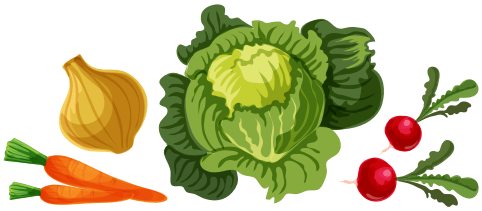
Garden Templates and Plant Choices for Kansas School Gardens

K-STATE
Research and Extension

Kansas State University Agricultural Experiment Station and Cooperative Extension Service



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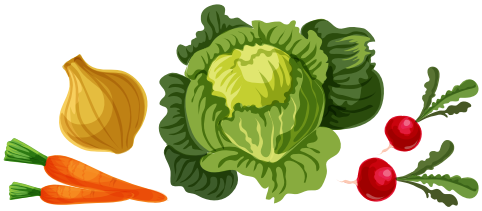


Fall Garden Templates 1

No planting required before school starts.

How to Use the Garden Templates and Coordinating Tables

The templates are divided by growing season. Each template is designed to be a stand-alone garden plan. However, it may be possible to use multiple templates in the same garden space over the course of a year. In a larger garden, several templates could be used each year or even in each season. The templates are not designed to be the only way or even the best way to plant a garden for your specific school. The templates are a guide to get you started with some options for what to plant and when. As you gain experience and confidence from successes, you can adjust and adapt your planting plans as needed.

The layout of the garden templates was designed with several things in mind. Some templates prioritize diversity of plants and others prioritize simplicity. In many cases, the garden layout is not designed to be efficient or high yielding, but rather to allow for effective learning and hands-on activities to be done with various sizes of groups. Some templates are designed for visual interest and inciting wonder in children rather than maximizing the yield.

If your garden is used for middle school or high school age students, planning and designing their own garden layouts can be a critical part of the learning process. These templates could serve as great starting points for students to study plant spacing and planting times, but do consider having them develop their own plans, research different planting options, or develop alternatives to compare results.

Each template tells a little bit about how easy or difficult it would be to implement the garden, as well as what the expected planting and harvesting window would be for the template. Be sure to pay attention to whether a template requires pre-planting indoors or prior to the school year, purchasing plants, or other preparations. The complexity level indicated reflects both the difficulty of managing the planting times and the difficulty of implementing the layout of the garden.

After each template, there are two tables. The first table provides more information about the recommended planting time, how to plant, and short notes on choosing a good variety. The second table gives alternatives to substitute for each plant recommended in the template. This allows for each garden to be adjusted to meet the needs of the school or student group.

For more information about each recommended plant in the guide, refer to the “Notes on Plant Choices” section of this publication. This document will provide more guidance on planting and growing each

crop, choosing varieties to grow, things to watch for, and ideas about learning opportunities related to the various plants.

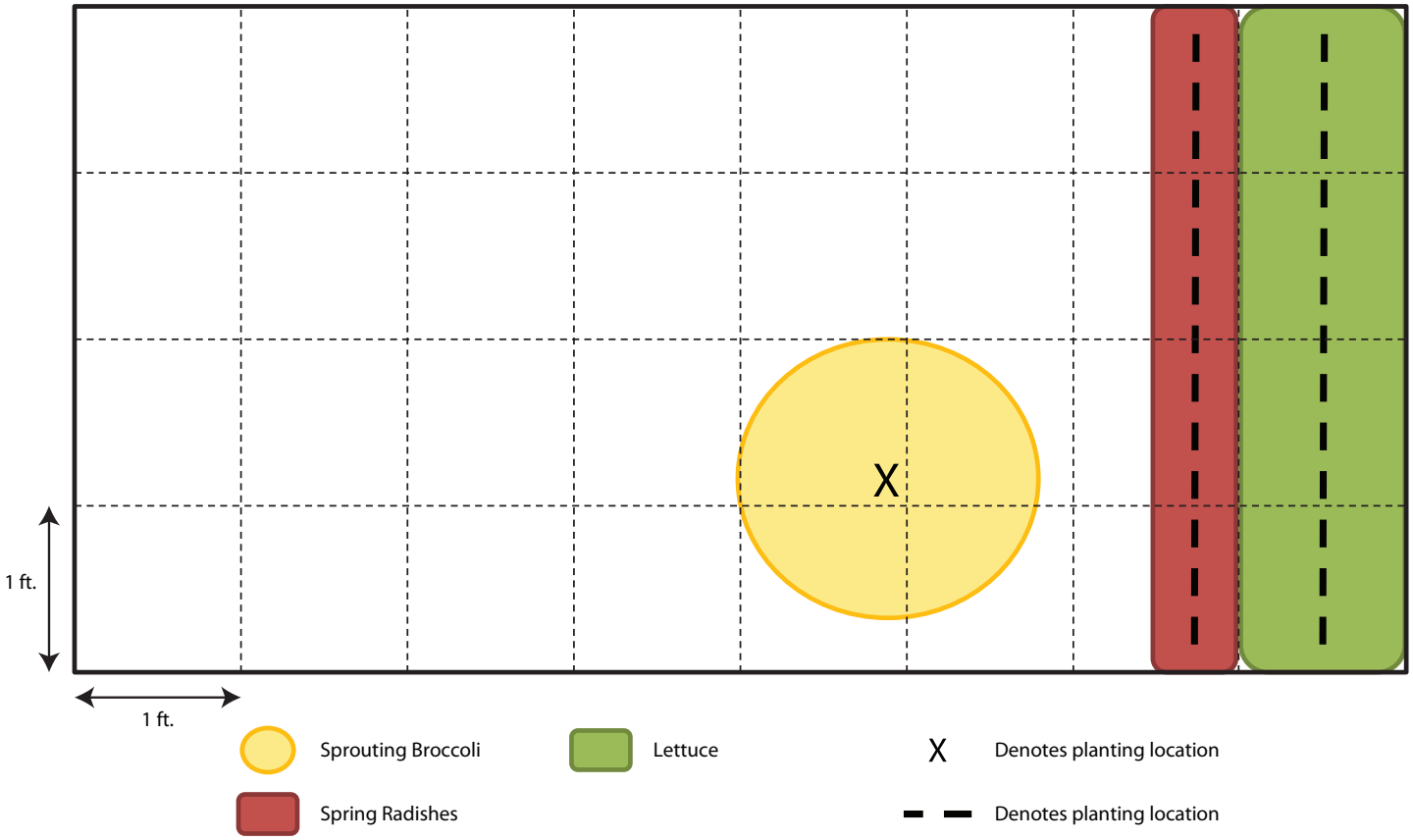
For tips on starting a garden and related resources, refer to the K-State Research and Extension publication, *Considerations and Curriculum Resources for School Garden Design in Kansas*, MF3589.

For lesson plans and educational activities, check out the chapter on "School Garden Curricula and Lesson Plan Options" in MF3589.

How to Read the Garden Templates

Each template is 4 feet by 8 feet. Each foot is marked by a gridline. A colored block that fills a whole square width is expected to be 1 foot wide, with the planting line denoted in the center of the block — allowing about 6 inches on either side of the planting location. A colored block that fills half a square is expected to be 6 inches wide, with planting in the center. These are typically where seeds are planted.

A circle or square with an "X" in the center will typically be where a single plant is transplanted. The plant will go on the "X," with the space of the circle or square the expected mature size of the plant. The key at the bottom shows what plants are planned for each space.



How to Read the Planting Schedule

Each template includes a Planting Schedule chart. This chart lists the ideal window when each type of plant should go into the garden. Bear in mind that every year is different from a weather standpoint, so a planting date that works well one year may not work as well in another year, especially at the extremes.

The planting type — either direct seeding in the garden or transplanting in the garden — is noted. In some cases, there may be special instructions for certain plants.

In the last column are some short variety notes. These notes are specific to the time of year and template, so may change from one chart to another. For more detailed information on variety selection for certain plants, refer to the "Notes on Plant Choices" section.

How to Read the Alternative Plants

Each template includes a chart of alternative plants. These are plants that have similar growth habits, spacing needs, and planting times to the plant originally indicated on the garden template. If there is a need to replace a particular plant with another option for whatever reason, this chart will help you determine which other plants you could consider.

In some cases, especially in the summer templates, there are few easy alternatives that have close characteristics to the original plant options. Alternatives may not need the exact same type of trellising or have slightly different planting dates. If you are unsure about a replacement plant, ask an experienced gardener for advice. Also refer to the "Notes on Plant Choices" section for more insight into certain types of plants.

Key-1. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Mid-Aug. to early Sept.	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Spring Radishes	Mid-Aug. to mid-Sept.	Seeds directly in garden	Any variety < 35 days to maturity.

Key-1. Alternative Plants for the Garden Plan

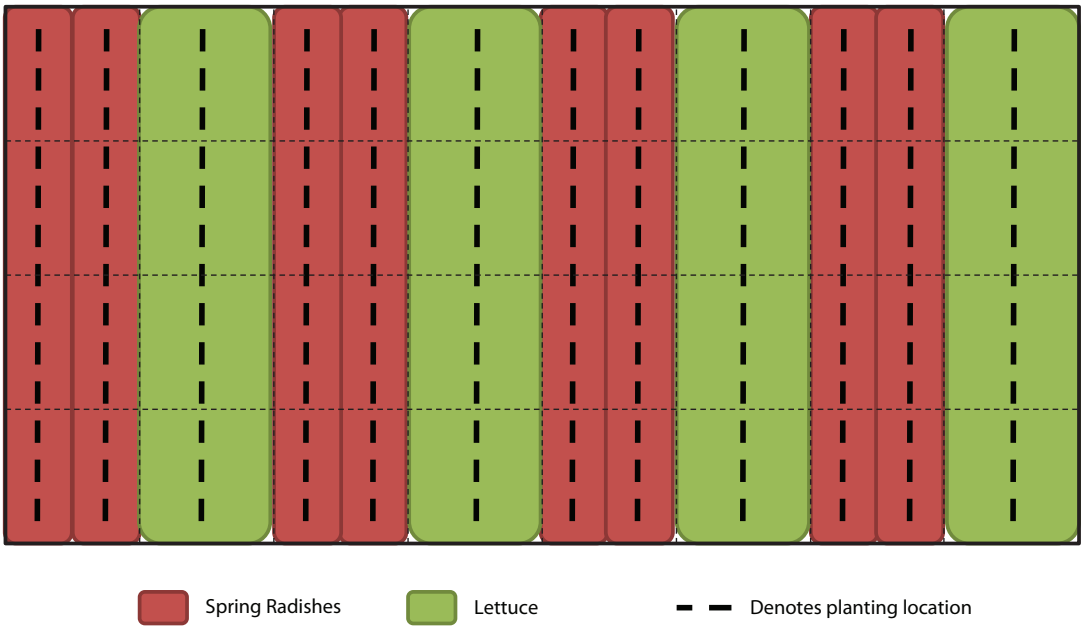
Vegetable	Alternative Plants
Lettuce	spinach, Chinese cabbage, mesclun, mizuna, mustards, arugula, kale, Swiss chard, bok choy
Spring Radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants)

F1-1

Very simple

Planted in mid-August to early September, harvest by late fall

No pre-planting or preparation necessary



F1-1. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Mid-Aug. to early Sept.	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Spring Radishes	Mid-Aug. to mid-Sept.	Seeds directly in garden	Any variety < 35 days to maturity.

F1-1. Alternative Plants for the Garden Plan

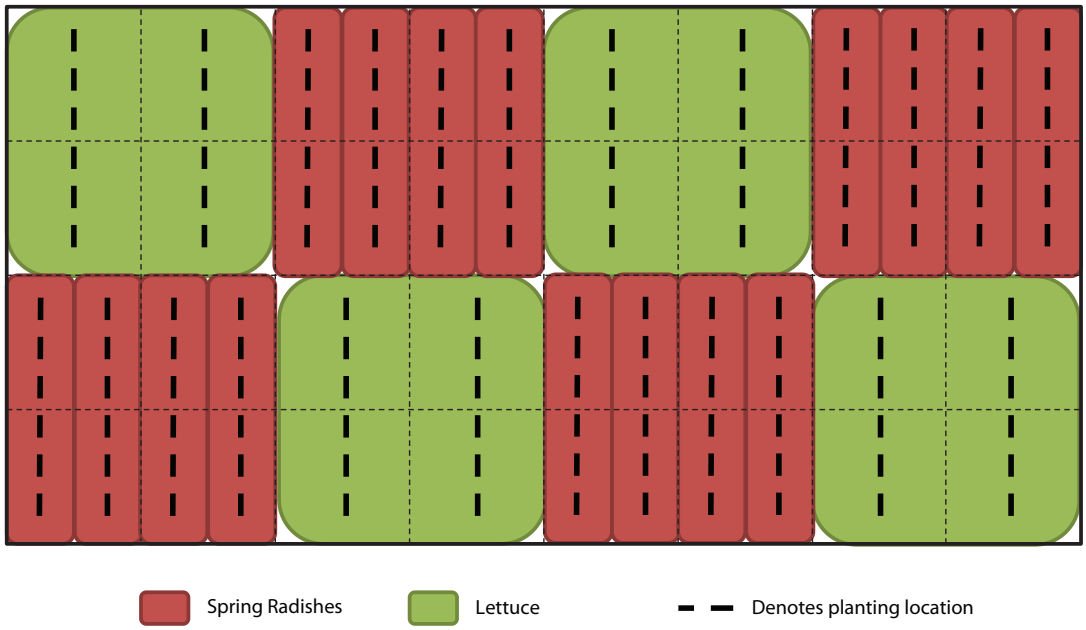
Vegetable	Alternative Plants
Lettuce	spinach, Chinese cabbage, mesclun, mizuna, mustards, arugula, kale, Swiss chard, bok choy
Spring Radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants)

F1-2

Very simple

Planted in mid-August to early September, harvest by late fall

No pre-planting or preparation necessary



F1-2. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Mid-Aug. to early Sept.	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Spring Radishes	Mid-Aug. to mid-Sept.	Seeds directly in garden	Any variety < 35 days to maturity.

F1-2. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Lettuce	spinach, Chinese cabbage, mesclun, mizuna, mustards, arugula, kale, Swiss chard, bok choy
Spring Radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants)

F1-3

Simple

Planted in mid-August to early September, harvest by late fall

No pre-planting or preparation necessary

F1-3. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Spinach	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety.
Spring Radishes	Mid-Aug. to mid-Sept.	Seeds directly in garden	Any variety < 35 days to maturity.
Green Onions	Mid-Aug. to mid-Sept.	Plant from sets directly in garden	Any variety of onion sets.
Bok Choy	Mid-Aug. to mid-Sept.	Seeds directly in garden	Any variety < 45 days to maturity preferred.
Salad Turnips	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety.
Arugula	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety.
Kohlrabi	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety < 45 days to maturity preferred.
Swiss Chard	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety.

F1-3. Alternative Plants for the Garden Plan

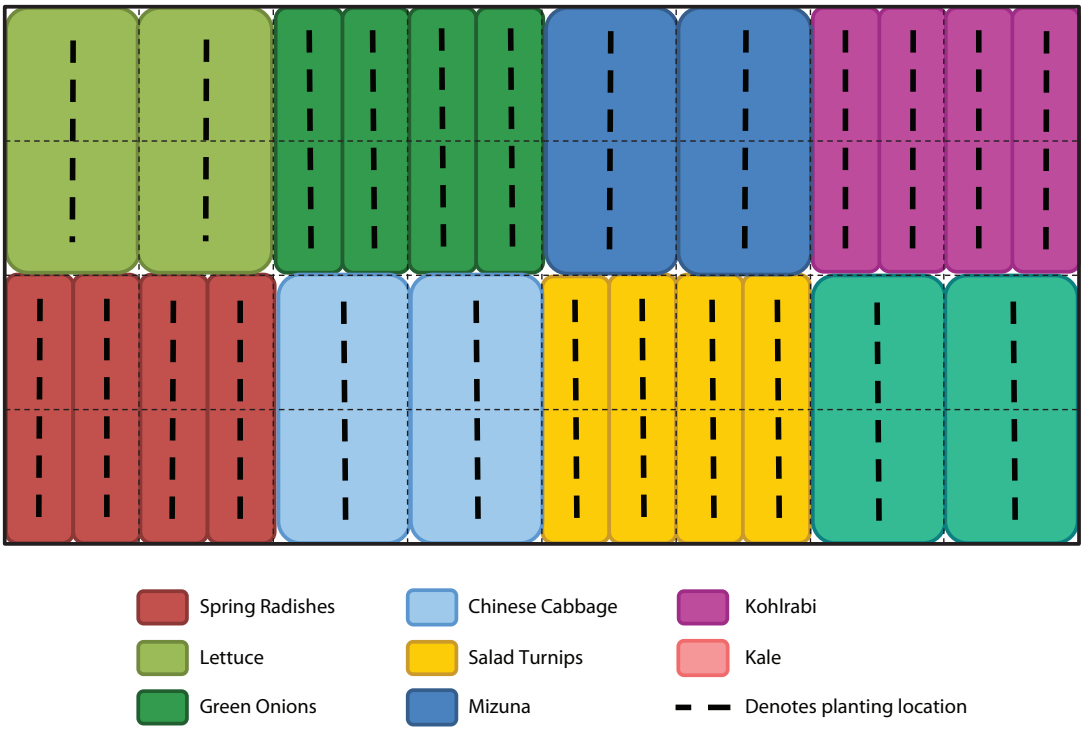
Vegetable	Alternative Plants
Spinach	lettuce, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Spring Radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants)
Green Onions	kohlrabi, salad turnips, purple top turnips, spring radishes (sets), pansies (purchased plants)
Bok Choy	lettuce, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, spinach
Salad Turnips	kohlrabi, spring radishes, purple top turnips, green onions (sets), pansies (purchased plants)
Arugula	lettuce, Chinese cabbage, mesclun, mustards, mizuna, spinach, kale, Swiss chard, bok choy
Kohlrabi	spring radishes, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants)
Swiss Chard	lettuce, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, spinach, bok choy

F1-4

Simple

Planted in mid-August to early September, harvest by late fall

No pre-planting or preparation necessary



F1-4. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Mid-Aug. to early Sept.	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Spring Radishes	Mid-Aug. to mid-Sept.	Seeds directly in garden	Any variety < 35 days to maturity.
Green Onions	Mid-Aug. to mid-Sept.	Plant from sets directly in garden	Any variety of onion sets.
Chinese Cabbage	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety < 50 days to maturity preferred. Heading types may not reach full size.
Salad Turnips	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety.
Mizuna	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety.
Kohlrabi	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety < 45 days to maturity preferred.
Kale	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety.

F1-4. Alternative Plants for the Garden Plan

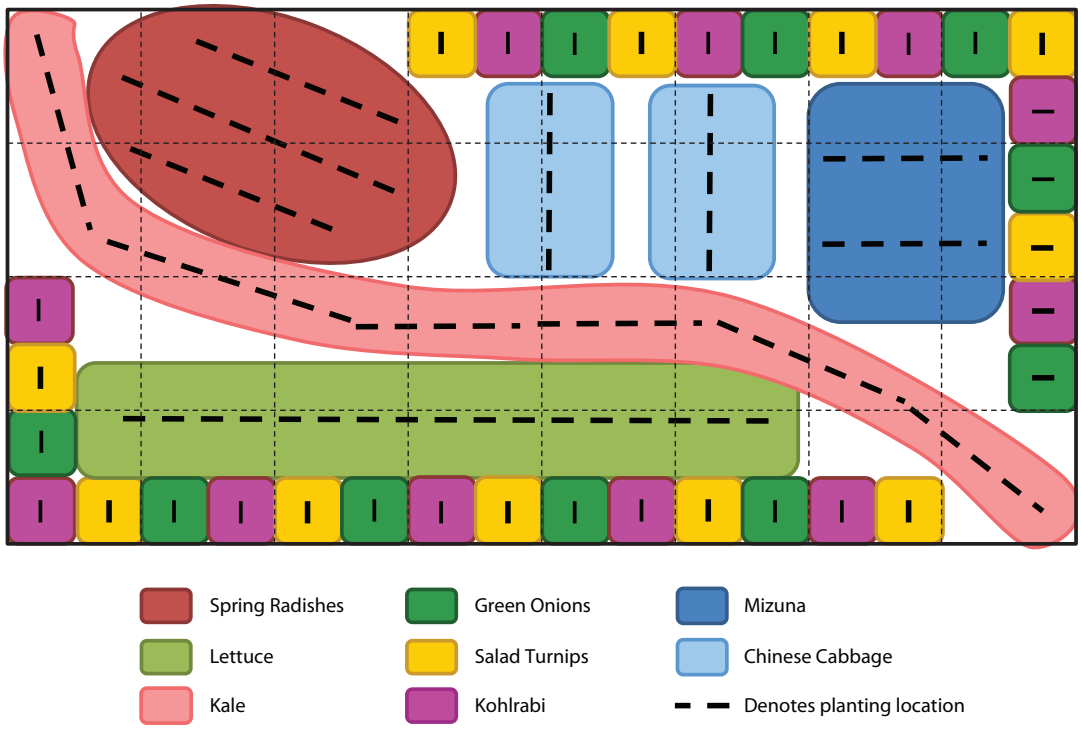
Vegetable	Alternative Plants
Lettuce	spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Spring radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants)
Green onions	kohlrabi, salad turnips, purple top turnips, spring radishes, pansies (purchased plants)
Chinese cabbage	lettuce, bok choy, mesclun, mustards, mizuna, arugula, kale, Swiss chard, spinach
Salad turnips	kohlrabi, spring radishes, purple top turnips, green onions (sets), pansies (purchased plants)
Mizuna	lettuce, Chinese cabbage, mesclun, mustards, arugula, spinach, kale, Swiss chard, bok choy
Kohlrabi	spring radishes, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants)
Kale	lettuce, Chinese cabbage, mesclun, mustards, mizuna, arugula, Swiss chard, spinach, bok choy

F1-5

Moderately complex

Planted in mid-August to early September, harvest by late fall.

No pre-planting or preparation necessary



F1-5. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Mid-Aug. to early Sept.	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Spring Radishes	Mid-Aug. to mid-Sept.	Seeds directly in garden	Any variety < 35 days to maturity.
Green Onions	Mid-Aug. to mid-Sept.	Plant from sets directly in garden	Any variety of onion sets.
Chinese Cabbage	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety < 50 days to maturity preferred. Heading types may not reach full size.
Salad Turnips	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety.
Mizuna	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety.
Kohlrabi	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety < 45 days to maturity preferred.
Kale	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety.

F1-5. Alternative Plants for the Garden Plan

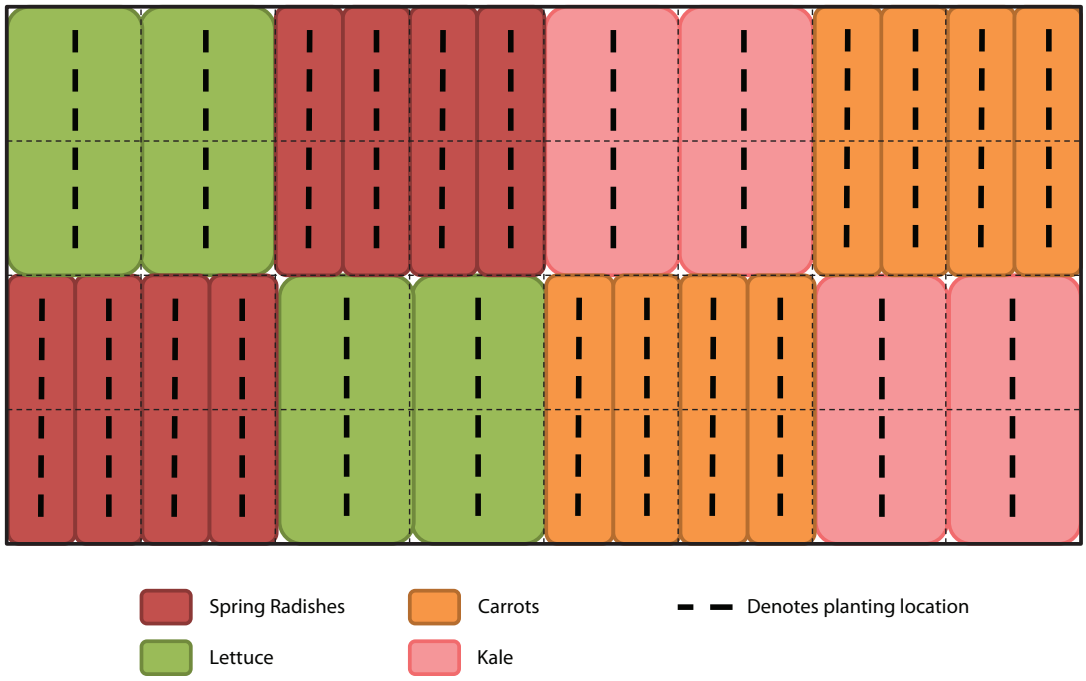
Vegetable	Alternative Plants
Lettuce	spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Spring radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants)
Green onions	kohlrabi, salad turnips, purple top turnips, spring radishes, pansies (purchased plants)
Chinese cabbage	lettuce, bok choy, mesclun, mustards, mizuna, arugula, kale, Swiss chard, spinach
Salad turnips	kohlrabi, spring radishes, purple top turnips, green onions (sets), pansies (purchased plants)
Mizuna	lettuce, Chinese cabbage, mesclun, mustards, arugula, spinach, kale, Swiss chard, bok choy
Kohlrabi	spring radishes, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants)
Kale	lettuce, Chinese cabbage, mesclun, mustards, mizuna, arugula, Swiss chard, spinach, bok choy

F1-6

Simple

Planted in mid-August, harvest by late fall or early winter, using row covers to extend the season.

No pre-planting or preparation necessary



F1-6. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Mid-Aug. to early Sept.	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Spring Radishes	Mid-Aug. to mid-Sept.	Seeds directly in garden	Any variety < 35 days to maturity.
Carrots	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety < 60 days to maturity preferred. Others may not reach full size.
Kale	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety.

F1-6. Alternative Plants for the Garden Plan

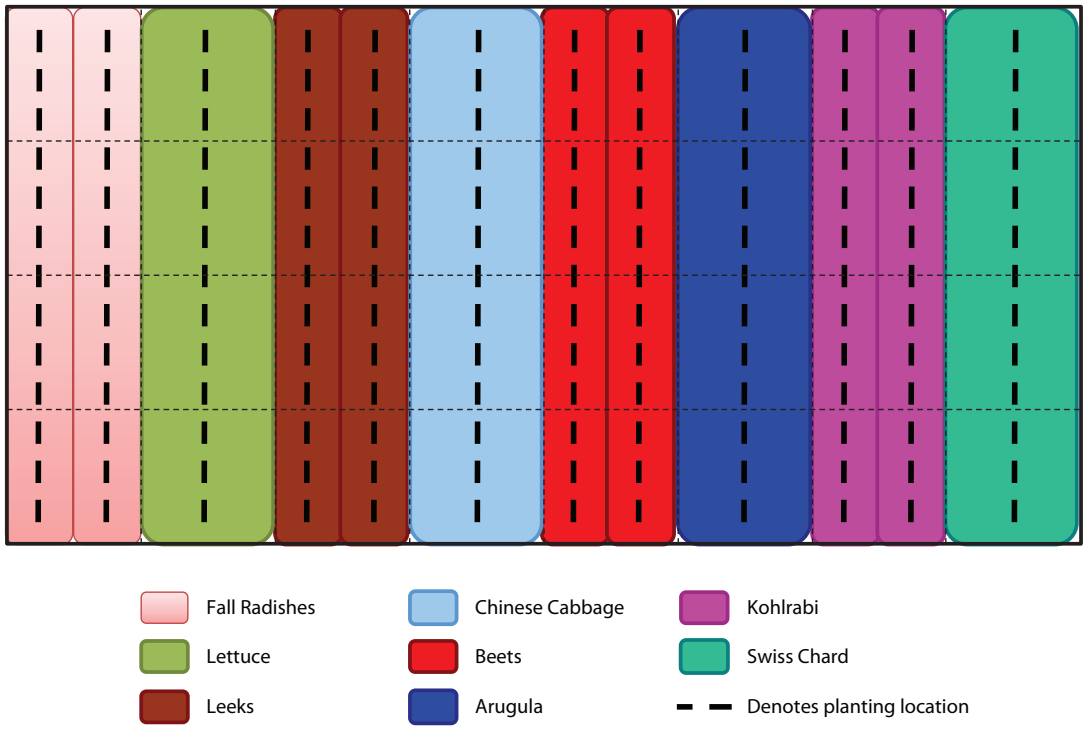
Vegetable	Alternative Plants
Lettuce	spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Spring Radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants)
Carrots	fall radishes (such as daikons), kohlrabi, salad turnips, purple top turnips, spring radishes, pansies (purchased plants), bulbing fennel, leeks (transplants)
Kale	lettuce, Chinese cabbage, mesclun, mustards, mizuna, arugula, Swiss chard, spinach, bok choy

F1-7

Simple

Planted in mid-August, harvest by late fall or early winter, using row covers to extend the season.

No pre-planting or preparation necessary



F1-7. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Mid-Aug. to early Sept.	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Fall Radishes	Mid-Aug. to mid-Sept.	Seeds directly in garden	Any variety. This category would include daikons, watermelon radishes, Black Spanish round, etc. May not reach full size.
Leeks	Mid-Aug. to mid-Sept.	Transplants are best, seed directly in garden if no transplants available.	Any variety, but shorter days to maturity preferred. May not reach full size.
Chinese Cabbage	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety < 50 days to maturity preferred. Heading types may not reach full size.
Beets	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety < 55 days to maturity preferred. Others may not reach full size.
Arugula	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety.
Kohlrabi	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety < 45 days to maturity preferred.
Swiss Chard	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety.

F1-7. Alternative Plants for the Garden Plan

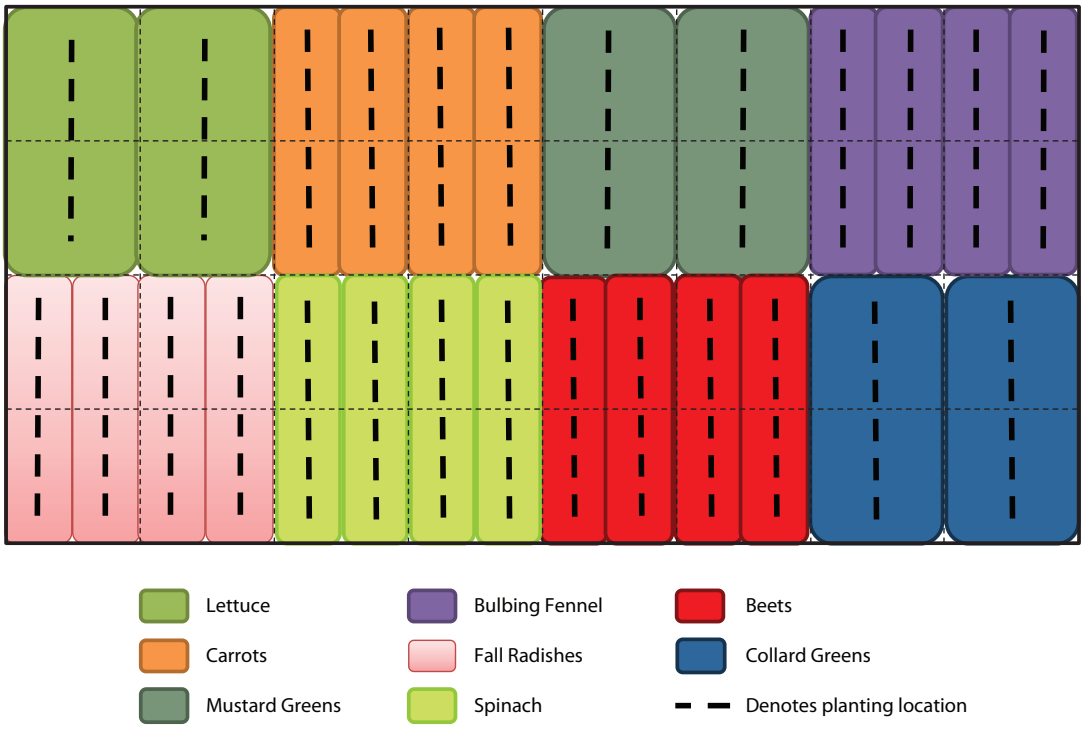
Vegetable	Alternative Plants
Lettuce	spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy, collards
Fall Radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants), carrots, beets, spring radishes, leeks, bulbing fennel, leeks (transplants)
Leeks	kohlrabi, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants), carrots, beets, spring radishes, fall radishes, bulbing fennel
Chinese Cabbage	lettuce, bok choy, mesclun, mustards, mizuna, arugula, kale, Swiss chard, spinach, collards
Beets	kohlrabi, spring radishes, purple top turnips, green onions (sets), pansies (purchased plants), carrots, fall radishes, leeks (transplants), bulbing fennel
Arugula	lettuce, Chinese cabbage, mesclun, mustards, spinach, kale, Swiss chard, bok choy, collards
Kohlrabi	spring radishes, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants), carrots, beets, fall radishes, leeks (transplants), bulbing fennel
Swiss Chard	lettuce, Chinese cabbage, mesclun, mustards, mizuna, arugula, Swiss chard, spinach, bok choy, collards

F1-8

Simple

Planted in mid-August, harvest by late fall or early winter, using row covers to extend the season.

No pre-planting or preparation necessary



F1-8. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Mid-Aug. to early Sept.	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Fall Radishes	Mid-Aug. to mid-Sept.	Seeds directly in garden	Any variety. This category would include daikons, watermelon radishes, Black Spanish round, etc. May not reach full size.
Carrots	Mid-Aug. to mid-Sept.	Seeds directly in garden	Any variety < 60 days to maturity preferred. Others may not reach full size.
Spinach	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety.
Beets	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety < 55 days to maturity preferred. Others may not reach full size.
Mustard Greens	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety.
Bulbing Fennel	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety, but shorter days to maturity preferred. May not reach full size.
Collard Greens	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety.

F1-8. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Lettuce	spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy, collards
Fall Radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants), carrots, beets, spring radishes, leeks (transplants), bulbing fennel
Carrots	kohlrabi, salad turnips, purple top turnips, spring radishes (sets), pansies (purchased plants), leeks (transplants), beets, spring radishes, fall radishes, bulbing fennel
Spinach	lettuce, bok choy, mesclun, mustards, mizuna, arugula, kale, Swiss chard, Chinese cabbage, collards
Beets	kohlrabi, spring radishes, purple top turnips, green onions (sets), pansies (purchased plants), carrots, fall radishes, leeks (transplants), bulbing fennel
Mustard Greens	lettuce, Chinese cabbage, mesclun, mustards, arugula, spinach, kale, Swiss chard, bok choy, collards
Bulbing Fennel	spring radishes, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants), carrots, beets, fall radishes, leeks (transplants), kohlrabi
Collard Greens	lettuce, Chinese cabbage, mesclun, mustards, mizuna, arugula, Swiss chard, spinach, bok choy

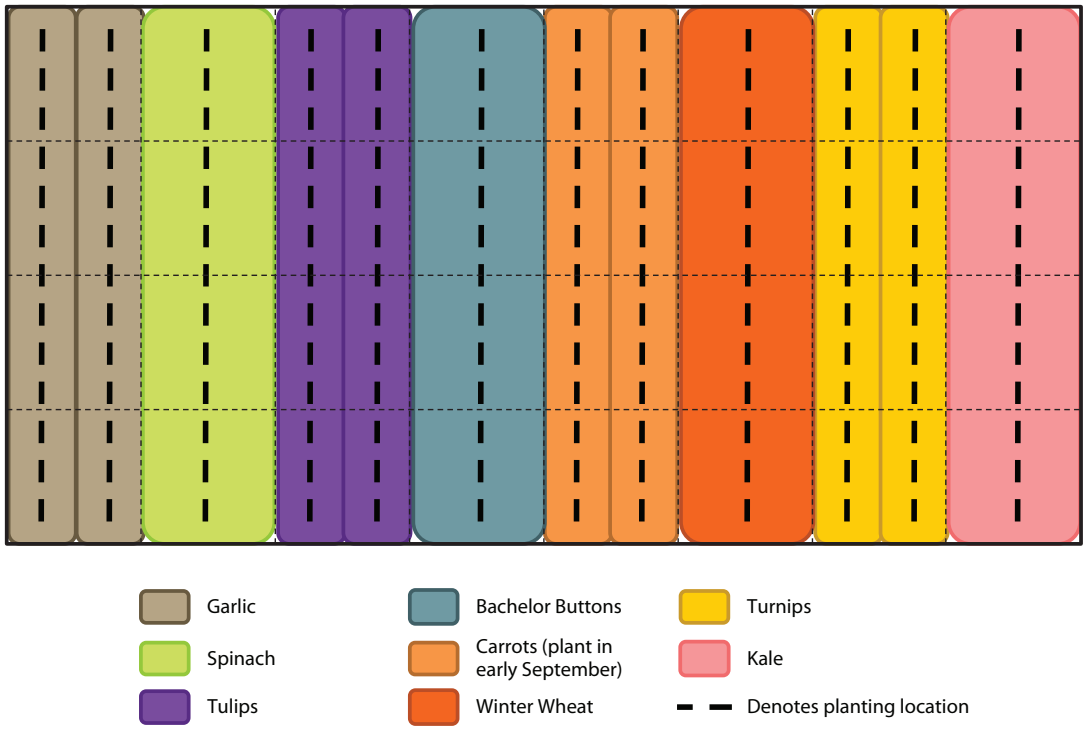
F1-9

Overwintering and Spring Harvests

Moderately simple

Planted in September to mid-October for over-wintering and spring harvest using mulches and/or row covers.

No pre-planting or preparation necessary



F1-9. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Carrots	Early Sept.	Seeds directly in garden	Any variety < 60 days to maturity preferred. Others may not reach full size.
Kale	Early to mid-Sept.	Seeds directly in garden	Any variety.
Turnips	Early to mid-Sept.	Seeds directly in garden	Any variety, but shorter days to maturity preferred. May not reach full size.
Spinach	Early Sept.	Seeds directly in garden	Any variety.
Garlic	Mid-Sept. to mid-Oct.	Plant individual cloves directly in garden	Any variety. Hardneck types perform best in Kansas.
Bachelor Buttons	Late Sept. to mid-Oct.	Seeds directly in garden	Any variety.
Winter Wheat	Mid-Sept. to mid-Oct.	Seeds directly in garden	Any variety.
Tulips	Oct.	Plant bulbs directly in garden	Any variety.

F1-9. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Carrots	leeks (transplants), turnips, bulb fennel
Kale	Lettuce, spinach, collards, claytonia (miner's lettuce), mache (lamb's lettuce)
Turnips	leeks (transplants), carrots, bulb fennel
Spinach	Lettuce, spinach, collards, claytonia (miner's lettuce), mache (lamb's lettuce)
Garlic	shallots, tulips, daffodils, hyacinths
Bachelor Buttons	larkspur, winter wheat, barley, nigella
Winter Wheat	larkspur, bachelor buttons, barley, nigella
Tulips	shallots, garlic, daffodils, hyacinths

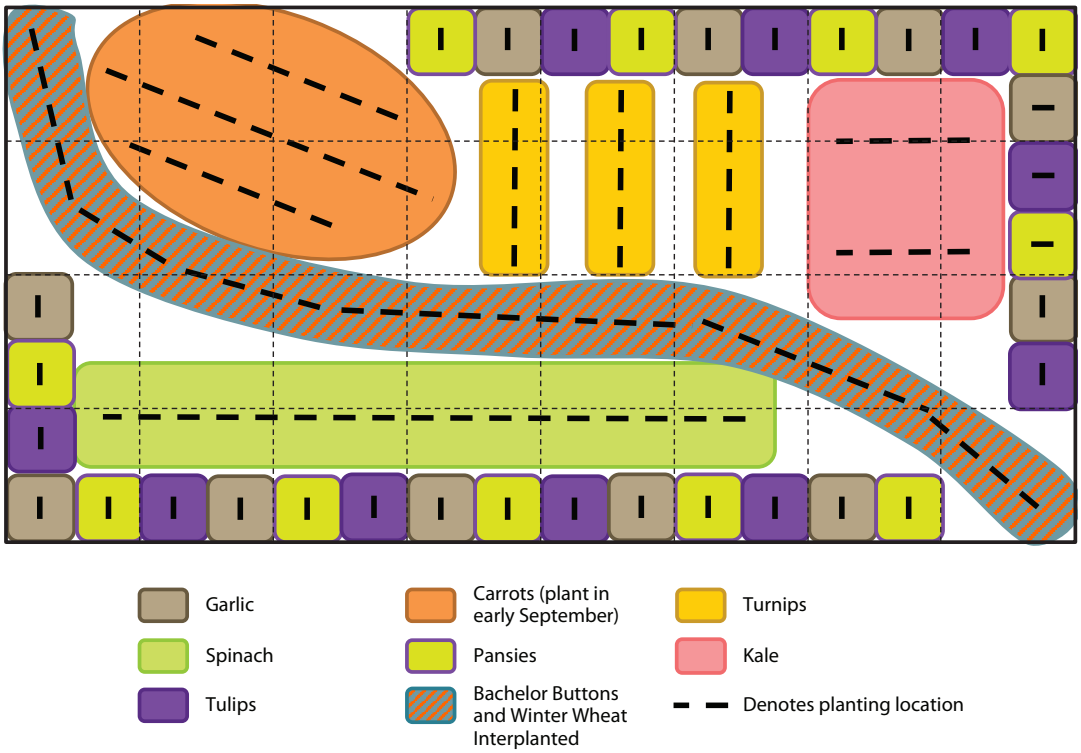
F1-10

Overwintering and Spring Harvests

Moderately complex

Planted in September to mid-October for over-wintering and spring harvest using mulches and/or row covers.

No pre-planting or preparation necessary



F1-10. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Carrots	Early Sept.	Seeds directly in garden	Any variety < 60 days to maturity preferred. Others may not reach full size.
Kale	Early to mid-Sept.	Seeds directly in garden	Any variety.
Turnips	Early to mid-Sept.	Seeds directly in garden	Any variety, but shorter days to maturity preferred. May not reach full size.
Spinach	Early Sept.	Seeds directly in garden	Any variety.
Garlic	Mid-Sept. to mid-Oct.	Plant individual cloves directly in garden	Any variety. Hardneck perform best in Kansas.
Pansies	Mid-Sept. to mid-Oct.	Plant started plants directly in garden	Any variety.
Bachelor Buttons and Winter Wheat (Interplanted)*	Mid-Sept. to mid-Oct.	Seeds directly in garden	Any variety.
Tulips	Oct.	Plant bulbs directly in garden	Any variety.

*Either mix the flower and grain seeds together before planting or plant both seeds in the same area, to result in a mixed flower-grain swath (think "meadow") through the garden next spring.

F1-10. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Carrots	Leeks (transplants), turnips, bulb fennel
Kale	Lettuce, spinach, collards, claytonia (miner's lettuce), mache (lamb's lettuce)
Turnips	Leeks (transplants), carrots, bulb fennel
Spinach	Lettuce, kale, collards, claytonia (miner's lettuce), mache (lamb's lettuce)
Garlic	Shallots, tulips, daffodils, hyacinths
Pansies	Garlic, shallots, tulips, daffodils, hyacinths
Bachelor Buttons and Winter Wheat (interplanted)	Larkspur, barley, oats, nigella
Tulips	Shallots, garlic, daffodils, hyacinths

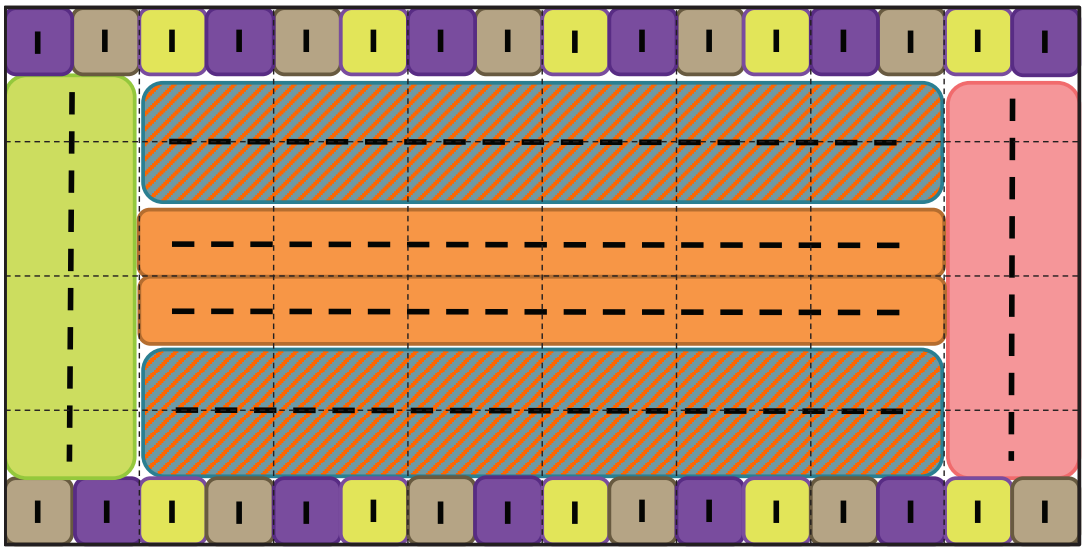
F1-11

Overwintering and Spring Harvests

Moderately complex

Planted in September to mid-October for over-wintering and spring harvest using mulches and/or row covers.

No pre-planting or preparation necessary



F1-11. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Carrots	Early Sept.	Seeds directly in garden	Any variety < 60 days to maturity preferred. Others may not reach full size.
Kale	Early to mid-Sept.	Seeds directly in garden	Any variety.
Turnips	Early to mid-Sept.	Seeds directly in garden	Any variety, but shorter days to maturity preferred. May not reach full size.
Spinach	Early Sept.	Seeds directly in garden	Any variety.
Garlic	Mid-Sept. to mid-Oct.	Plant individual cloves directly in garden	Any variety. Hardneck perform best in Kansas.
Pansies	Mid-Sept. to mid-Oct.	Plant started plants directly in garden	Any variety.
Bachelor Buttons and Winter Wheat (Interplanted)*	Late Sept. to mid-Oct.	Seeds directly in garden	Any variety.
Tulips	Oct.	Plant bulbs directly in garden	Any variety.

*Either mix the flower and grain seeds together before planting or plant both seeds in the same area, to result in a mixed flower-grain swath (think "meadow") through the garden next spring.

F1-11. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Carrots	Leeks (transplants), turnips, bulb fennel
Kale	Lettuce, spinach, collards, claytonia (miner's lettuce), mache (lamb's lettuce)
Turnips	Leeks (transplants), carrots, bulb fennel
Spinach	Lettuce, kale, collards, claytonia (miner's lettuce), mache (lamb's lettuce)
Garlic	Shallots, tulips, daffodils, hyacinths
Pansies	Garlic, shallots, tulips, daffodils, hyacinths
Bachelor Buttons and Winter Wheat (interplanted)	Larkspur, barley, oats, nigella
Tulips	Shallots, garlic, daffodils, hyacinths

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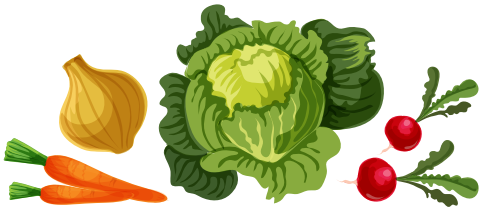
MF3590 March 2022



Fall Garden Templates 2

Planting needed before school starts.

How to Use the Garden Templates and Coordinating Tables

The templates are divided by growing season. Each template is designed to be a stand-alone garden plan. However, it may be possible to use multiple templates in the same garden space over the course of a year. In a larger garden, several templates could be used each year or even in each season. The templates are not designed to be the only way or even the best way to plant a garden for your specific school. The templates are a guide to get you started with some options for what to plant and when. As you gain experience and confidence from successes, you can adjust and adapt your planting plans as needed.

The layout of the garden templates was designed with several things in mind. Some templates prioritize diversity of plants and others prioritize simplicity. In many cases, the garden layout is not designed to be efficient or high yielding, but rather to allow for effective learning and hands-on activities to be done with various sizes of groups. Some templates are designed for visual interest and inciting wonder in children rather than maximizing the yield.

If your garden is used for middle school or high school age students, planning and designing their own garden layouts can be a critical part of the learning process. These templates could serve as great starting points for students to study plant spacing and planting times, but do consider having them develop their own plans, research different planting options, or develop alternatives to compare results.

Each template tells a little bit about how easy or difficult it would be to implement the garden, as well as what the expected planting and harvesting window would be for the template. Be sure to pay attention to whether a template requires pre-planting indoors or prior to the school year, purchasing plants, or other preparations. The complexity level indicated reflects both the difficulty of managing the planting times and the difficulty of implementing the layout of the garden.

After each template, there are two tables. The first table provides more information about the recommended planting time, how to plant, and short notes on choosing a good variety. The second table gives alternatives to substitute for each plant recommended in the template. This allows for each garden to be adjusted to meet the needs of the school or student group.

For more information about each recommended plant in the guide, refer to the “Notes on Plant Choices” section of this publication. This document will provide more guidance on planting and growing each

crop, choosing varieties to grow, things to watch for, and ideas about learning opportunities related to the various plants.

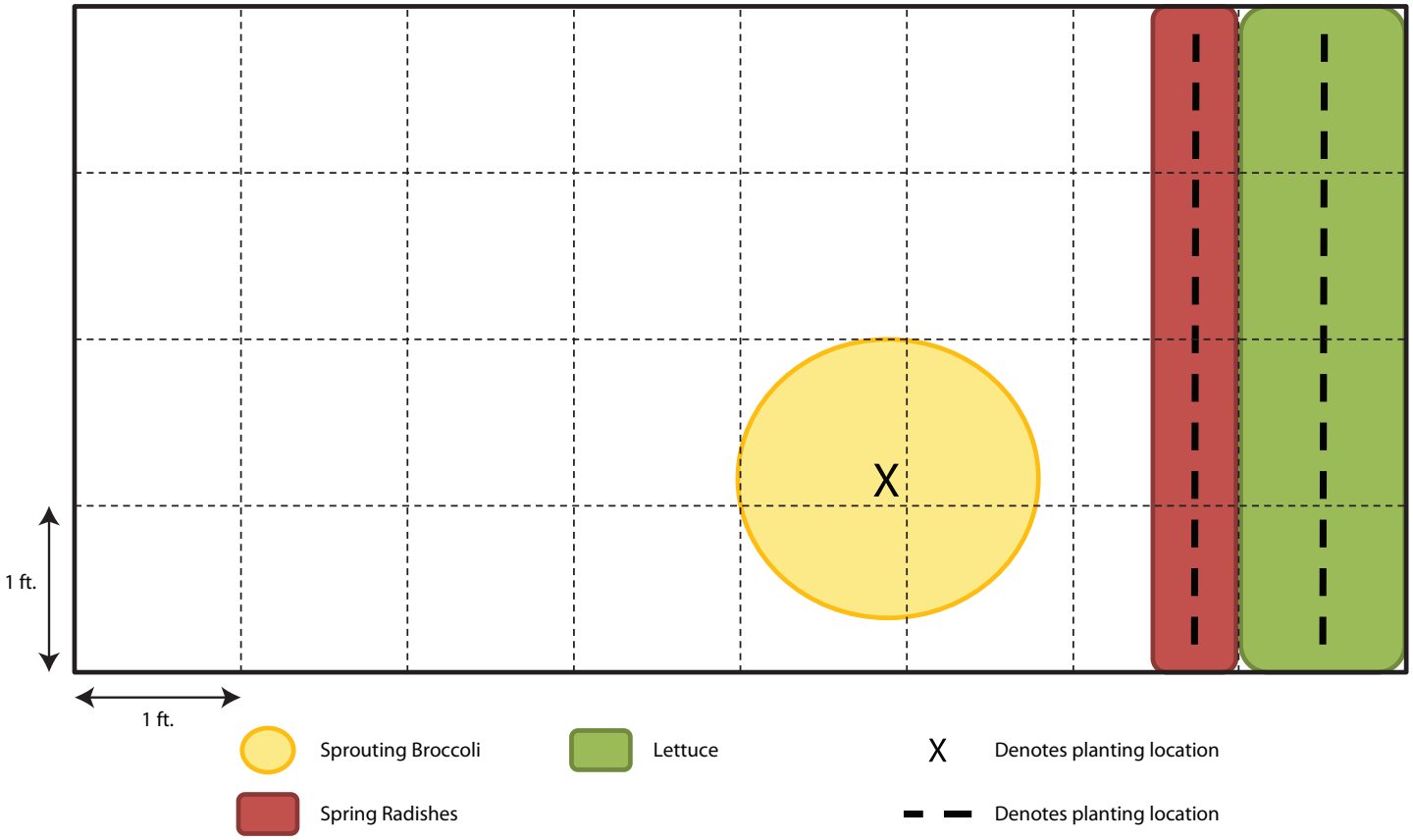
For tips on starting a garden and related resources, refer to the K-State Research and Extension publication, *Considerations and Curriculum Resources for School Garden Design in Kansas*, MF3589.

For lesson plans and educational activities, check out the chapter on "School Garden Curricula and Lesson Plan Options" in MF3589.

How to Read the Garden Templates

Each template is 4 feet by 8 feet. Each foot is marked by a gridline. A colored block that fills a whole square width is expected to be 1 foot wide, with the planting line denoted in the center of the block — allowing about 6 inches on either side of the planting location. A colored block that fills half a square is expected to be 6 inches wide, with planting in the center. These are typically where seeds are planted.

A circle or square with an "X" in the center will typically be where a single plant is transplanted. The plant will go on the "X," with the space of the circle or square the expected mature size of the plant. The key at the bottom shows what plants are planned for each space.



How to Read the Planting Schedule

Each template includes a Planting Schedule chart. This chart lists the ideal window when each type of plant should go into the garden. Bear in mind that every year is different from a weather standpoint, so a planting date that works well one year may not work as well in another year, especially at the extremes.

The planting type — either direct seeding in the garden or transplanting in the garden — is noted. In some cases, there may be special instructions for certain plants.

In the last column are some short variety notes. These notes are specific to the time of year and template, so may change from one chart to another. For more detailed information on variety selection for certain plants, refer to the "Notes on Plant Choices" section.

How to Read the Alternative Plants

Each template includes a chart of alternative plants. These are plants that have similar growth habits, spacing needs, and planting times to the plant originally indicated on the garden template. If there is a need to replace a particular plant with another option for whatever reason, this chart will help you determine which other plants you could consider.

In some cases, especially in the summer templates, there are few easy alternatives that have close characteristics to the original plant options. Alternatives may not need the exact same type of trellising or have slightly different planting dates. If you are unsure about a replacement plant, ask an experienced gardener for advice. Also refer to the "Notes on Plant Choices" section for more insight into certain types of plants.

Key-1. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Mid-Aug. to early Sept.	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Spring Radishes	Mid-Aug. to mid-Sept.	Seeds directly in garden	Any variety < 35 days to maturity.

Key-1. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Lettuce	spinach, Chinese cabbage, mesclun, mizuna, mustards, arugula, kale, Swiss chard, bok choy
Spring Radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants)

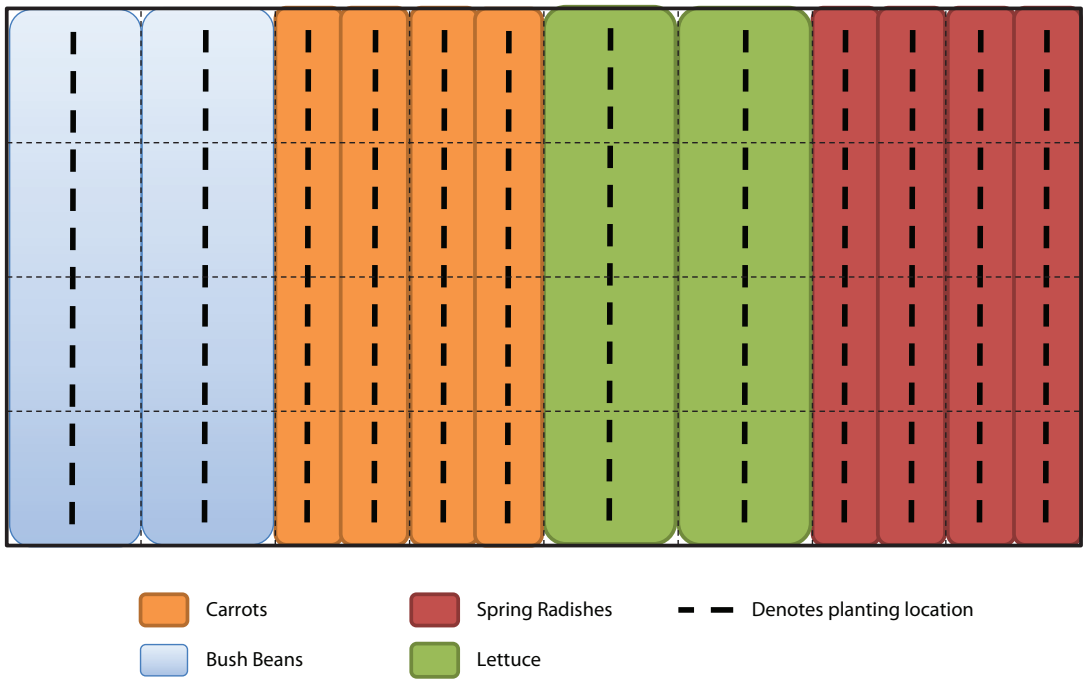
F2-1

Planting before School Starts

Simple

Partially planted in late July by teachers or volunteers and partially planted in late August to early September with students.

Expected harvest by late fall with no season extension or row covers needed.



F2-1. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Carrots	Mid-July to early Aug.	Seeds directly in garden	Any variety.
Bush Beans	Mid- to late July	Seeds directly in garden	Any variety < 55 days to maturity preferred.
Lettuce	Mid-Aug. to early Sept.	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Spring Radishes	Mid-Aug. to mid-Sept.	Seeds directly in garden	Any variety < 35 days to maturity.

F2-1. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Carrots	Fall radishes (such as daikons), kohlrabi, salad turnips, purple top turnips, bulbing fennel, pansies (purchased plants)
Bush Beans	Pollenless sunflowers (50-55 day varieties). Fall potatoes or sugar snap peas could be considered if the soil is cool enough.
Lettuce	Spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Spring Radishes	Kohlrabi, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants)

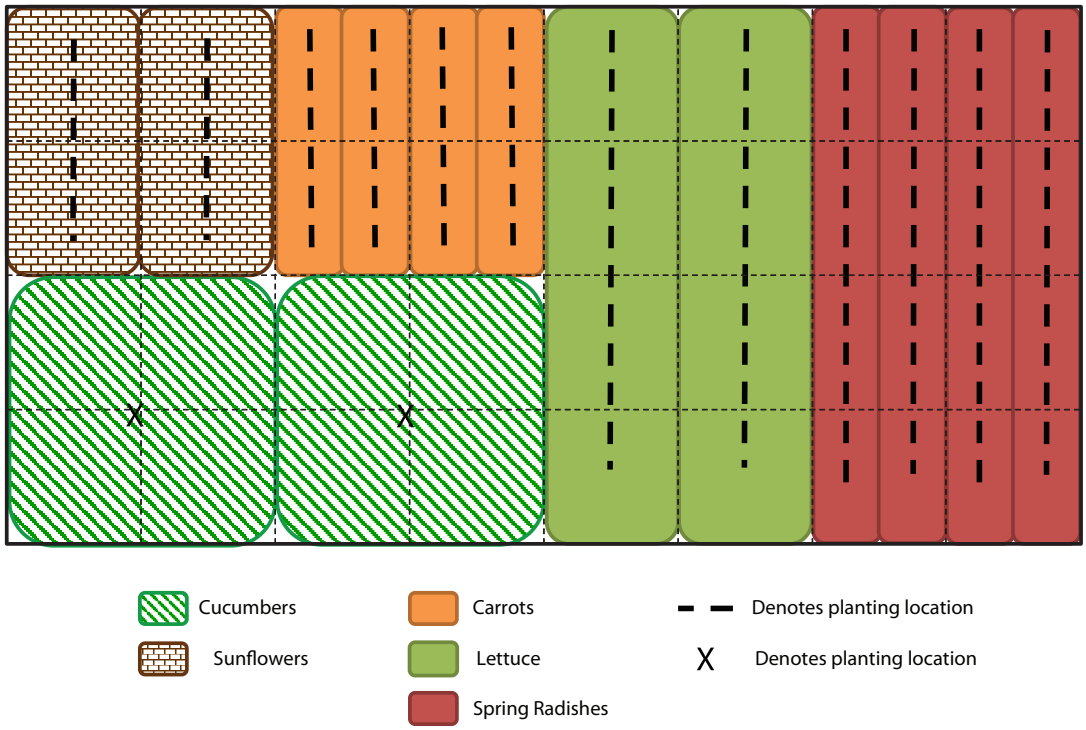
F2-2

Planting before School Starts

Moderately simple

Partially planted in late July by teachers or volunteers and partially planted in late August to early September with students.

Expected harvest by late fall with no season extension or row covers needed.



F2-2. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Carrots	Mid-July to early Aug.	Seeds directly in garden	Any variety.
Sunflowers	Mid-July to mid-Aug.	Seeds directly in garden	Look for 50-55 day varieties, pollenless.
Lettuce	Mid-Aug. to early Sept.	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Spring Radishes	Mid-Aug. to mid-Sept.	Seeds directly in garden	Any variety < 35 days to maturity.
Cucumbers	Mid- to late July	Seeds directly in garden (can also transplant if preferred)	Any variety < 55 days preferred. Bush types preferred if no trellises available.

F2-2. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Carrots	Fall radishes (such as daikons), kohlrabi, salad turnips, purple top turnips, bulbing fennel, pansies (purchased plants)
Sunflowers	Bush beans. Fall potatoes or sugar snap peas could be considered if the soil is cool enough.
Lettuce	Spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Spring Radishes	Kohlrabi, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants)
Cucumbers	Pole beans (ideally planted on a trellis or tomato cage), summer squash or zucchini , pollenless sunflowers (50-55 day varieties)

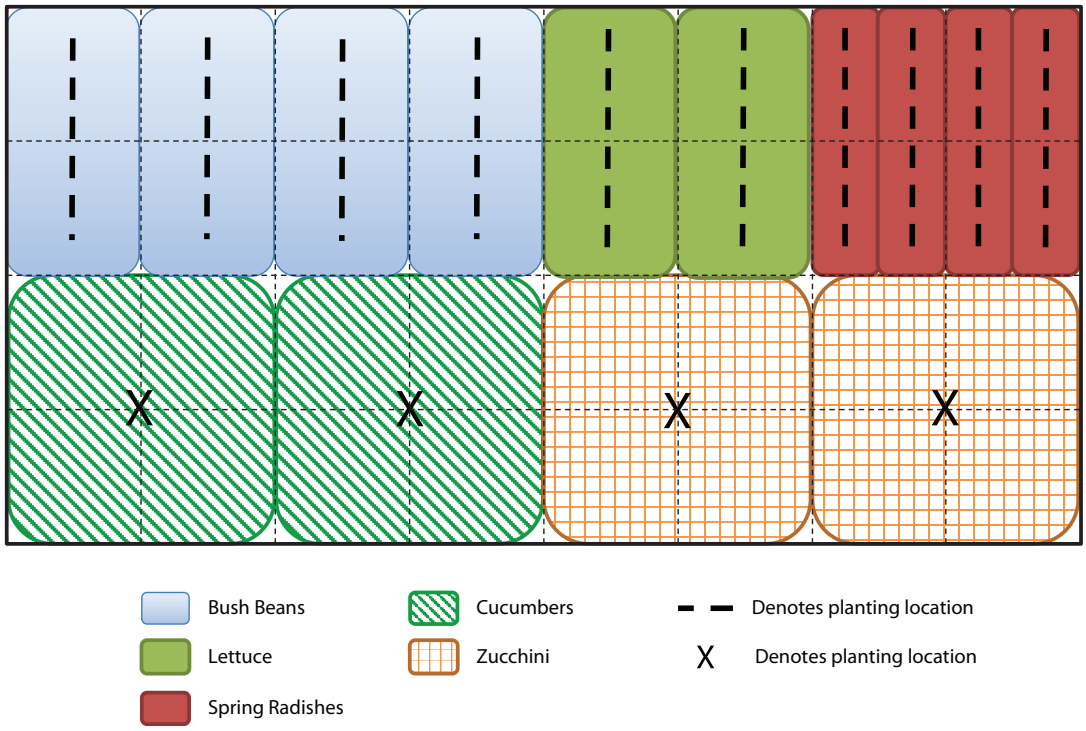
F2-3

Planting before School Starts

Moderately simple

Partially planted in late July by teachers or volunteers and partially planted in late August to early September with students.

Expected harvest by late fall with no season extension or row covers needed.



F2-3. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Summer Squash or Zucchini	Mid- to late July	Seeds directly in garden (can also transplant if preferred)	Any variety < 50 days to maturity preferred.
Bush Beans	Mid- to late July	Seeds directly in garden	Any variety < 55 days to maturity preferred.
Lettuce	Mid-Aug. to early Sept.	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Spring Radishes	Mid-Aug. to mid-Sept.	Seeds directly in garden	Any variety < 35 days to maturity.
Cucumbers	Mid- to late July	Seeds directly in garden (can also transplant if preferred)	Any variety < 55 days preferred. Bush types preferred if no trellises available.

F2-3. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Summer Squash or Zucchini	cucumbers, pole beans (ideally planted on a trellis or tomato cage), pollenless sunflowers (50-55 day varieties)
Bush Beans	pollenless sunflowers (50-55 day varieties). Fall potatoes or sugar snap peas could be considered if the soil is cool enough.
Lettuce	spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Spring Radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants), fall radishes
Cucumbers	pole beans (ideally planted on a trellis or tomato cage), summer squash or zucchini, pollenless sunflowers (50-55 day varieties)

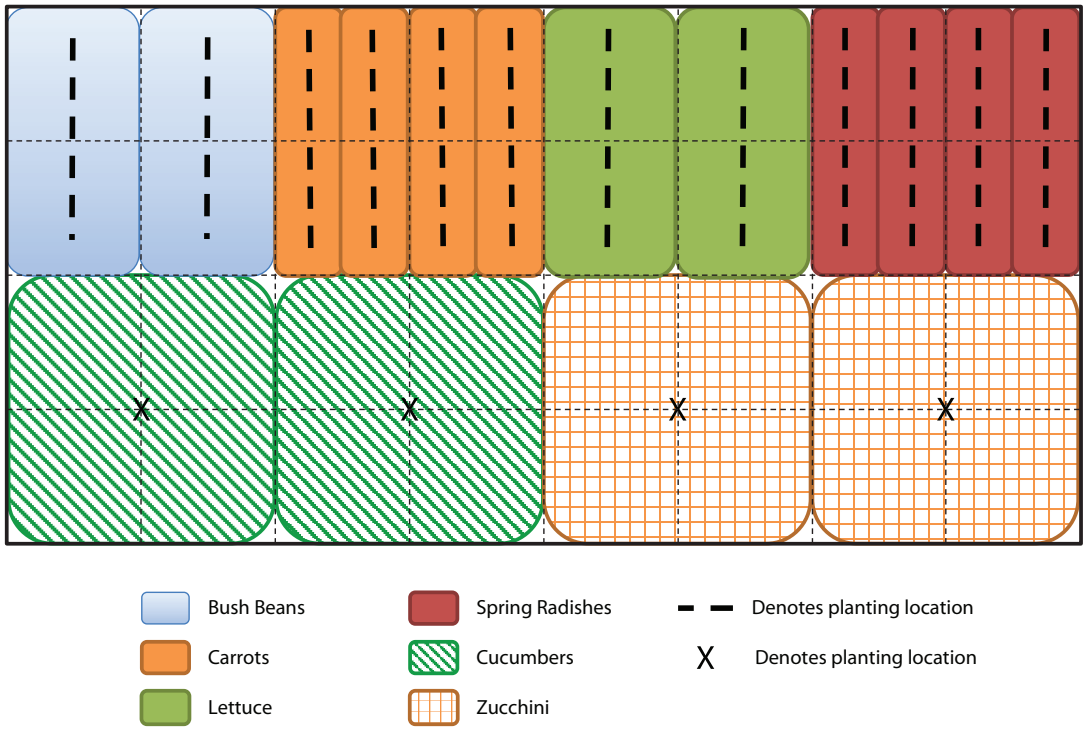
F2-4

Planting before School Starts

Moderately simple

Partially planted in late July by teachers or volunteers and partially planted in late August to early September with students.

Expected harvest by late fall with no season extension or row covers needed.



F2-4. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Carrots	Mid-July to early Aug.	Seeds directly in garden	Any variety.
Summer Squash or Zucchini	Mid- to late July	Seeds directly in garden (can also transplant if preferred)	Any variety < 50 days to maturity preferred.
Bush Beans	Mid- to late July	Seeds directly in garden	Any variety < 55 days to maturity preferred.
Lettuce	Mid-Aug. to early Sept.	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Spring Radishes	Mid-Aug. to mid-Sept.	Seeds directly in garden	Any variety < 35 days to maturity.
Cucumbers	Mid- to late July	Seeds directly in garden (can also transplant if preferred)	Any variety < 55 days preferred. Bush types preferred if no trellises available.

F2-4. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Carrots	Fall radishes (such as daikons), kohlrabi, salad turnips, purple top turnips, leeks(transplants), pansies (purchased plants), bulbing fennel
Summer Squash or Zucchini	Cucumbers, pole beans (ideally planted on a trellis or tomato cage), pollenless sunflowers (50-55 day varieties)
Bush Beans	Pollenless sunflowers (50-55 day varieties). Fall potatoes or sugar snap peas could be considered if the soil is cool enough.
Lettuce	Spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Spring Radishes	Kohlrabi, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants), fall radishes
Cucumbers	Pole beans (ideally planted on a trellis or tomato cage), summer squash or zucchini, pollenless sunflowers (50-55 day varieties)

F2-5

Planting before School Starts

Moderately simple

Partially planted in late July by teachers or volunteers and partially planted in late August to early September with students.

Expected harvest by late fall with no season extension or row covers needed.

F2-5. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Mid-Aug. to early Sept.	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Fall Radishes	Late July to early Aug.	Seeds directly in garden	Any variety, which includes daikons, watermelon radishes, Black Spanish round, etc.
Carrots	Late July to early Aug.	Seeds directly in garden	Any variety.
Bok Choy	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety < 45 days to maturity preferred.
Bush Beans	Mid to late July	Seeds directly in garden	Any variety < 55 days to maturity preferred.
Salad Turnips	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety.
Kohlrabi	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety < 45 days to maturity preferred.
Swiss Chard	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety.

F2-5. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Lettuce	spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy, collards
Fall Radishes	carrots, beets, leeks, bulbing fennel
Carrots	fall radishes, beets, leeks, bulbing fennel
Bok Choy	lettuce, spinach, mesclun, mustards, mizuna, arugula, kale, Swiss chard, Chinese cabbage, collards
Bush Beans	pollenless sunflowers (50-55 day varieties); fall potatoes or sugar snap peas could be considered if the soil is cool enough.
Salad Turnips	spring radishes, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants), carrots, beets, fall radishes, leeks (transplants), kohlrabi
Kohlrabi	spring radishes, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants), carrots, beets, fall radishes, leeks (transplants), kohlrabi
Swiss Chard	lettuce, Chinese cabbage, mesclun, mustards, mizuna, arugula, Swiss chard, spinach, bok choy, collards

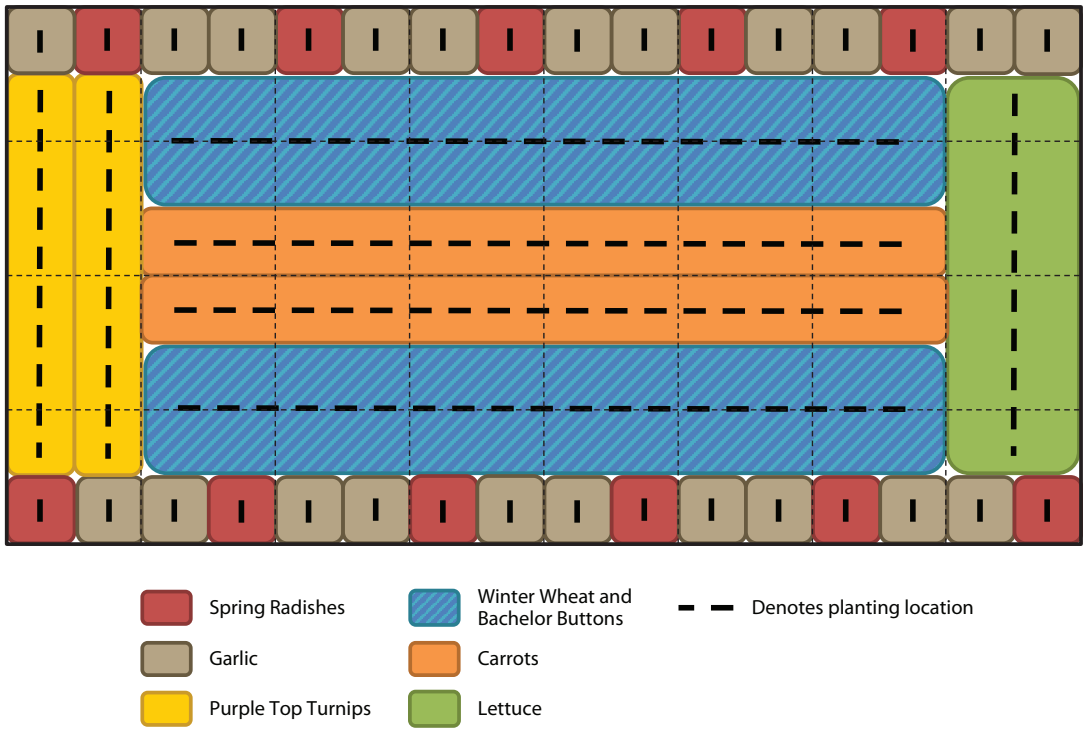
F2-6

Planting before School Starts

Complex

Partially planted in late July by teachers or volunteers and partially planted in late August to early September and early October with students.

Some plants harvested in late fall, others are for overwintering.



F2-6. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Carrots	Late July to early Aug.	Seeds directly in garden	Any variety.
Lettuce	Early to mid-Sept.	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Purple Top Turnips	Early to mid-Sept.	Seeds directly in garden	Any variety, but shorter days to maturity preferred. May not reach full size.
Spinach	Early Sept.	Seeds directly in garden	Any variety.
Garlic	Mid-Sept. to mid-Oct.	Plant individual cloves directly in garden	Any variety. Hardneck perform best in Kansas.
Spring Radishes	Late Aug. to early Sept.	Seeds directly in garden	Any variety < 35 days to maturity.
Bachelor Buttons and Winter Wheat (Interplanted) *	Late Sept. to mid-Oct.	Seeds directly in garden	Any variety.

*Either mix the flower and grain seeds together before planting or plant both seeds in the same area, to result in a mixed flower-grain swath (think "meadow") through the garden next spring.

F2-6. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Carrots	fall radishes, beets, leeks, bulbing fennel
Lettuce	spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy, collards
Purple Top Turnips	spring radishes, salad turnips, green onions (sets), pansies (purchased plants), carrots, beets, fall radishes, leeks, kohlrabi
Spinach	lettuce, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy, collards
Garlic	shallots, tulips, daffodils, hyacinths, pansies (purchased plants)
Spring Radishes	salad turnips, purple top turnips, green onions (sets), pansies (purchased plants), carrots, beets, fall radishes, leeks, kohlrabi
Bachelor Buttons and Winter Wheat (interplanted)	larkspur, barley, oats, nigella

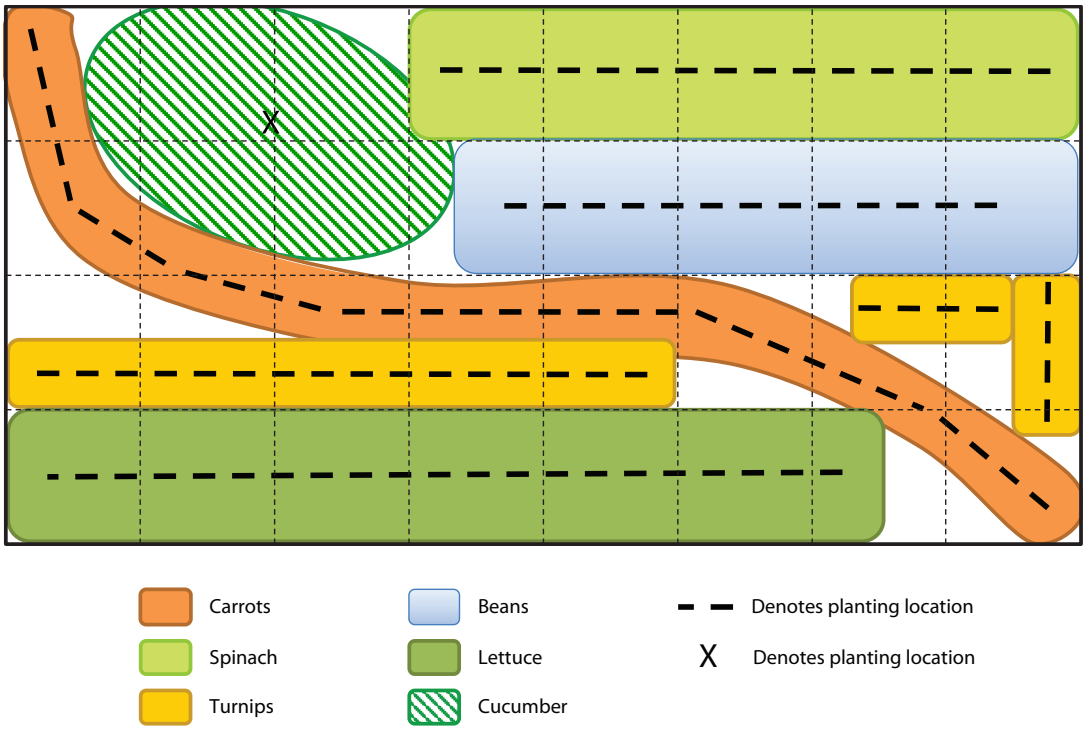
F2-7

Planting before School Starts

Complex

Partially planted in late July by teachers or volunteers and partially planted in late August to early September with students.

Expected harvest by late fall with no season extension or row covers needed.



F2-7. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Carrots	Late July to early Aug.	Seeds directly in garden	Any variety.
Lettuce	Early to mid-Sept.	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Purple Top Turnips	Early to mid-Sept.	Seeds directly in garden	Any variety, but shorter days to maturity preferred. May not reach full size.
Spinach	Early Sept.	Seeds directly in garden	Any variety.
Garlic	Mid-Sept. to mid-Oct.	Plant individual cloves directly in garden	Any variety. Hardneck perform best in Kansas.
Spring Radishes	Late Aug. to early Sept.	Seed directly in garden	Any variety < 35 days to maturity.
Bachelor Buttons and Winter Wheat (Interplanted) *	Late Sept. to mid-Oct.	Seeds directly in garden	Any variety.

*Either mix the flower and grain seeds together before planting or plant both seeds in the same area, to result in a mixed flower-grain swath (think "meadow") through the garden next spring.

F2-7. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Carrots	fall radishes, beets, leeks, bulbing fennel
Lettuce	spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy, collards
Purple Top Turnips	spring radishes, salad turnips, green onions (sets), pansies (purchased plants), carrots, beets, fall radishes, leeks, kohlrabi
Spinach	lettuce, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy, collards
Garlic	shallots, tulips, daffodils, hyacinths, pansies (purchased plants)
Spring Radishes	salad turnips, purple top turnips, green onions (sets), pansies (purchased plants), carrots, beets, fall radishes, leeks, kohlrabi
Bachelor Buttons and Winter Wheat (interplanted)	larkspur, barley, oats, nigella

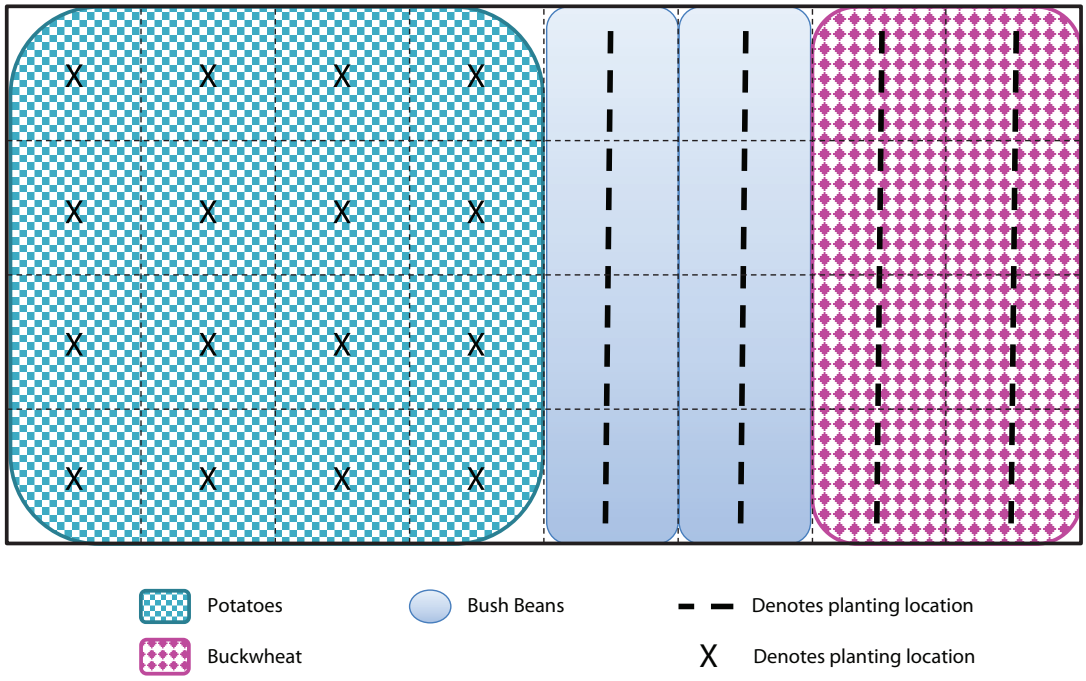
F2-8

Planting before School Starts

Simple

Planted in late July by teachers or volunteers.

Expected harvest by late fall with no season extension or row covers needed.



F2-8. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Potatoes (Irish)	Late July to early Aug.	Seed pieces planted directly in garden	Any variety, but early varieties preferred.
Bush Beans	Mid- to late July	Seeds directly in garden	Any variety < 55 days to maturity preferred.
Buckwheat	Mid-July to late Aug.	Seeds directly in garden	Any variety, but white varieties show more vigor.

F2-8. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Potato	bush beans, sugar snap peas, pollenless sunflowers (50-55 day)
Bush Beans	potatoes, sugar snap peas, pollenless sunflowers (50-55 day)
Buckwheat	No similar substitutes. Pollenless sunflowers (50-55 day)

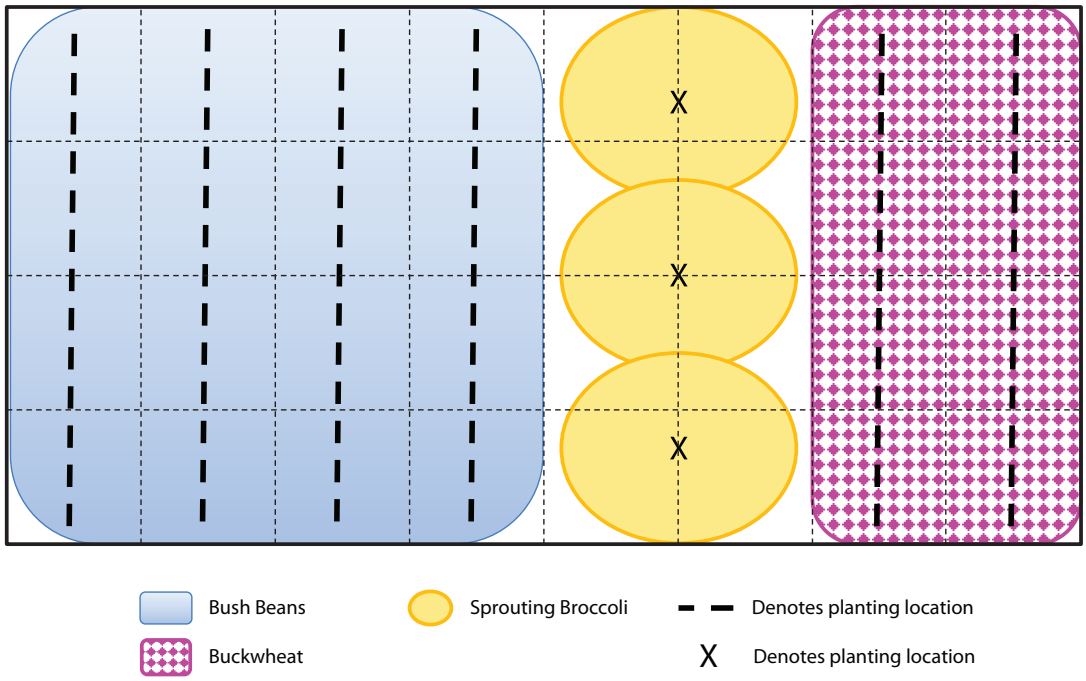
F2-9

Planting before School Starts

Simple

Indoor seed starting in late June, then partially planted in late July by teachers or volunteers.

Expected harvest by late fall with no season extension or row covers needed.



F2-9. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Sprouting Broccoli	Seeds planted indoors in late June, transplants to garden in late July to early Aug.	Seeds started indoors, planted out in garden.	Any variety < 55 days to maturity preferred.
Bush Beans	Mid- to late July	Seeds directly in garden	Any variety preferred < 55 days to maturity preferred.
Buckwheat	Mid-July to late Aug.	Seeds directly in garden	Any variety, but white varieties show more vigor.

F-9. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Sprouting Broccoli	broccoli, cauliflower, cabbage
Bush Beans	potatoes, sugar snap peas, pollenless sunflowers (50-55 day)
Buckwheat	No similar substitutes. Pollenless sunflowers (50-55 day)

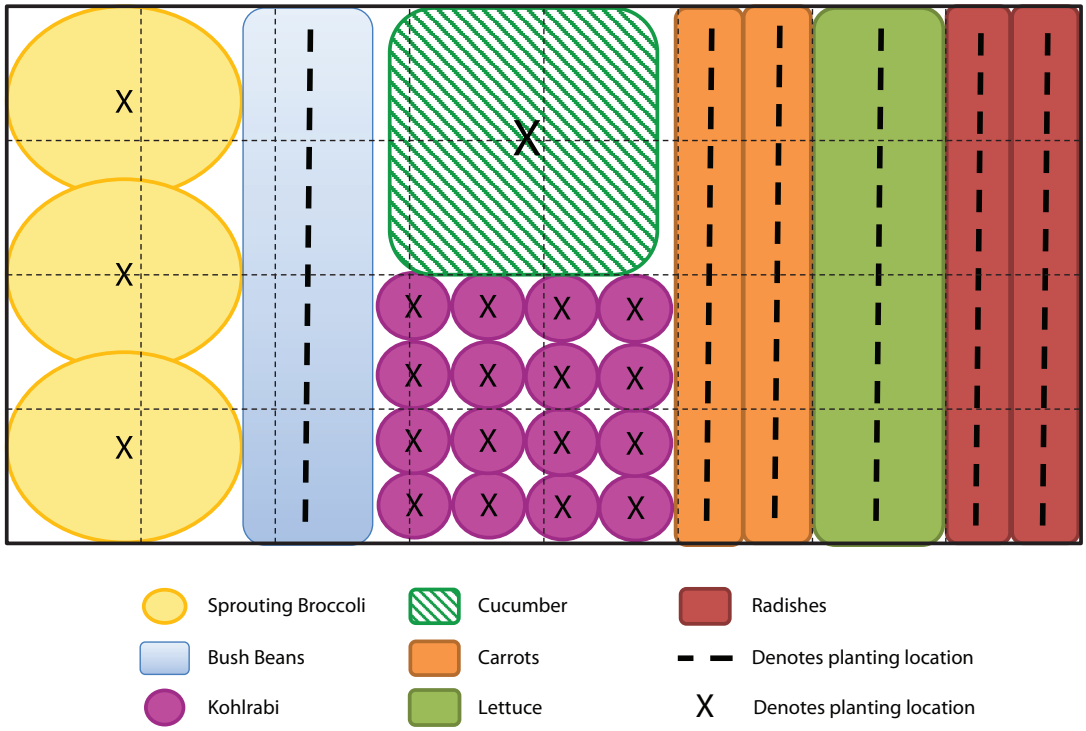
F2-10

Planting before School Starts

Complex

Indoor seed starting in late June, then partially planted in late July by teachers or volunteers, and partially planted in late August to early September with students.

Expected harvest by late fall with no season extension or row covers needed.



F2-10. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Sprouting Broccoli	Seeds planted indoors in late June, transplants to garden in late July to early Aug.	Seeds started indoors, planted out in garden as plants.	Any variety < 55 days to maturity preferred.
Bush Beans	Mid- to late July	Seeds directly in garden	Any variety < 55 days to maturity preferred.
Kohlrabi	Seeds planted indoors in mid- to late July, transplants to garden in late Aug. to early Sept.	Seeds started indoors, planted out in garden as plants.	Any variety.
Lettuce	Mid-Aug. to mid-Sept.	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Carrots	Mid- to late July	Seeds directly in garden	Any variety.
Cucumber	Mid- to late July	Seeds directly in garden	Any variety < 55 days preferred. Bush types preferred if no trellises available.
Spring Radishes	Mid-Aug. to mid-Sept.	Seeds directly in garden	Any variety.

F2-10. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Sprouting Broccoli	broccoli, cauliflower, cabbage
Bush Beans	pollenless sunflowers (50-55 day varieties). Fall potatoes or sugar snap peas could be considered if the soil is cool enough.
Kohlrabi	bulbing fennel, leeks. (Other root vegetables could be substituted, but should not be started indoors and transplanted out.)
Lettuce	spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Carrots	fall radishes (such as daikons), kohlrabi, salad turnips, purple top turnips, leeks (transplants), pansies (purchased plants), bulbing fennel
Cucumbers	pole beans (ideally planted on a trellis or tomato cage), summer squash or zucchini, pollenless sunflowers (50-55 day varieties)
Spring Radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants), fall radishes

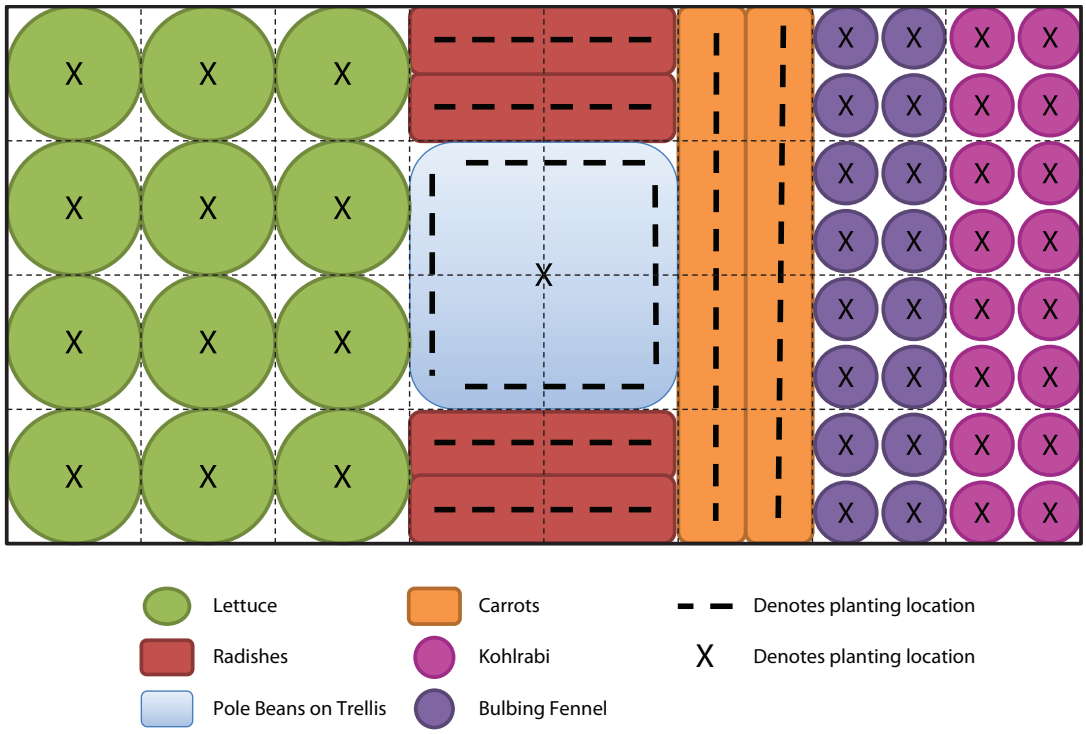
F2-11

Planting before School Starts

Complex

Indoor seed starting in late June and July, then partially planted in late July by teachers or volunteers, and partially planted in late August to early September with students.

Expected harvest by late fall with no season extension or row covers needed.



F2-11. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Bulbing Fennel	Seeds planted indoors in mid- to late July, transplants to garden in late Aug. to early Sept.	Seeds started indoors, planted out in garden as plants.	Any variety.
Kohlrabi	Seeds planted indoors in mid- to late July, transplants to garden in late Aug. to early Sept.	Seeds started indoors, planted out in garden as plants.	Any variety.
Lettuce	Seeds planted indoors in mid- to late July, transplants to garden in late Aug. to early Sept.	Seeds started indoors, planted out in garden as plants.	Any leaf, romaine, or butterhead type.
Carrots	Mid- to late July	Seeds directly in garden	Any variety.
Pole Beans (on trellis)	Mid- to late July	Seeds directly in garden	Any variety < 60 days to maturity preferred.
Spring Radishes	Mid-Aug. to mid-Sept.	Seeds directly in garden	Any variety < 35 days to maturity.

F2-11. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Bulbing Fennel	kohlrabi, leeks. (Other root vegetables could be substituted, but should not be started indoors and transplanted out.)
Kohlrabi	bulbing fennel, leeks. (Other root vegetables could be substituted, but should not be started indoors and transplanted out.)
Lettuce	spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Carrots	fall radishes (such as daikons), kohlrabi, salad turnips, purple top turnips, spring radishes, pansies (purchased plants)
Pole Beans	cucumbers, summer squash or zucchini, pollenless sunflowers (50-55 day varieties)
Spring Radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants), fall radishes

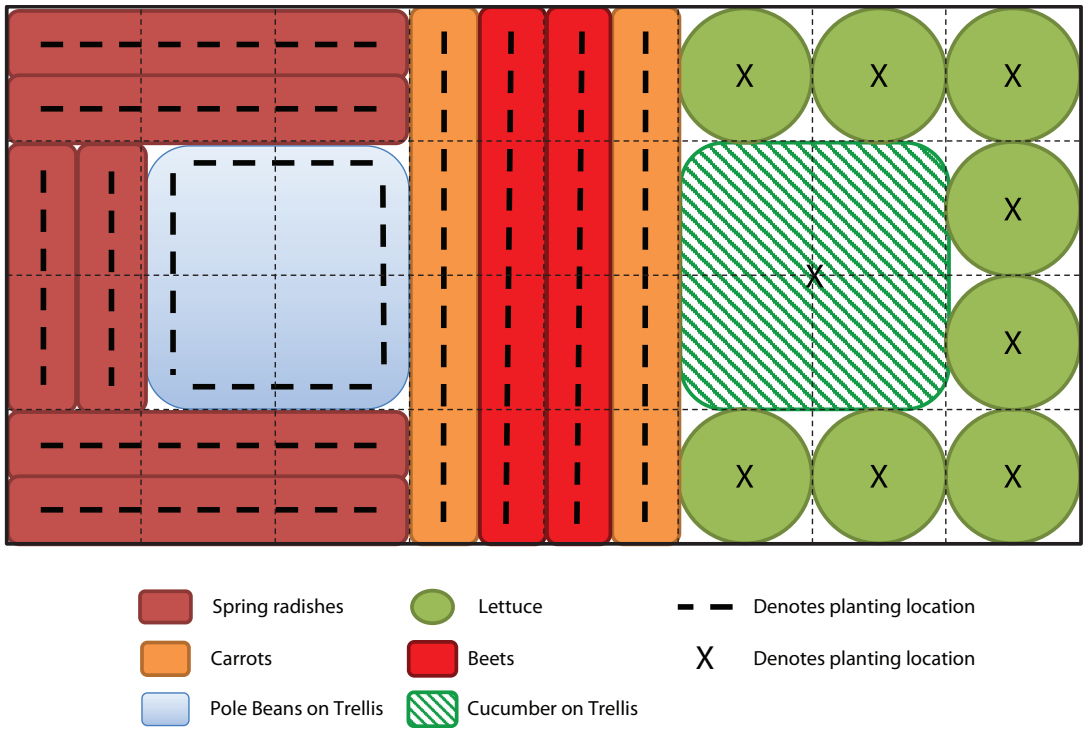
F2-12

Planting before School Starts

Complex

Indoor seed starting in late June and July, then partially planted in late July by teachers or volunteers, and partially planted in late August to early September with students.

Expected harvest by late fall with no season extension or row covers needed.



F2-12. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Seeds planted indoors in mid- to late July, transplants to garden in late Aug. to early Sept.	Seeds started indoors, planted out in garden as plants.	Any leaf, romaine, or butterhead type.
Carrots	Mid- to late July	Seeds directly in garden	Any variety.
Beets	Mid- to late July	Seeds directly in garden	Any variety.
Pole Beans (on trellis)	Mid- to late July	Seeds directly in garden	Any variety < 60 days to maturity preferred.
Cucumber	Mid- to late July	Seeds directly in garden	Any variety < 55 days preferred. Bush types preferred if no trellises available.
	Mid-Aug. to mid-Sept.	Seeds directly in garden	Any variety < 35 days to maturity.

F2-12. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Lettuce	spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Beets	fall radishes (such as daikons), kohlrabi, salad turnips, carrots, purple top turnips, bulbing fennel, leeks (transplants)
Carrots	fall radishes (such as daikons), kohlrabi, salad turnips, beets, purple top turnips, bulbing fennel, leeks (transplants)
Pole Beans	cucumbers, summer squash or zucchini, pollenless sunflowers (50-55 day varieties)
Cucumber	pole beans, summer squash or zucchini, pollenless sunflowers (50-55 day varieties)
Spring Radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants), fall radishes

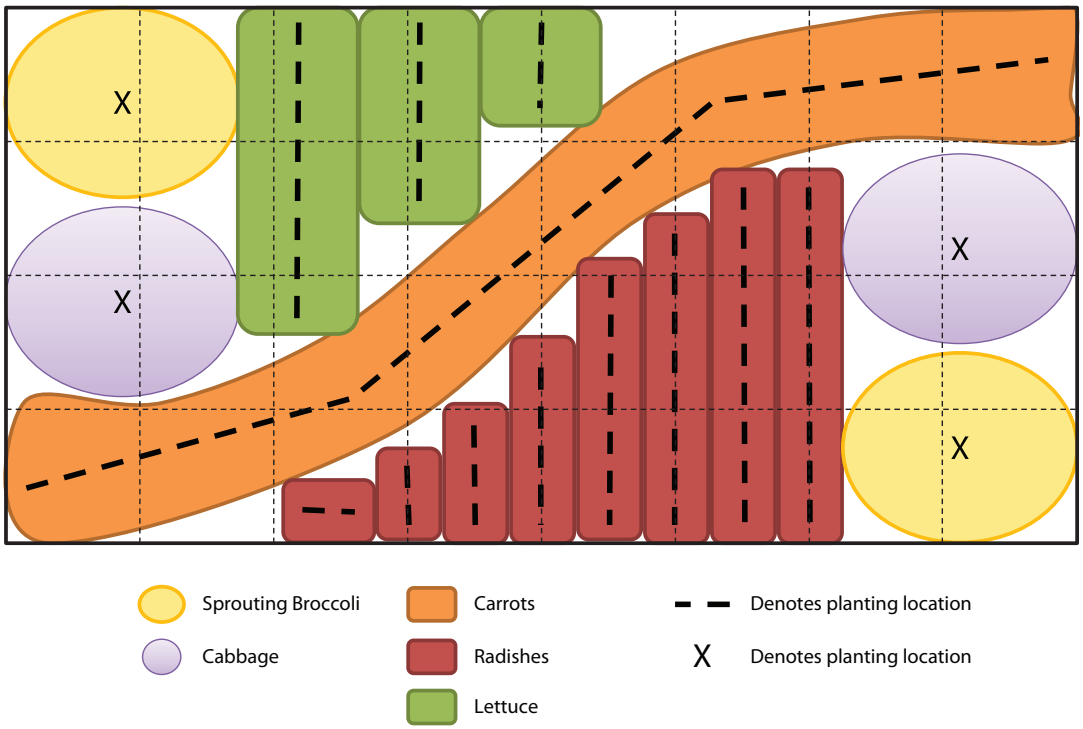
F2-13

Planting before School Starts

Complex

Indoor seed starting in late June, then partially planted in late July by teachers or volunteers.

Expected harvest by late fall with no season extension or row covers needed.



F2-13. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Mid-Aug. to early Sept.	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Sprouting Broccoli	Seeds planted indoors in late June, transplants to garden in late July to early Aug.	Seeds started indoors, planted out in garden as plants.	Any variety < 55 days to maturity preferred.
Cabbage	Seeds planted indoors in late June, transplants to garden in late July to early Aug.	Seeds started indoors, planted out in garden as plants.	Any variety < 65 days to maturity preferred. May not reach full size.
Carrots	Mid- to late July	Seeds directly in garden	Any variety.
Spring Radishes	Mid-Aug. to mid-Sept.	Seeds directly in garden	Any variety < 35 days to maturity.

F2-13. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Lettuce	spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Sprouting Broccoli	broccoli, cauliflower, cabbage
Cabbage	cauliflower, broccoli, sprouting broccoli
Carrots	fall radishes (such as daikons), kohlrabi, salad turnips, beets, purple top turnips, fennel, leeks (transplants)
Spring Radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants), fall radishes

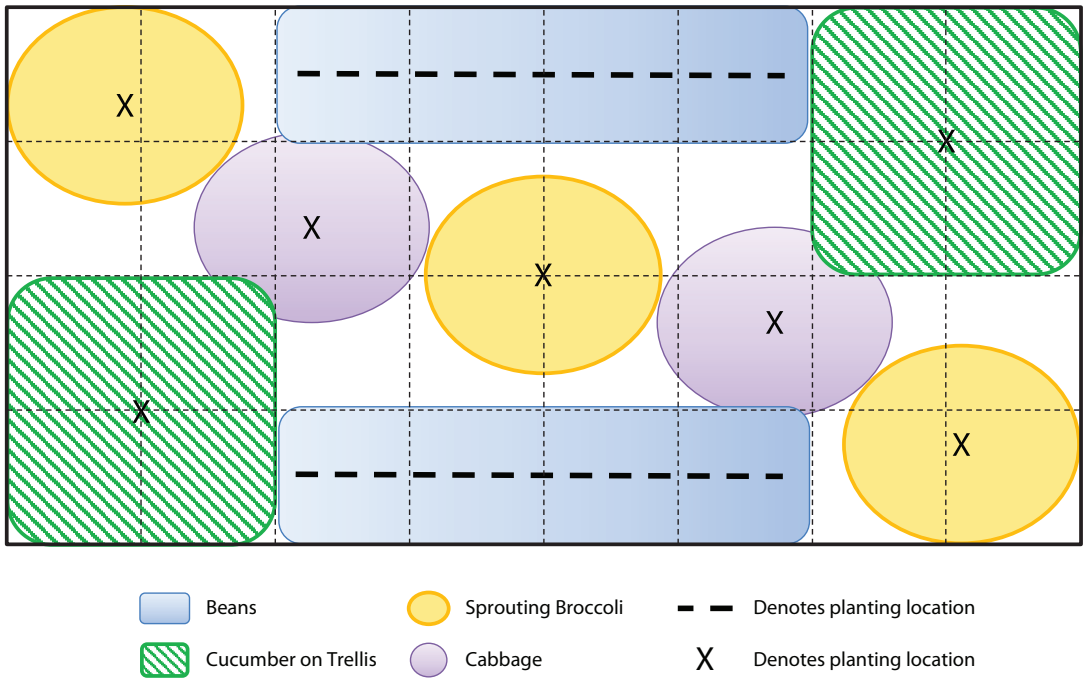
F2-14

Planting before School Starts

Moderately simple

Indoor seed starting in late June, then partially planted in late July by teachers or volunteers.

Expected harvest by late fall with no season extension or row covers needed.



F2-14. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Cucumber	Mid- to late July	Seeds directly in garden	Any variety < 55 days preferred. Bush types preferred if no trellises available.
Sprouting Broccoli	Seeds planted indoors in late June, transplants to garden in late July to early Aug.	Seeds started indoors, planted out in garden as plants.	Any variety < 55 days to maturity preferred.
Cabbage	Seeds planted indoors in late June, transplants to garden in late July to early Aug.	Seeds started indoors, planted out in garden as plants.	Any variety < 65 days to maturity preferred. May not reach full size.
Bush Beans	Mid- to late July	Seeds directly in garden	Any variety < 55 days to maturity preferred.

F2-14. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Cucumbers	pole beans (ideally planted on a trellis or tomato cage), summer squash or zucchini, pollenless sunflowers (50-55 day varieties)
Sprouting Broccoli	broccoli, cauliflower, cabbage
Cabbage	cauliflower, broccoli, sprouting broccoli
Bush Beans	Pollenless sunflowers (50-55 day varieties). Fall potatoes or sugar snap peas could be considered if the soil is cool enough.

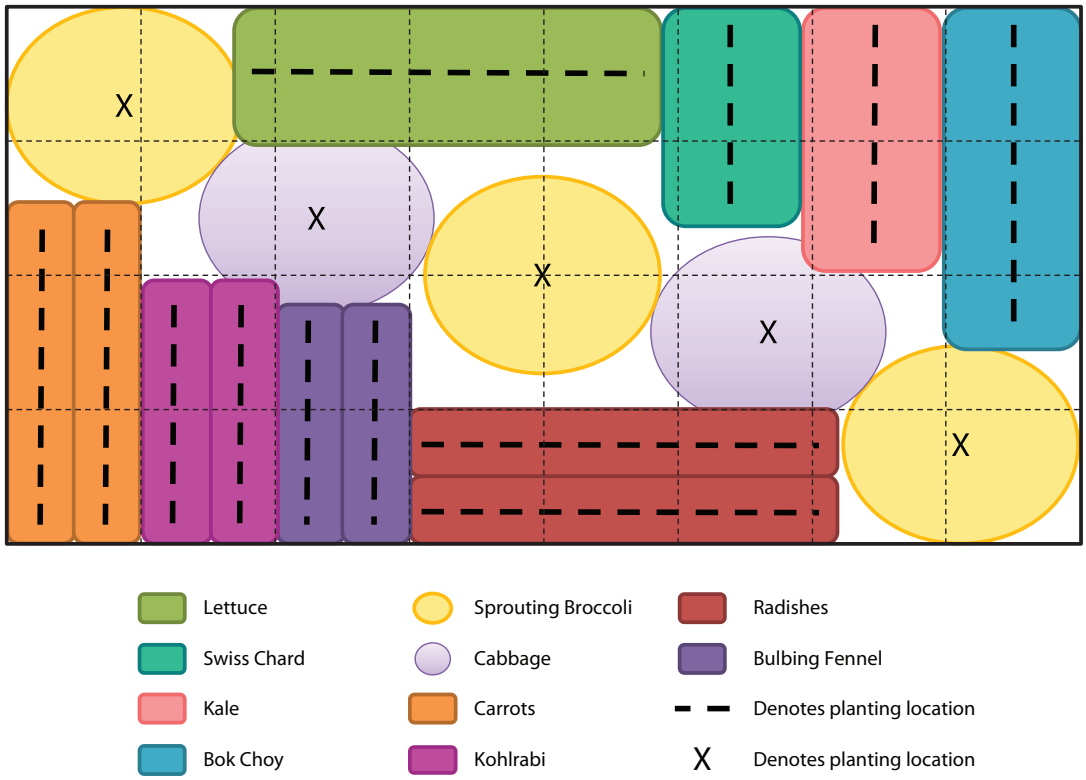
F2-15

Planting before School Starts

Complex

Indoor seed starting in late June, then partially planted in late July by teachers or volunteers. Remainder planted in August-September with students.

Expected harvest by late fall with no season extension or row covers needed.



F2-15. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Mid-Aug. to early Sept.	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Spring Radishes	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety < 35 days to maturity.
Carrots	Late July to early Aug.	Seeds directly in garden	Any variety.
Bok Choy	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety < 45 days to maturity preferred.
Sprouting Broccoli	Seeds planted indoors in late June, transplants to garden in late July to early Aug.	Seeds started indoors, planted out in garden as plants.	Any variety < 55 days to maturity preferred.
Cabbage	Seeds planted indoors in late June, transplants to garden in late July to early Aug.	Seeds started indoors, planted out in garden as plants.	Any variety < 65 days to maturity preferred. May not reach full size.
Fennel	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety.
Kohlrabi	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety < 45 days to maturity preferred.
Swiss Chard	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety.
Kale	Mid-Aug. to early Sept.	Seeds directly in garden	Any variety.

F2-15. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Lettuce	spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy, collards
Spring Radishes	salad turnips, purple top turnips, green onions (sets), pansies (purchased plants)
Carrots	fall radishes, beets, leeks, bulbing fennel
Bok Choy	lettuce, spinach, mesclun, mustards, mizuna, arugula, kale, Swiss chard, Chinese cabbage, collards
Sprouting Broccoli	broccoli, cauliflower, cabbage
Cabbage	cauliflower, broccoli, sprouting broccoli
Bulbing Fennel	spring radishes, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants), carrots, beets, fall radishes, leeks (transplants), kohlrabi
Kohlrabi	spring radishes, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants), carrots, beets, fall radishes, leeks (transplants), bulbing fennel
Swiss Chard	lettuce, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, spinach, bok choy, collards
Kale	lettuce, Chinese cabbage, mesclun, mustards, mizuna, arugula, Swiss chard, spinach, bok choy, collards

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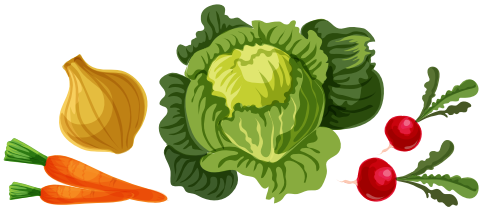
MF3590 March 2022



Spring Garden Templates 1

No indoor seed starting needed.

How to Use the Garden Templates and Coordinating Tables

The templates are divided by growing season. Each template is designed to be a stand-alone garden plan. However, it may be possible to use multiple templates in the same garden space over the course of a year. In a larger garden, several templates could be used each year or even in each season. The templates are not designed to be the only way or even the best way to plant a garden for your specific school. The templates are a guide to get you started with some options for what to plant and when. As you gain experience and confidence from successes, you can adjust and adapt your planting plans as needed.

The layout of the garden templates was designed with several things in mind. Some templates prioritize diversity of plants and others prioritize simplicity. In many cases, the garden layout is not designed to be efficient or high yielding, but rather to allow for effective learning and hands-on activities to be done with various sizes of groups. Some templates are designed for visual interest and inciting wonder in children rather than maximizing the yield.

If your garden is used for middle school or high school age students, planning and designing their own garden layouts can be a critical part of the learning process. These templates could serve as great starting points for students to study plant spacing and planting times, but do consider having them develop their own plans, research different planting options, or develop alternatives to compare results.

Each template tells a little bit about how easy or difficult it would be to implement the garden, as well as what the expected planting and harvesting window would be for the template. Be sure to pay attention to whether a template requires pre-planting indoors or prior to the school year, purchasing plants, or other preparations. The complexity level indicated reflects both the difficulty of managing the planting times and the difficulty of implementing the layout of the garden.

After each template, there are two tables. The first table provides more information about the recommended planting time, how to plant, and short notes on choosing a good variety. The second table gives alternatives to substitute for each plant recommended in the template. This allows for each garden to be adjusted to meet the needs of the school or student group.

For more information about each recommended plant in the guide, refer to the “Notes on Plant Choices” section of this publication. This document will provide more guidance on planting and growing each

crop, choosing varieties to grow, things to watch for, and ideas about learning opportunities related to the various plants.

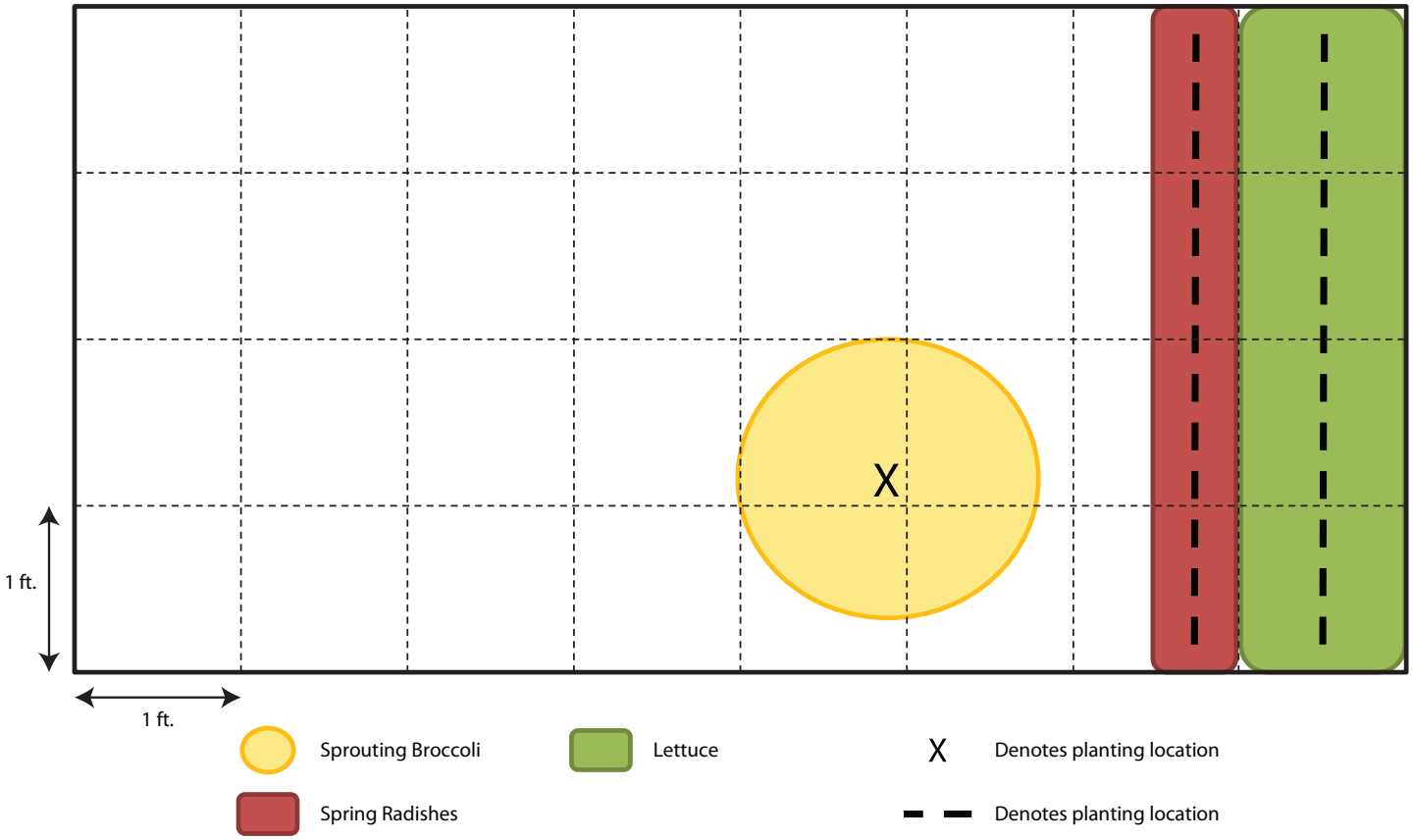
For tips on starting a garden and related resources, refer to the K-State Research and Extension publication, *Considerations and Curriculum Resources for School Garden Design in Kansas*, MF3589.

For lesson plans and educational activities, check out the chapter on "School Garden Curricula and Lesson Plan Options" in MF3589.

How to Read the Garden Templates

Each template is 4 feet by 8 feet. Each foot is marked by a gridline. A colored block that fills a whole square width is expected to be 1 foot wide, with the planting line denoted in the center of the block — allowing about 6 inches on either side of the planting location. A colored block that fills half a square is expected to be 6 inches wide, with planting in the center. These are typically where seeds are planted.

A circle or square with an "X" in the center will typically be where a single plant is transplanted. The plant will go on the "X," with the space of the circle or square the expected mature size of the plant. The key at the bottom shows what plants are planned for each space.



How to Read the Planting Schedule

Each template includes a Planting Schedule chart. This chart lists the ideal window when each type of plant should go into the garden. Bear in mind that every year is different from a weather standpoint, so a planting date that works well one year may not work as well in another year, especially at the extremes.

The planting type — either direct seeding in the garden or transplanting in the garden — is noted. In some cases, there may be special instructions for certain plants.

In the last column are some short variety notes. These notes are specific to the time of year and template, so may change from one chart to another. For more detailed information on variety selection for certain plants, refer to the "Notes on Plant Choices" section.

How to Read the Alternative Plants

Each template includes a chart of alternative plants. These are plants that have similar growth habits, spacing needs, and planting times to the plant originally indicated on the garden template. If there is a need to replace a particular plant with another option for whatever reason, this chart will help you determine which other plants you could consider.

In some cases, especially in the summer templates, there are few easy alternatives that have close characteristics to the original plant options. Alternatives may not need the exact same type of trellising or have slightly different planting dates. If you are unsure about a replacement plant, ask an experienced gardener for advice. Also refer to the "Notes on Plant Choices" section for more insight into certain types of plants.

Key-1. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Mid-Aug. to early Sept.	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Spring Radishes	Mid-Aug. to mid-Sept.	Seeds directly in garden	Any variety < 35 days to maturity.

Key-1. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Lettuce	spinach, Chinese cabbage, mesclun, mizuna, mustards, arugula, kale, Swiss chard, bok choy
Spring Radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants)

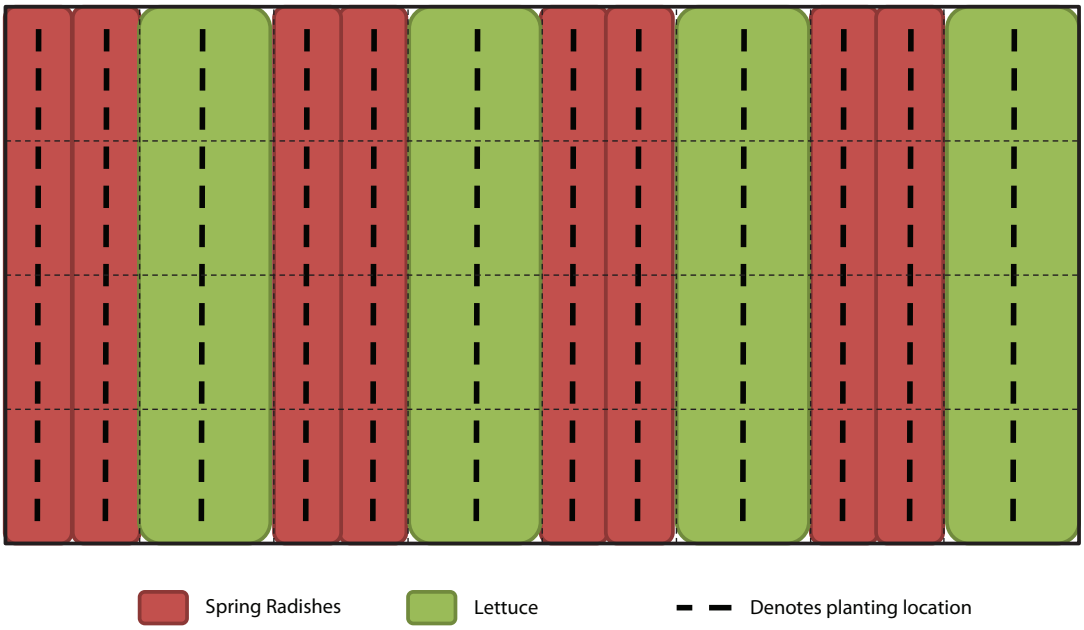
SP1-1

Short Season

Very simple

Planted in mid- to late March, with harvest expected in early to mid-May, well before the end of the school year.

No pre-planting or preparation necessary.



SP1-1. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Mid- to late March	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Spring Radishes	Mid- to late March	Seeds directly in garden	Any variety < 35 days to maturity.

SP1-1. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Lettuce	spinach, Chinese cabbage, mesclun, mizuna, mustards, arugula, kale, Swiss chard, bok choy
Spring Radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets)

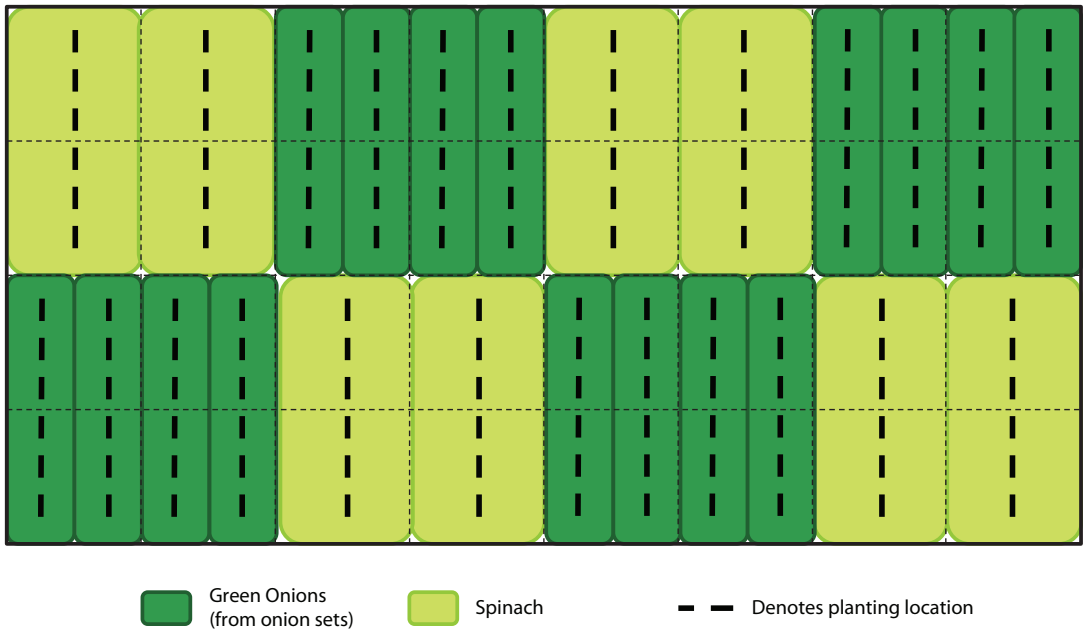
SP1-2

Short Season

Very simple

Planted in mid- to late March, with harvest expected in early to mid-May, well before the end of the school year.

No pre-planting or preparation necessary.



SP1-2. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Spinach	Mid- to late March	Seeds directly in garden	Any variety.
Green onion	Mid- to late March	Plant sets directly in garden	Any available.

SP1-2. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Spinach	lettuce, Chinese cabbage, mesclun, mizuna, mustards, arugula, kale, Swiss chard, bok choy
Green onion	kohlrabi, salad turnips, purple top turnips, spring radishes

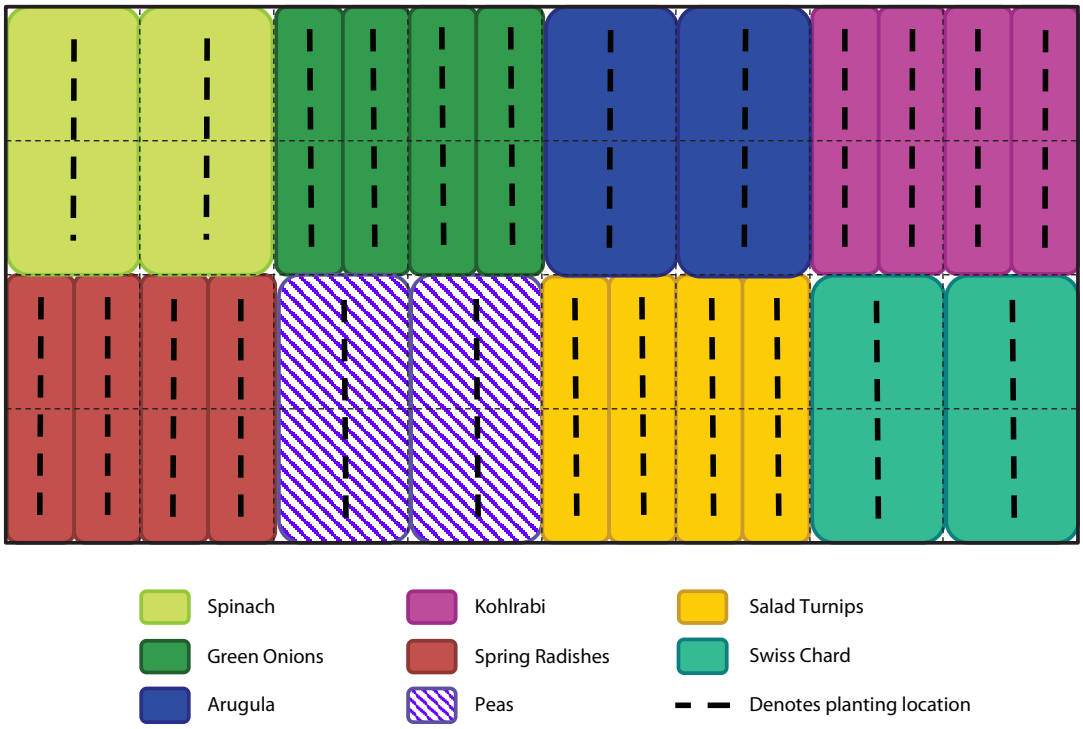
SP1-3

Short Season

Simple

Planted in mid- to late March, with harvest expected in mid- to late May, at the end of the school year, although some crops may not be fully mature.

No pre-planting or preparation necessary.



SP1-3. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Spinach	Mid- to late March	Seeds directly in garden	Any variety.
Spring Radishes	Mid- to late March	Seeds directly in garden	Any variety < 35 days to maturity.
Green Onions	Mid- to late March	Plant from sets directly in garden	Any variety of onion sets.
Peas	March	Seeds directly in garden	Any variety < 60 days to maturity preferred. Snow or sugar snap peas may be better choices.
Salad Turnips	Mid- to late March	Seeds directly in garden	Any variety.
Arugula	Mid- to late March	Seeds directly in garden	Any variety.
Kohlrabi	Mid- to late March	Seeds directly in garden	Any variety < 45 days to maturity preferred.
Swiss Chard	Mid- to late March	Seeds directly in garden	Any variety.

SP1-3. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Spinach	lettuce, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Spring Radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets)
Green Onions	kohlrabi, salad turnips, purple top turnips, spring radishes
Peas	No comparable substitutes. Leafy greens or root vegetables could be used instead.
Salad Turnips	kohlrabi, spring radishes, purple top turnips, green onions (sets)
Arugula	lettuce, Chinese cabbage, mesclun, mustards, mizuna, spinach, kale, Swiss chard, bok choy
Kohlrabi	spring radishes, salad turnips, purple top turnips, green onions (sets)
Swiss Chard	lettuce, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, spinach, bok choy

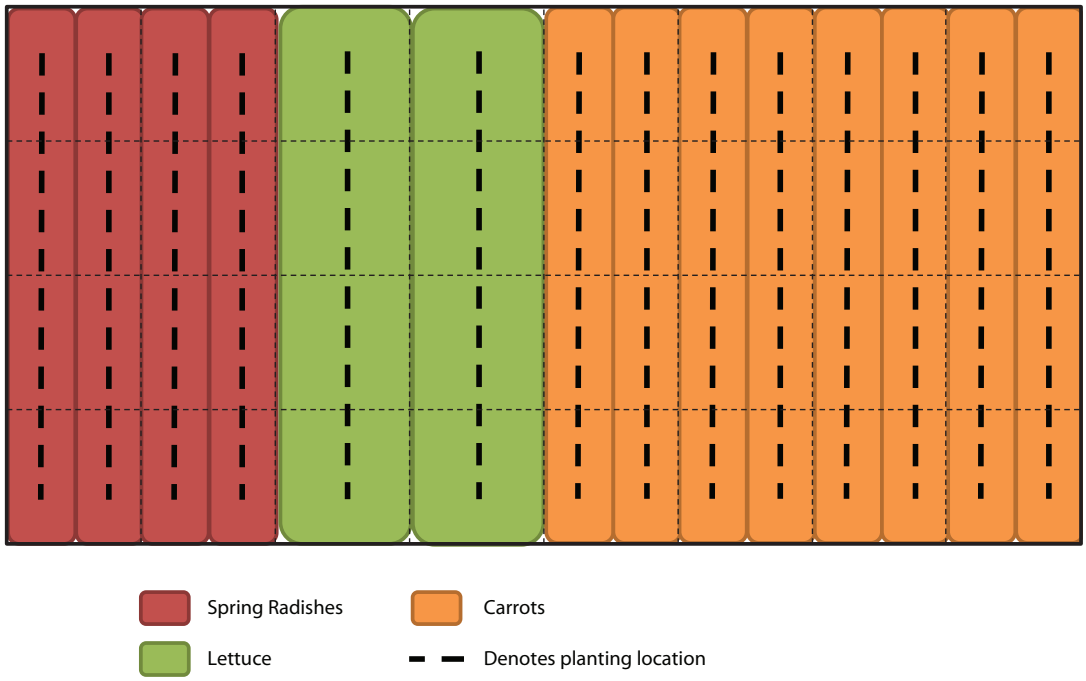
SP1-4

Medium Season with Season Extension

Very simple

Planted in mid- to late March, with harvest expected in mid- to late May, at the end of the school year.

Row covers used throughout spring to help warm soil and speed growth.



SP1-4. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Spinach	Mid- to late March	Seeds directly in garden	Any variety.
Spring Radishes	Mid- to late March	Seeds directly in garden	Any variety < 35 days to maturity.
Carrots	Mid- to late March	Seeds directly in garden	Any variety < 60 days to maturity preferred. Others likely will not reach full maturity by late May.

SP1-4. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Spinach	lettuce, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Spring Radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets)
Carrots	kohlrabi, salad turnips, purple top turnips, spring radishes, bulbing fennel, fall radishes, beets

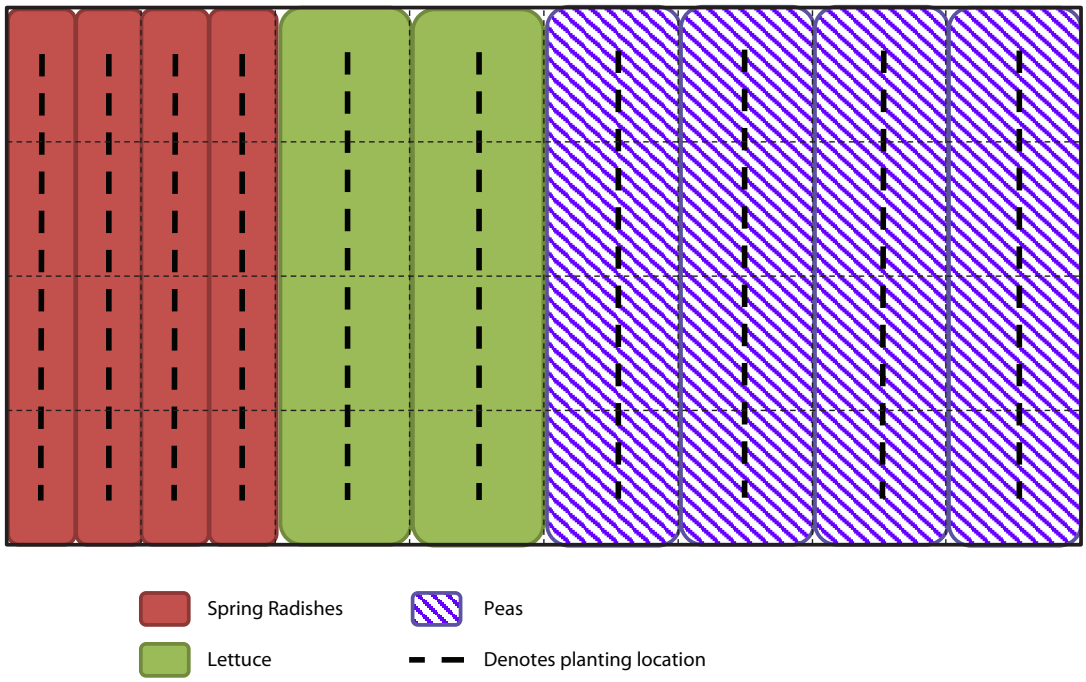
SP1-5

Medium Season with Season Extension

Very simple

Planted in mid- to late March, with harvest expected in mid- to late May, at the end of the school year.

Row covers could be used throughout spring to help warm soil and speed growth.



SP1-5. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Mid- to late March	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Spring Radishes	Mid- to late March	Seeds directly in garden	Any variety < 35 days to maturity.
Peas	Mid- to late March	Seeds directly in garden	Any variety < 60 days to maturity preferred. Snow or sugar snap peas may be better choices.

SP1-5. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Lettuce	lettuce, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Spring Radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets), fall radishes, carrots, bulbing fennel, beets
Peas	No comparable substitutes. Leafy greens or root vegetables could be used instead.

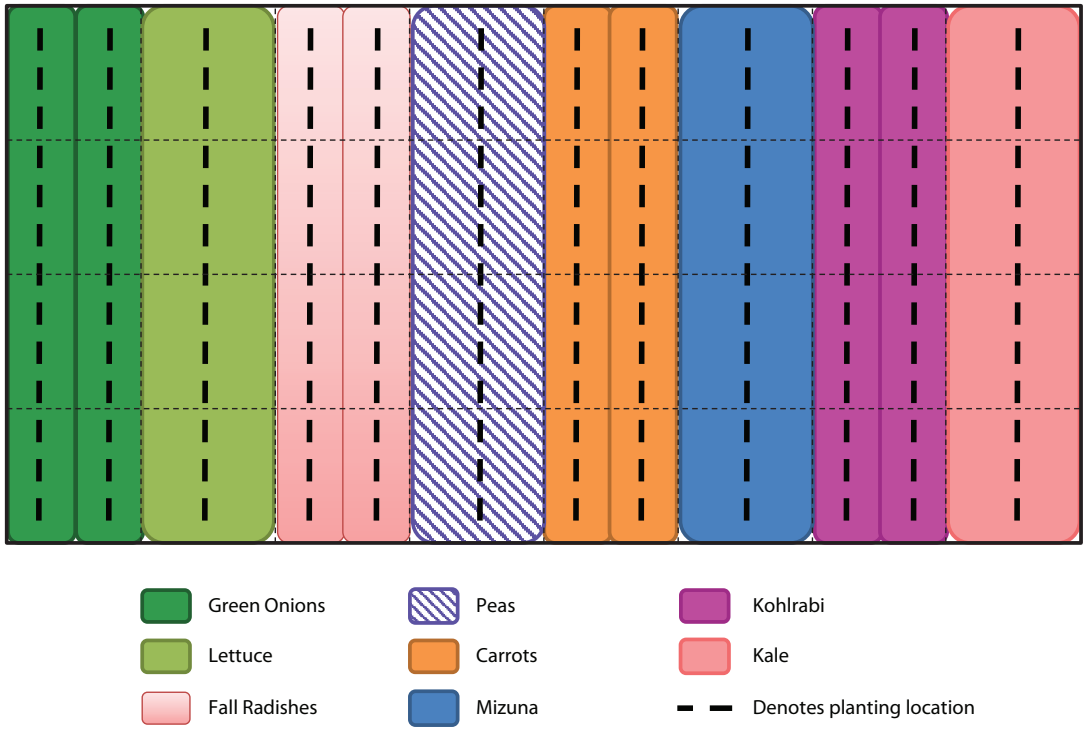
SP1-6

Medium Season with Season Extension

Moderately simple

Planted in mid- to late March, with harvest expected in mid- to late May, at the end of the school year.

Row covers could be used throughout spring to help warm soil and speed growth.



SP1-6. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Mid- to late March	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Fall Radishes	Mid- to late March	Seeds directly in garden	Any < 45 days to maturity.
Green Onions	Mid- to late March	Plant from sets directly in garden	Any variety of onion sets.
Peas	March	Seeds directly in garden	Any variety < 60 days to maturity preferred. Snow or sugar snap peas may be better choices.
Carrots	Mid- to late March	Seeds directly in garden	Any variety < 60 days to maturity preferred. Others likely will not reach full maturity by late May.
Mizuna	Mid- to late March	Seeds directly in garden	Any variety.
Kohlrabi	Mid- to late March	Seeds directly in garden	Any variety < 45 days to maturity preferred.
Kale	Mid- to late March	Seeds directly in garden	Any variety.

SP1-6. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Lettuce	lettuce, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Fall Radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets)
Green Onions	kohlrabi, salad turnips, purple top turnips, spring radishes (sets)
Peas	No comparable substitutes. Leafy greens or root vegetables could be used instead.
Carrots	kohlrabi, spring radishes, purple top turnips, green onions (sets)
Mizuna	lettuce, Chinese cabbage, mesclun, mustards, mizuna, spinach, kale, Swiss chard, bok choy
Kohlrabi	spring radishes, salad turnips, purple top turnips, green onions (sets)
Kale	lettuce, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, spinach, bok choy

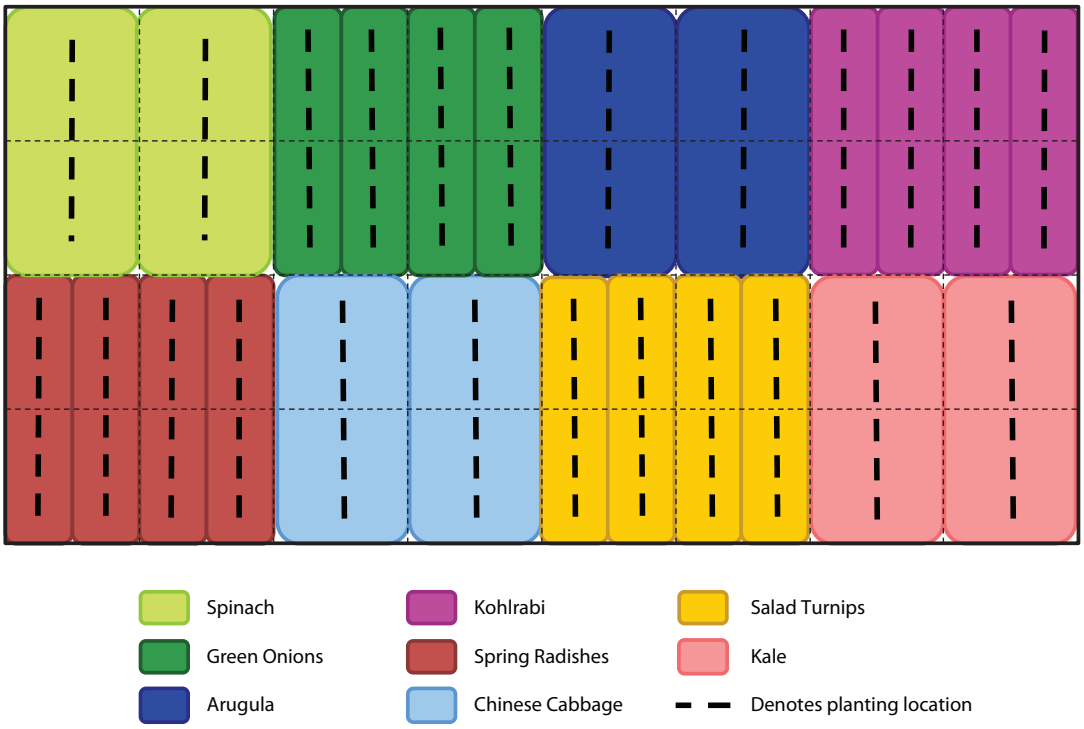
SP1-7

Medium Season with Season Extension

Moderately simple

Planted in mid- to late March, with harvest expected in mid- to late May, at the end of the school year.

Row covers could be used throughout spring to help warm soil and speed growth.



SP1-7. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Mid- to late March	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Spring Radishes	Mid- to late March	Seeds directly in garden	Any variety < 35 days to maturity.
Green Onions	Mid- to late March	Plant directly in garden	Any variety of onion sets.
Chinese Cabbage	March	Seeds directly in garden	Any variety < 50 days to maturity preferred. Heading types may not reach full size.
Salad Turnips	Mid- to late March	Seeds directly in garden	Any variety.
Arugula	Mid- to late March	Seeds directly in garden	Any variety.
Kohlrabi	Mid- to late March	Seeds directly in garden	Any variety < 45 days to maturity preferred.
Kale	Mid- to late March	Seeds directly in garden	Any variety.

SP1-7. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Lettuce	spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Spring Radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets)
Green Onions	kohlrabi, salad turnips, purple top turnips, spring radishes (sets)
Chinese Cabbage	lettuce, spinach, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Salad Turnips	kohlrabi, spring radishes, purple top turnips, green onions (sets)
Arugula	lettuce, Chinese cabbage, mesclun, mustards, mizuna, spinach, kale, Swiss chard, bok choy
Kohlrabi	spring radishes, salad turnips, purple top turnips, green onions (sets)
Kale	lettuce, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, spinach, bok choy

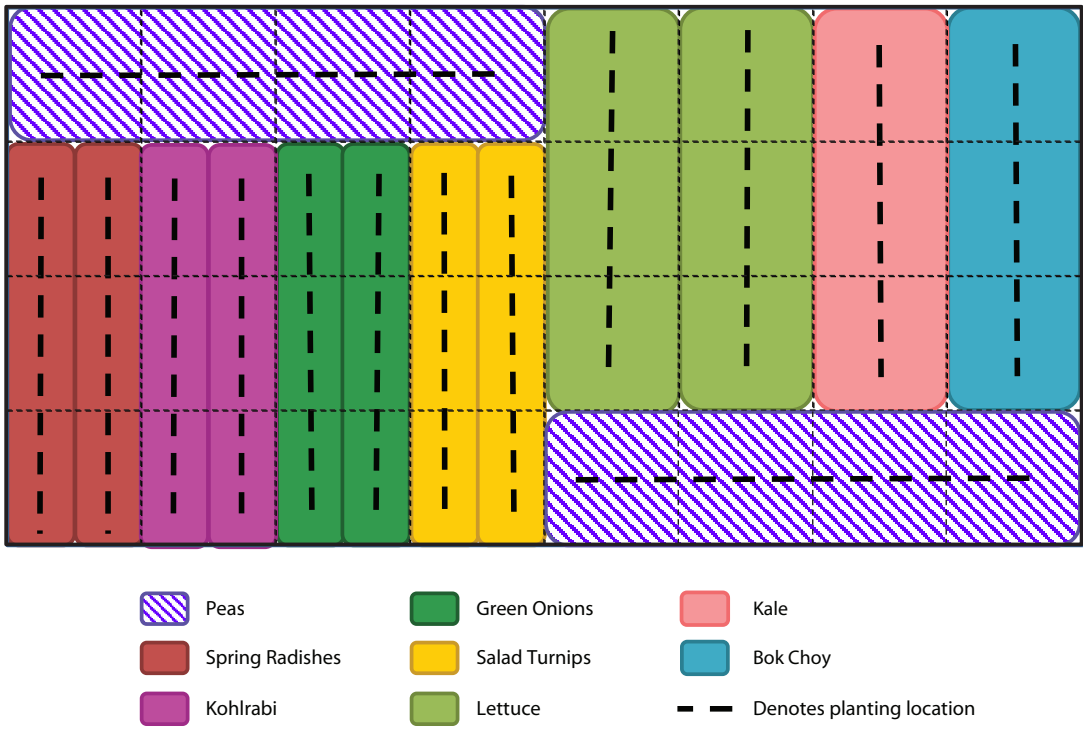
SP1-8

Medium Season with Season Extension

Moderately simple

Planted in mid- to late March, with harvest expected in mid- to late May, at the end of the school year.

Row covers could be used throughout spring to help warm soil and speed growth.



SP1-8. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Mid- to late March	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Spring Radishes	Mid- to late March	Seeds directly in garden	Any variety < 35 days to maturity.
Green Onions	Mid- to late March	Plant directly in garden	Any variety of onion sets.
Peas	March	Seeds directly in garden	Any variety < 60 days to maturity preferred. Snow or sugar snap peas may be better choices.
Salad Turnips	Mid- to late March	Seeds directly in garden	Any variety.
Bok Choy	Mid- to late March	Seeds directly in garden	Any variety < 45 days to maturity preferred.
Kohlrabi	Mid- to late March	Seeds directly in garden	Any variety < 45 days to maturity preferred.
Kale	Mid- to late March	Seeds directly in garden	Any variety.

SP1-8. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Lettuce	lettuce, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Spring radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets)
Green onions	kohlrabi, salad turnips, purple top turnips, spring radishes (sets)
Peas	No comparable substitutes. Leafy greens or root vegetables could be used instead.
Salad Turnips	kohlrabi, spring radishes, purple top turnips, green onions (sets)
Bok Choy	lettuce, Chinese cabbage, mesclun, mustards, mizuna, spinach, kale, Swiss chard, bok choy
Kohlrabi	spring radishes, salad turnips, purple top turnips, green onions (sets)
Kale	lettuce, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, spinach, bok choy

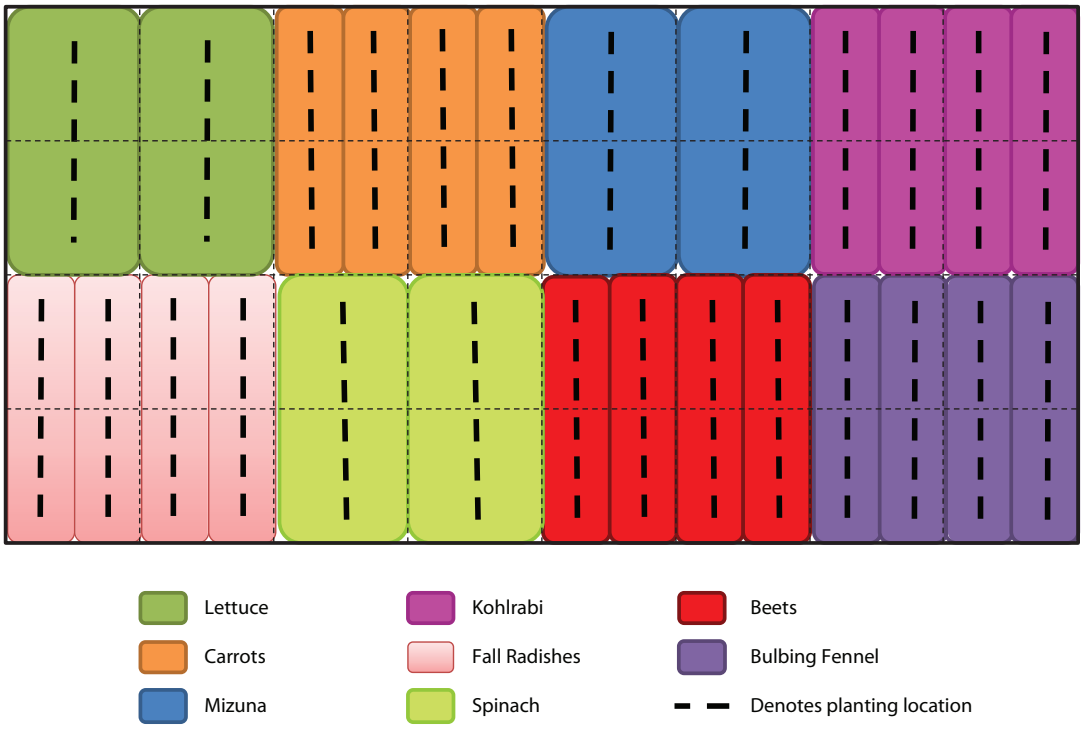
SP1-9

Medium Season with Season Extension

Moderately simple

Planted in mid- to late March, with harvest expected in mid- to late May, at the end of the school year.

Row covers could be used throughout spring to help warm soil and speed growth.



Sp-9 Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Mid- to late March	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Fall Radishes	Mid- to late March	Seeds directly in garden	Any < 45 days to maturity.
Carrots	Mid- to late March	Seeds directly in garden	Any variety < 60 days to maturity preferred. Others may not reach full maturity by late May.
Spinach	Mid- to late March	Seeds directly in garden	Any variety.
Beets	Mid- to late March	Seeds directly in garden	Any variety < 55 days to maturity preferred. Others may not reach full size.
Mizuna	Mid- to late March	Seeds directly in garden	Any variety.
Kohlrabi	Mid- to late March	Seeds directly in garden	Any variety < 45 days to maturity preferred.
Bulbing Fennel	Mid- to late March	Seeds directly in garden	Any variety.

Sp-9 Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Lettuce	spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Fall Radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets)
Carrots	kohlrabi, salad turnips, purple top turnips, spring radishes (sets)
Spinach	lettuce, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Beets	kohlrabi, spring radishes, purple top turnips, green onions (sets)
Mizuna	lettuce, Chinese cabbage, mesclun, mustards, mizuna, spinach, kale, Swiss chard, bok choy
Kohlrabi	spring radishes, salad turnips, purple top turnips, green onions (sets)
Bulbing Fennel	kohlrabi, salad turnips, purple top turnips, green onions (sets)

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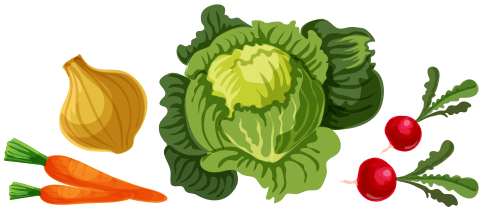
MF3590 March 2022



Spring Garden Templates 2

Indoor seed starting or purchased transplants needed.

How to Use the Garden Templates and Coordinating Tables

The templates are divided by growing season. Each template is designed to be a stand-alone garden plan. However, it may be possible to use multiple templates in the same garden space over the course of a year. In a larger garden, several templates could be used each year or even in each season. The templates are not designed to be the only way or even the best way to plant a garden for your specific school. The templates are a guide to get you started with some options for what to plant and when. As you gain experience and confidence from successes, you can adjust and adapt your planting plans as needed.

The layout of the garden templates was designed with several things in mind. Some templates prioritize diversity of plants and others prioritize simplicity. In many cases, the garden layout is not designed to be efficient or high yielding, but rather to allow for effective learning and hands-on activities to be done with various sizes of groups. Some templates are designed for visual interest and inciting wonder in children rather than maximizing the yield.

If your garden is used for middle school or high school age students, planning and designing their own garden layouts can be a critical part of the learning process. These templates could serve as great starting points for students to study plant spacing and planting times, but do consider having them develop their own plans, research different planting options, or develop alternatives to compare results.

Each template tells a little bit about how easy or difficult it would be to implement the garden, as well as what the expected planting and harvesting window would be for the template. Be sure to pay attention to whether a template requires pre-planting indoors or prior to the school year, purchasing plants, or other preparations. The complexity level indicated reflects both the difficulty of managing the planting times and the difficulty of implementing the layout of the garden.

After each template, there are two tables. The first table provides more information about the recommended planting time, how to plant, and short notes on choosing a good variety. The second table gives alternatives to substitute for each plant recommended in the template. This allows for each garden to be adjusted to meet the needs of the school or student group.

For more information about each recommended plant in the guide, refer to the "Notes on Plant Choices" section of this publication. This document will provide more guidance on planting and growing each

crop, choosing varieties to grow, things to watch for, and ideas about learning opportunities related to the various plants.

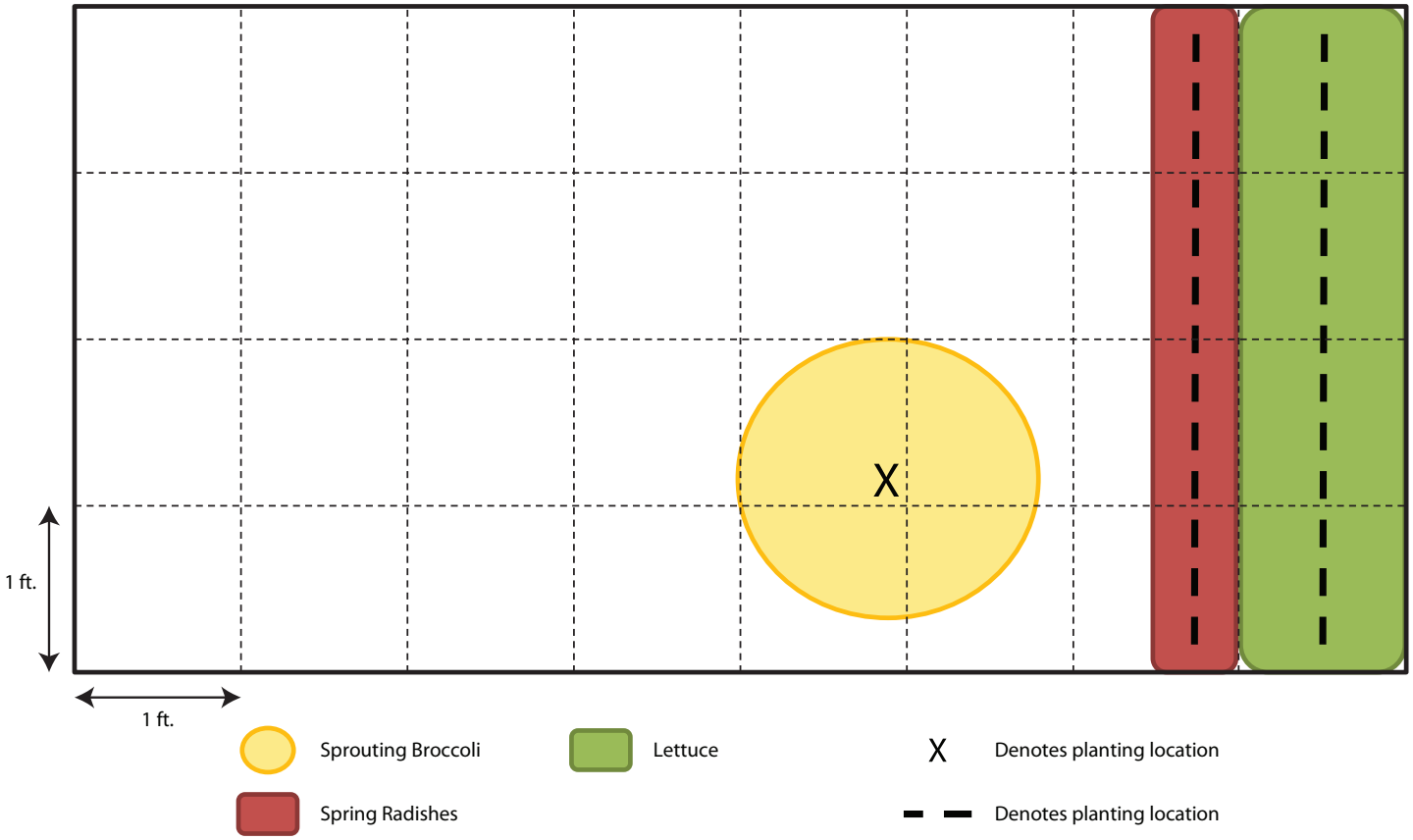
For tips on starting a garden and related resources, refer to the K-State Research and Extension publication, *Considerations and Curriculum Resources for School Garden Design in Kansas*, MF3589.

For lesson plans and educational activities, check out the chapter on "School Garden Curricula and Lesson Plan Options" in MF3589.

How to Read the Garden Templates

Each template is 4 feet by 8 feet. Each foot is marked by a gridline. A colored block that fills a whole square width is expected to be 1 foot wide, with the planting line denoted in the center of the block — allowing about 6 inches on either side of the planting location. A colored block that fills half a square is expected to be 6 inches wide, with planting in the center. These are typically where seeds are planted.

A circle or square with an "X" in the center will typically be where a single plant is transplanted. The plant will go on the "X," with the space of the circle or square the expected mature size of the plant. The key at the bottom shows what plants are planned for each space.



How to Read the Planting Schedule

Each template includes a Planting Schedule chart. This chart lists the ideal window when each type of plant should go into the garden. Bear in mind that every year is different from a weather standpoint, so a planting date that works well one year may not work as well in another year, especially at the extremes.

The planting type — either direct seeding in the garden or transplanting in the garden — is noted. In some cases, there may be special instructions for certain plants.

In the last column are some short variety notes. These notes are specific to the time of year and template, so may change from one chart to another. For more detailed information on variety selection for certain plants, refer to the "Notes on Plant Choices" section.

How to Read the Alternative Plants

Each template includes a chart of alternative plants. These are plants that have similar growth habits, spacing needs, and planting times to the plant originally indicated on the garden template. If there is a need to replace a particular plant with another option for whatever reason, this chart will help you determine which other plants you could consider.

In some cases, especially in the summer templates, there are few easy alternatives that have close characteristics to the original plant options. Alternatives may not need the exact same type of trellising or have slightly different planting dates. If you are unsure about a replacement plant, ask an experienced gardener for advice. Also refer to the "Notes on Plant Choices" section for more insight into certain types of plants.

Key-1. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Mid-Aug. to early Sept.	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Spring Radishes	Mid-Aug. to mid-Sept.	Seeds directly in garden	Any variety < 35 days to maturity.

Key-1. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Lettuce	spinach, Chinese cabbage, mesclun, mizuna, mustards, arugula, kale, Swiss chard, bok choy
Spring Radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants)

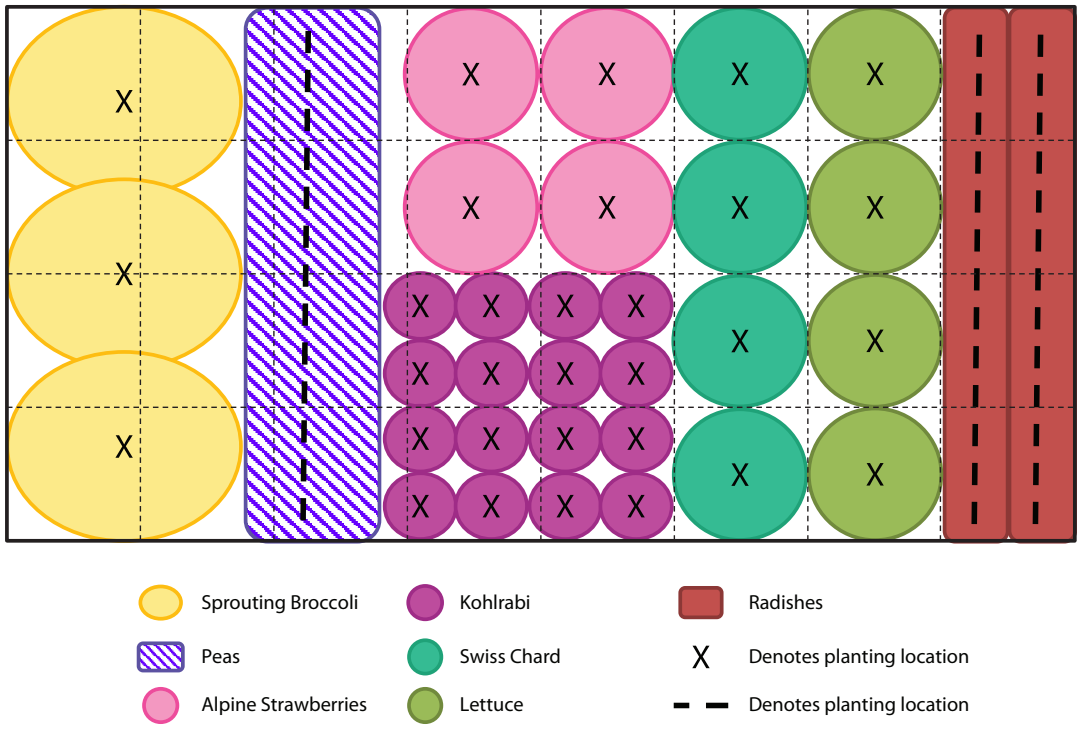
SP2-1

Medium Season with Indoor Seed Starting

Complex

Planted in mid- to late March, with harvest expected in mid- to late May, at the end of the school year.

Most of the plants should be started from seed indoors in January or February to give a head start on the growing season and allow for maturity of the final plantings by late May.



SP2-1. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Seed indoors in mid-Feb. Transplant outdoors in mid- to late March.	Seeds started indoors, then transplanted out in garden.	Any leaf, romaine, or butterhead type.
Spring Radishes	Mid- to late March.	Seed directly in the garden.	Any variety < 35 days to maturity.
Alpine Strawberries	Seed indoors in mid- to late Jan. Transplant outdoors in mid- to late March.	Seeds started indoors, then transplanted out in garden.	Any variety.
Peas	Late Feb. to late March.	Seed directly in the garden.	Any variety < 60 days to maturity preferred. Snow or sugar snap peas may be better choices.
Sprouting Broccoli	Seed indoors in mid-Feb. Transplant outdoors in mid- to late March.	Seeds started indoors, then transplanted out in garden.	Any variety < 55 days to maturity preferred.
Swiss Chard	Seed indoors in mid-Feb. Transplant outdoors in mid- to late March.	Seeds started indoors, then transplanted out in garden.	Any variety.
Kohlrabi	Seed indoors in mid-Feb. Transplant outdoors in mid- to late March.	Seeds started indoors, then transplanted out in garden.	Any variety.

SP2-1. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Lettuce	spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Spring Radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets)
Alpine Strawberries	No comparable substitutes. Leafy greens or root vegetables could be used instead.
Peas	No comparable substitutes. Leafy greens or root vegetables could be used instead.
Sprouting Broccoli	cabbage, broccoli, Chinese cabbage, bok choy
Swiss Chard	lettuce, Chinese cabbage, mesclun, mustards, mizuna, spinach, kale, arugula, bok choy
Kohlrabi	bulbing fennel, leeks, green onions (sets)

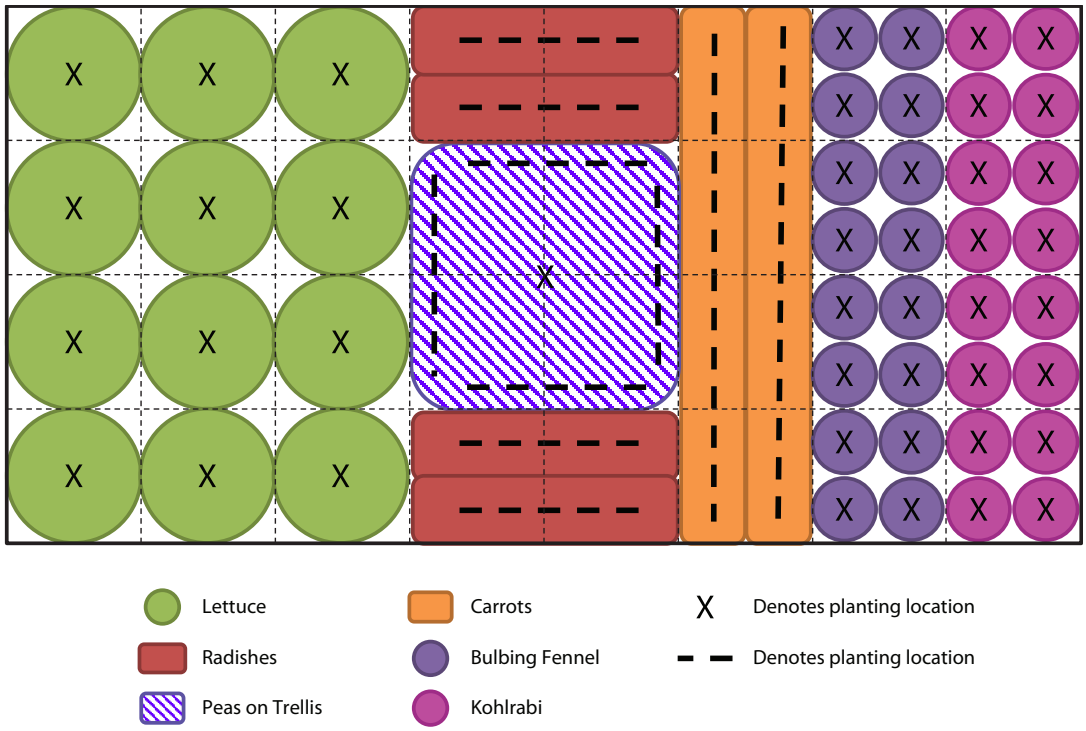
SP2-2

Medium Season with Indoor Seed Starting

Moderately complex

Planted in mid- to late March, with harvest expected in mid- to late May, at the end of the school year.

Most of the plants should be started from seed indoors in January or February to give a head start on the growing season and allow for maturity of the final plantings by late May.



SP2-2. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Seed indoors in mid-Feb. Transplant outdoors in mid- to late March.	Seeds started indoors, then transplanted out in garden.	Any leaf, romaine, or butterhead type.
Spring Radishes	Mid- to late March.	Seed directly in the garden.	Any variety < 35 days to maturity.
Bulbing Fennel	Seed indoors in mid-Feb. Transplant outdoors in mid- to late March.	Seeds started indoors, then transplanted out in garden.	Any variety.
Peas	Late Feb. to late March.	Seed directly in the garden.	Any variety < 60 days to maturity preferred. Snow or sugar snap peas may be better choices.
Carrots	Mid- to late March	Seed directly in the garden.	Any variety < 60 days to maturity preferred. Others likely will not reach full maturity by late May.
Kohlrabi	Seed indoors in mid-Feb. Transplant outdoors in mid- to late March.	Seeds started indoors, then transplanted out in garden.	Any variety.

SP2-2. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Lettuce	spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Spring Radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets)
Bulbing Fennel	kohlrabi, leeks, green onions (sets)
Peas	No comparable substitutes. Leafy greens or root vegetables could be used instead without the trellis.
Swiss Chard	lettuce, Chinese cabbage, mesclun, mustards, mizuna, spinach, kale, arugula, bok choy
Kohlrabi	bulbing fennel, leeks, green onions (sets)

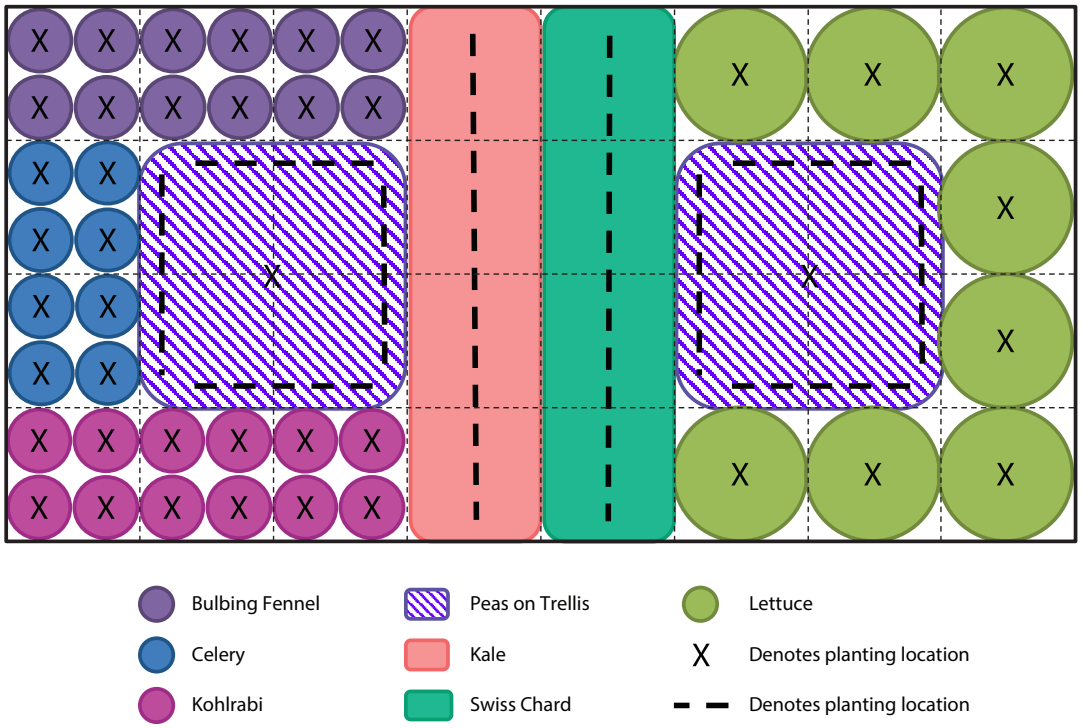
SP2-3

Medium Season with Indoor Seed Starting

Complex

Planted in mid- to late March, with harvest expected in mid- to late May, at the end of the school year.

Most of the plants should be started from seed indoors in January or February to give a head start on the growing season and allow for maturity of the final plantings by late May.



SP2-3. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Seed indoors in mid-Feb. Transplant outdoors in mid- to late March.	Seeds started indoors, then transplanted out in garden.	Any leaf, romaine, or butterhead type.
Swiss Chard	Mid- to late March.	Seed directly in the garden.	Any variety.
Kale	Mid- to late March.	Seed directly in the garden.	Any variety.
Spring Radishes	Mid- to late March.	Seed directly in the garden.	Any variety < 35 days to maturity.
Bulbing Fennel	Seed indoors in mid-Feb. Transplant outdoors in mid- to late March.	Seeds started indoors, then transplanted out in garden.	Any variety.
Peas	Late Feb. to late March.	Seed directly in the garden.	Any variety < 60 days to maturity preferred. Snow or sugar snap peas may be better choices.
Celery	Seed indoors in mid-Feb. Transplant outdoors in mid- to late March.	Seeds started indoors, then transplanted out in garden.	Any variety. Will not reach full size by late May.
Kohlrabi	Seed indoors in mid-Feb. Transplant outdoors in mid- to late March.	Seeds started indoors, then transplanted out in garden.	Any variety.

SP2-3. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Lettuce	spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy, Alpine strawberries
Swiss Chard	lettuce, Chinese cabbage, mesclun, mustards, mizuna, spinach, kale, arugula, bok choy
Kale	lettuce, Chinese cabbage, mesclun, mustards, mizuna, spinach, Swiss chard, arugula, bok choy
Spring Radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets)
Bulbing Fennel	kohlrabi, leeks, green onions (sets), celery
Peas	No comparable substitutes. Leafy greens or root vegetables could be used instead without the trellis.
Celery	kohlrabi, bulbing fennel, leeks, green onions (sets)
Kohlrabi	bulbing fennel, leeks, green onions (sets), celery

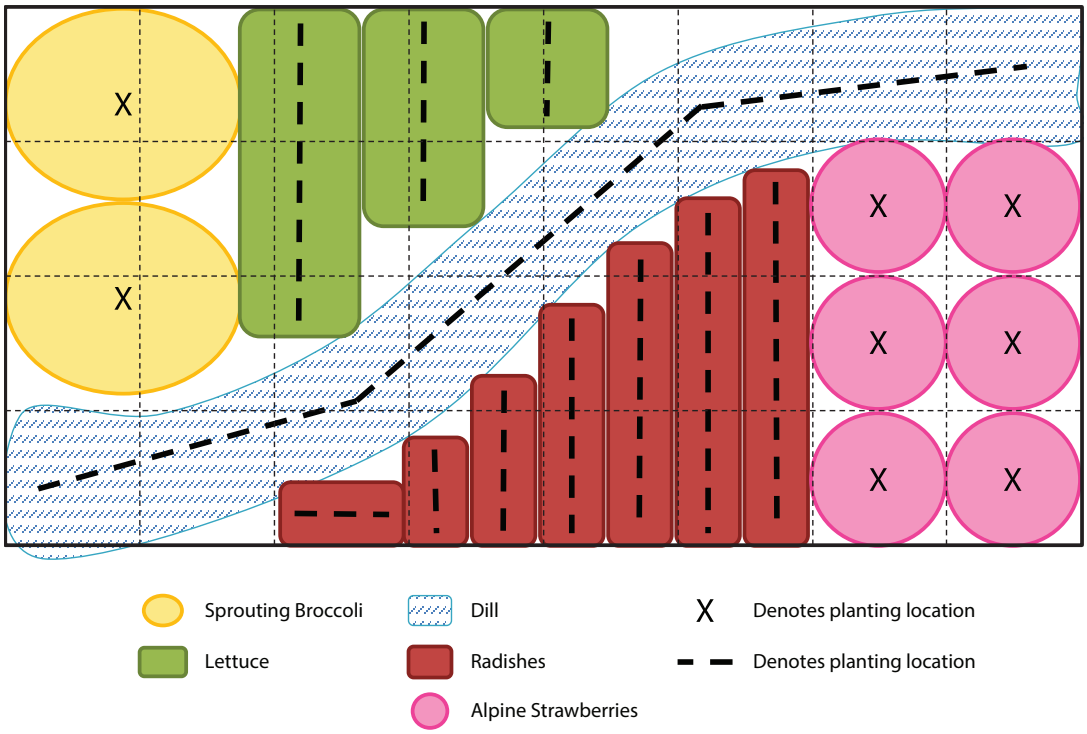
SP2-4

Medium Season with Indoor Seed Starting

Moderately complex

Planted in mid- to late March, with harvest expected in mid- to late May, at the end of the school year.

Most of the plants should be started from seed indoors in January or February to give a head start on the growing season and allow for maturity of the final plantings by late May.



SP2-4. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Seed indoors in mid-Feb. Transplant outdoors in mid- to late March.	Seeds started indoors, then transplanted out in garden.	Any leaf, romaine, or butterhead type.
Spring Radishes	Mid- to late March.	Seed directly in the garden.	Any variety < 35 days to maturity.
Alpine Strawberries	Seed indoors in mid- to late Jan. Transplant outdoors in mid- to late March.	Seeds started indoors, then transplanted out in garden.	Any variety.
Sprouting Broccoli	Seed indoors in mid-Feb. Transplant outdoors in mid- to late March.	Seeds started indoors, then transplanted out in garden.	Any variety < 55 days to maturity preferred.
Dill	Seed indoors in mid-Feb. Transplant outdoors in mid- to late March.	Seeds started indoors, then transplanted out in garden.	Any variety.

SP2-4. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Lettuce	Spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Spring Radishes	Kohlrabi, salad turnips, purple top turnips, green onions (sets)
Alpine Strawberries	No comparable substitutes. Leafy greens started indoors could be used instead.
Sprouting Broccoli	Cabbage, broccoli, Chinese cabbage, bok choy
Dill	Fennel, cilantro, parsley, oats (direct seeded)

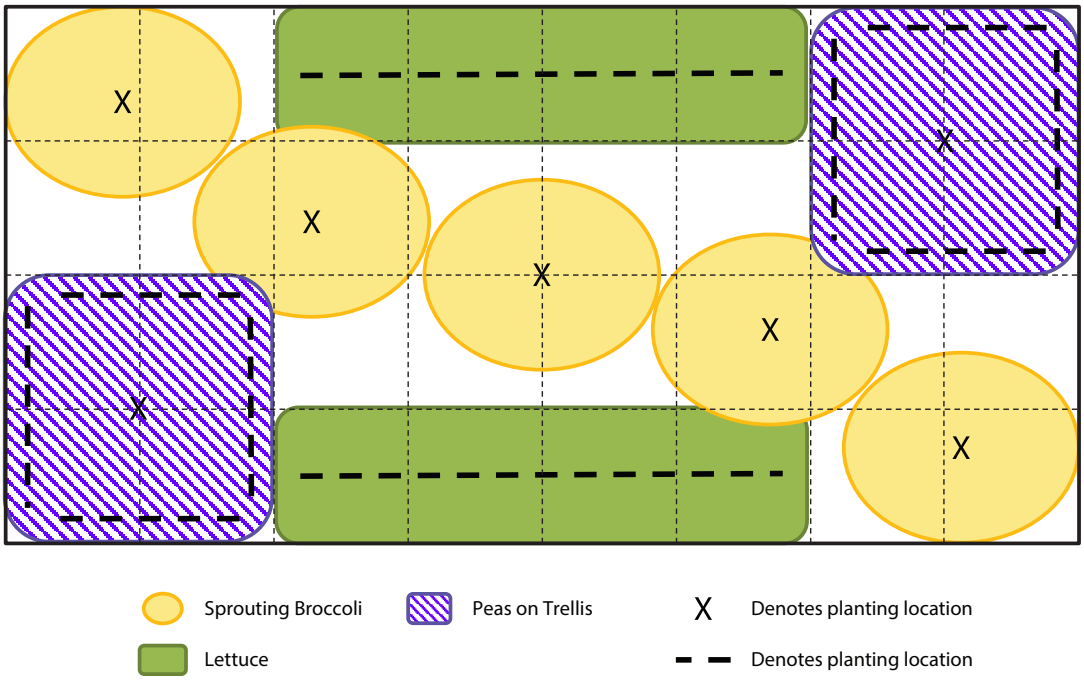
SP2-5

Medium Season with Indoor Seed Starting

Simple

Planted in mid- to late March, with harvest expected in mid- to late May, at the end of the school year.

Most of the plants should be started from seed indoors in January or February to give a head start on the growing season and allow for maturity of the final plantings by late May.



SP2-5. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Seed indoors in mid-Feb. Transplant outdoors in mid- to late March.	Seeds started indoors, then transplanted out in garden.	Any leaf, romaine, or butterhead type.
Sprouting Broccoli	Seed indoors in mid-Feb. Transplant outdoors in mid- to late March.	Seeds started indoors, then transplanted out in garden.	Any variety < 55 days to maturity preferred.
Peas	Late Feb. to late March.	Seed directly in the garden.	Any variety < 60 days to maturity preferred. Snow or sugar snap peas may be better choices.

SP2-5. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Lettuce	spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Sprouting Broccoli	cabbage, broccoli, Chinese cabbage, bok choy
Peas	No comparable substitutes. Leafy greens or root vegetables could be used instead without the trellis.

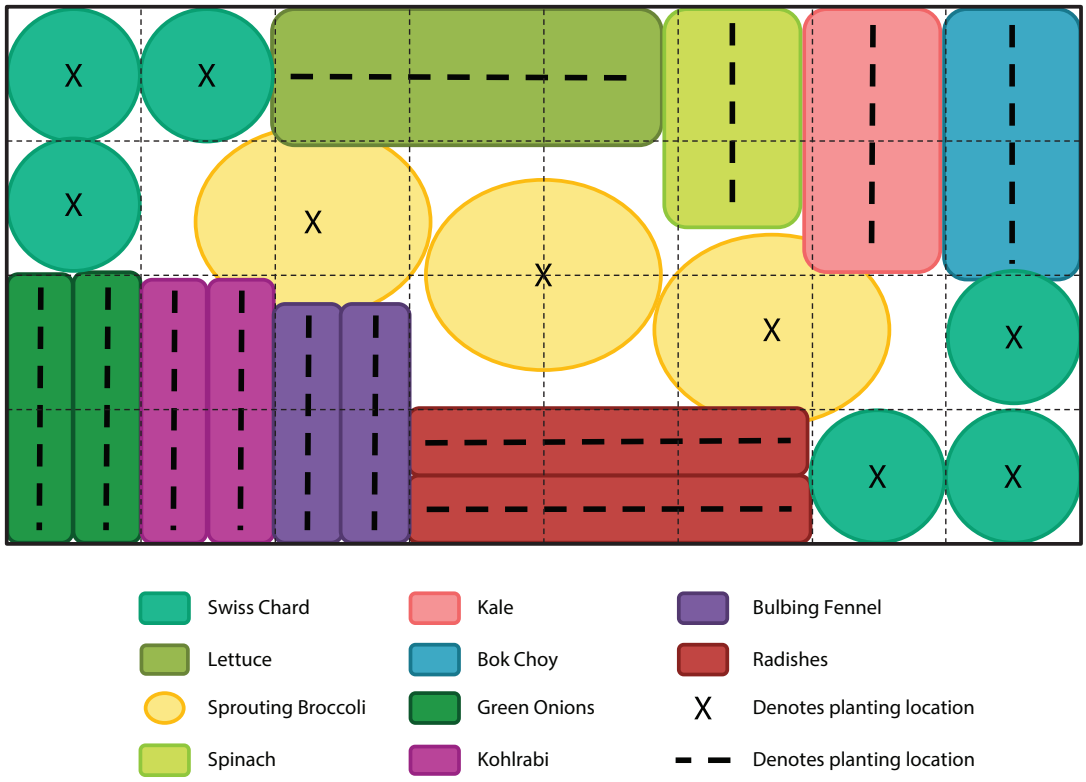
SP2-6

Medium Season with Indoor Seed Starting

Complex

Planted in mid- to late March, with harvest expected in mid- to late May, at the end of the school year.

Most of the plants should be started from seed indoors in January or February to give a head start on the growing season and allow for maturity of the final plantings by late May.



SP2-6. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Seed indoors in mid-Feb. Transplant outdoors in mid- to late March.	Seeds started indoors, then transplanted out in garden.	Any leaf, romaine, or butterhead type.
Swiss Chard	Mid- to late March.	Seed directly in the garden.	Any variety.
Kale	Mid- to late March.	Seed directly in the garden.	Any variety.
Spring Radishes	Mid- to late March.	Seed directly in the garden.	Any variety < 35 days to maturity.
Bulbing Fennel	Seed indoors in mid-Feb. Transplant outdoors in mid- to late March.	Seeds started indoors, then transplanted out in garden.	Any variety.
Sprouting Broccoli	Seed indoors in mid-Feb. Transplant outdoors in mid- to late March.	Seeds started indoors, then transplanted out in garden.	Any variety < 55 days to maturity preferred.
Green Onions	Mid- to late March	Plant from sets directly in garden	Any variety of onion sets.
Kohlrabi	Seed indoors in mid-Feb. Transplant outdoors in mid- to late March.	Seeds started indoors, then transplanted out in garden.	Any variety.
Spinach	Mid- to late March	Seeds directly in garden	Any variety.
Bok Choy	Mid- to late March	Seeds directly in garden	Any variety < 45 days to maturity preferred.

SP2-6. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Lettuce	spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Swiss Chard	lettuce, Chinese cabbage, mesclun, mustards, mizuna, spinach, kale, arugula, bok choy, Alpine strawberries
Kale	spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, lettuce, Swiss chard, bok choy
Spring Radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets)
Bulbing Fennel	kohlrabi, leeks, green onions (sets)
Sprouting Broccoli	cabbage, broccoli
Green Onions	kohlrabi, salad turnips, purple top turnips, spring radishes
Kohlrabi	bulbing fennel, leeks, green onions (sets)
Spinach	lettuce, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Bok Choy	spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, lettuce, Swiss chard, kale

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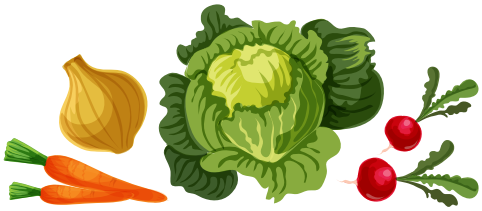

June Programming
Summer Garden Templates

Planting occurs during the spring of the school year.

How to Use the Garden Templates and Coordinating Tables

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After each template, there are two tables. The first table provides more information about the recommended planting time, how to plant, and short notes on choosing a good variety. The second table gives alternatives to substitute for each plant recommended in the template. This allows for each garden to be adjusted to meet the needs of the school or student group.

For more information about each recommended plant in the guide, refer to the “Notes on Plant Choices” section of this publication. This document will provide more guidance on planting and growing each

crop, choosing varieties to grow, things to watch for, and ideas about learning opportunities related to the various plants.

For tips on starting a garden and related resources, refer to the K-State Research and Extension publication, *Considerations and Curriculum Resources for School Garden Design in Kansas*, MF3589.

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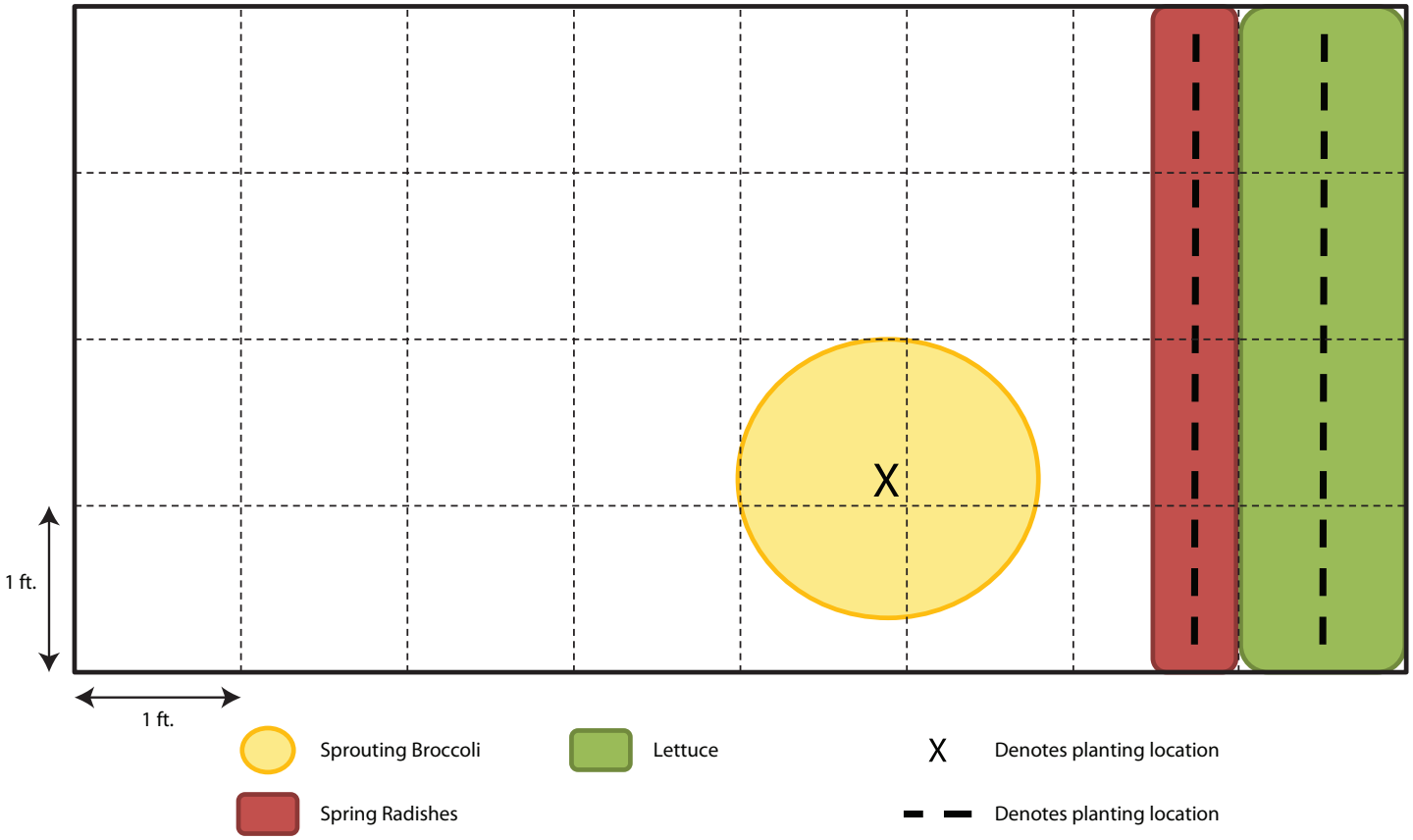
How to Read the Garden Templates

Each template is 4 feet by 8 feet. Each foot is marked by a gridline. A colored block that fills a whole square width is expected to be 1 foot wide, with the planting line denoted in the center of the block — allowing about 6 inches on either side of the planting location. A colored block that fills half a square is expected to be 6 inches wide, with planting in the center. These are typically where seeds are planted.

A circle or square with an "X" in the center will typically be where a single plant is transplanted. The plant will go on the "X," with the space of the circle or square the expected mature size of the plant. The key at the bottom shows what plants are planned for each space.



How to Read the Planting Schedule

Each template includes a Planting Schedule chart. This chart lists the ideal window when each type of plant should go into the garden. Bear in mind that every year is different from a weather standpoint, so a planting date that works well one year may not work as well in another year, especially at the extremes.

The planting type — either direct seeding in the garden or transplanting in the garden — is noted. In some cases, there may be special instructions for certain plants.

In the last column are some short variety notes. These notes are specific to the time of year and template, so may change from one chart to another. For more detailed information on variety selection for certain plants, refer to the "Notes on Plant Choices" section.

How to Read the Alternative Plants

Each template includes a chart of alternative plants. These are plants that have similar growth habits, spacing needs, and planting times to the plant originally indicated on the garden template. If there is a need to replace a particular plant with another option for whatever reason, this chart will help you determine which other plants you could consider.

In some cases, especially in the summer templates, there are few easy alternatives that have close characteristics to the original plant options. Alternatives may not need the exact same type of trellising or have slightly different planting dates. If you are unsure about a replacement plant, ask an experienced gardener for advice. Also refer to the "Notes on Plant Choices" section for more insight into certain types of plants.

Key-1. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Mid-Aug. to early Sept.	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Spring Radishes	Mid-Aug. to mid-Sept.	Seeds directly in garden	Any variety < 35 days to maturity.

Key-1. Alternative Plants for the Garden Plan

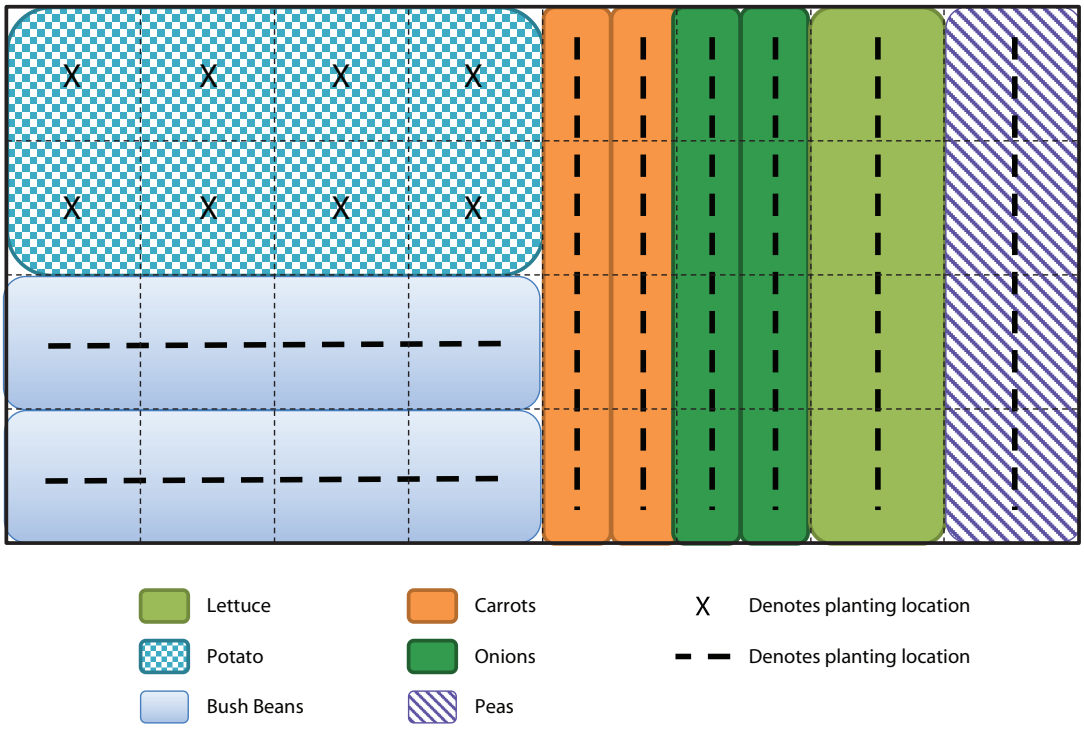
Vegetable	Alternative Plants
Lettuce	spinach, Chinese cabbage, mesclun, mizuna, mustards, arugula, kale, Swiss chard, bok choy
Spring Radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants)

JN-1

Moderately complex

Planted in March-May, with the intention of primary harvests occurring during June, although some harvesting could be done in May, before the end of the school year.

Active maintenance needed at least through June, with the potential for some plants to carry over to the fall semester with minimal additional maintenance.



JN-1. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Mid- to late March	Seeds directly in garden	Any leaf, romaine, or butterhead type. Look for heat tolerance.
Carrots	Late March to early April	Seeds directly in garden	Any variety.
Onions	Mid- to late March	Plant from sets or plants directly in garden	Any intermediate day variety.
Peas	March	Seeds directly in garden	Any variety.
Bush Beans	Mid-April to early May	Seeds directly in garden	Any variety.
Potatoes (Irish)	Mid- to late March	Seed pieces planted directly in garden	Any variety.

JN-1. Alternative Plants for the Garden Plan

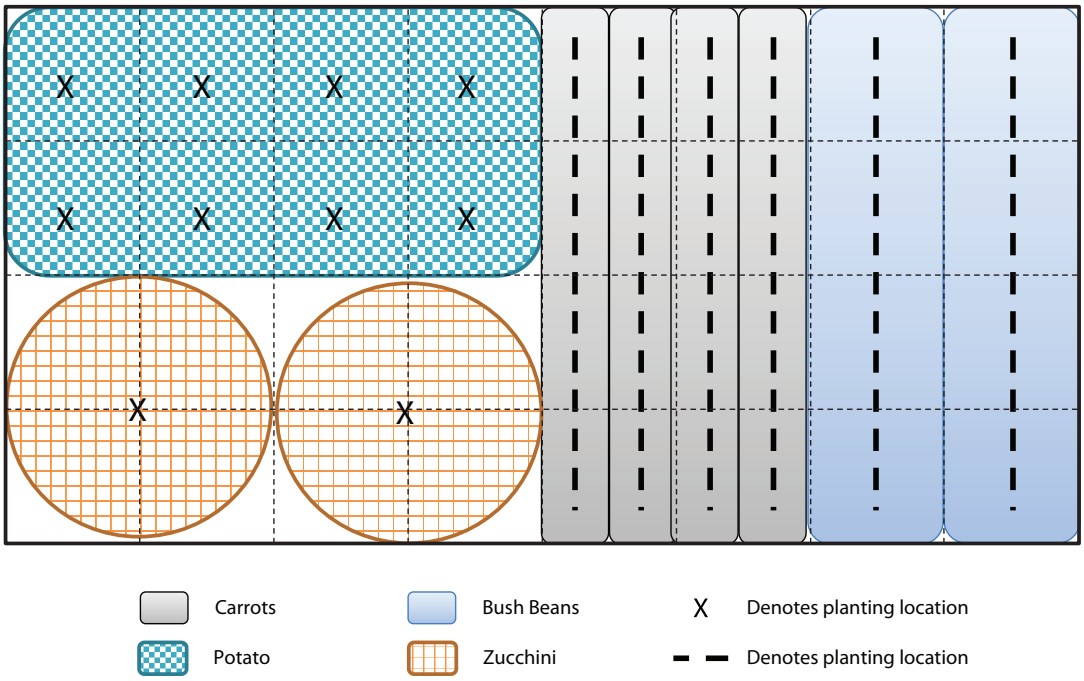
Vegetable	Alternative Plants
Lettuce	spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Carrots	kohlrabi, purple top turnips, bulbing fennel, onions, beets, leeks
Onions	kohlrabi, purple top turnips, bulbing fennel, carrots, beets, leeks
Peas	No comparable substitutes. Bush beans could be used if planted later. Leafy greens or root vegetables could be used instead.
Bush Beans	No comparable substitutes. Peas could be used if planted earlier. Leafy greens or root vegetables could be used instead.
Potatoes (Irish)	No comparable substitutes. Other root vegetables could be used if needed.

JN-2

Moderately simple

Planted in March-May, with the intention of primary harvests occurring during mid- to late June, although some harvesting could be done in May, before the end of the school year.

Active maintenance needed at least through June, with the potential for some plants to carry over to the fall semester with minimal additional maintenance.



JN-2. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Carrots	Late March to early April	Seeds directly in garden	Any variety.
Zucchini or Summer Squash	May	Seeds directly in garden	Any variety.
Bush Beans	Mid-April to early May	Seeds directly in garden	Any variety.
Potatoes (Irish)	Mid- to late March	Seed pieces planted directly in garden	Any variety.

JN-2. Alternative Plants for the Garden Plan

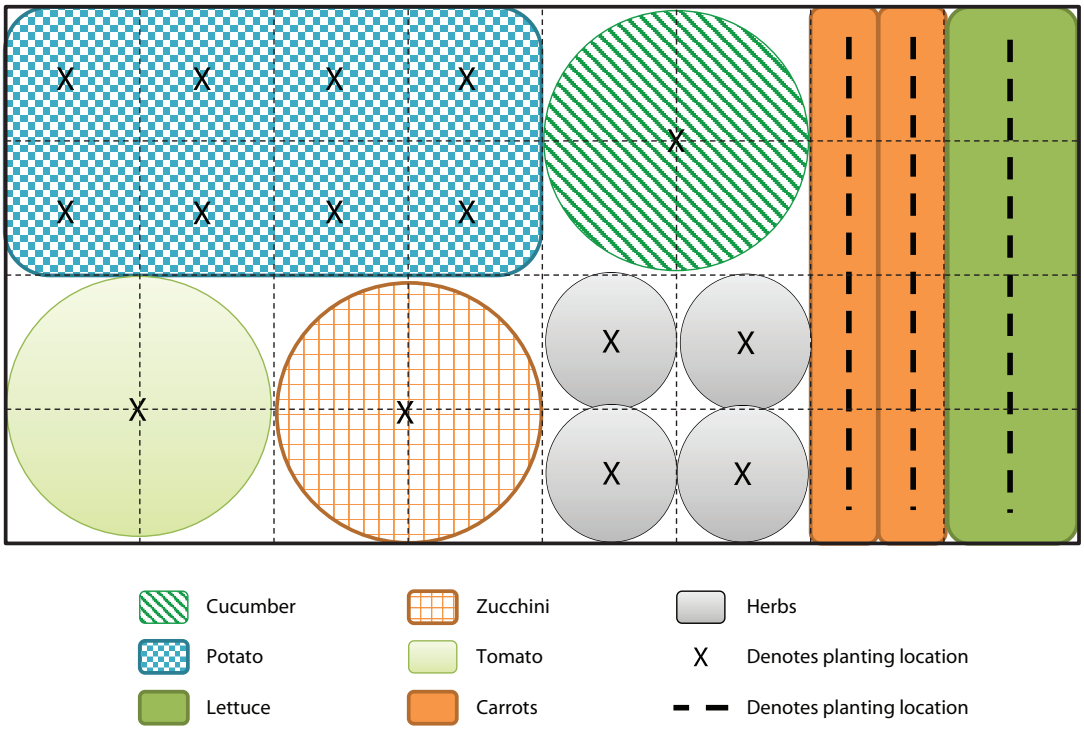
Vegetable	Alternative Plants
Carrots	kohlrabi, purple top turnips, bulbing fennel, onions, beets, leeks
Zucchini or Summer Squash	cucumbers (grown on trellis), tomatoes. Could replace with peppers, amaranth, or Malabar spinach, but those plants are less likely to have production during the June programming window that this garden plan targets.
Bush Beans	No comparable substitutes. Peas could be used if planted earlier. Leafy greens or root vegetables could be used instead.
Potatoes (Irish)	No comparable substitutes. Other root vegetables could be used if needed. Peas could also serve as a substitute.

JN-3

Moderately simple

Planted in March-May, with the intention of primary harvests occurring during mid- to late June, although some harvesting could be done in May, before the end of the school year.

Active maintenance needed at least through June, with the potential for some plants to carry over to the fall semester with minimal additional maintenance.



JN-3. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Carrots	Late March to early April	Seeds directly in garden	Any variety.
Lettuce	Mid- to late March	Seeds directly in garden	Any leaf, romaine, or butterhead type. Look for heat tolerance.
Zucchini or Summer Squash	May	Seeds directly in garden	Any variety.
Cucumber	May	Seeds directly in garden	Any variety < 55 days preferred. Bush types preferred if no trellises available.
Herbs	May	Transplants in garden	Any variety. Suggestions include: basil, thyme, oregano, agastaches, flowering sages, etc.
Potatoes (Irish)	Mid- to late March	Seed pieces planted directly in garden	Any variety.
Tomato	May	Transplants in garden	Any variety, but indeterminate cherry tomatoes will give best results.

JN-3. Alternative Plants for the Garden Plan

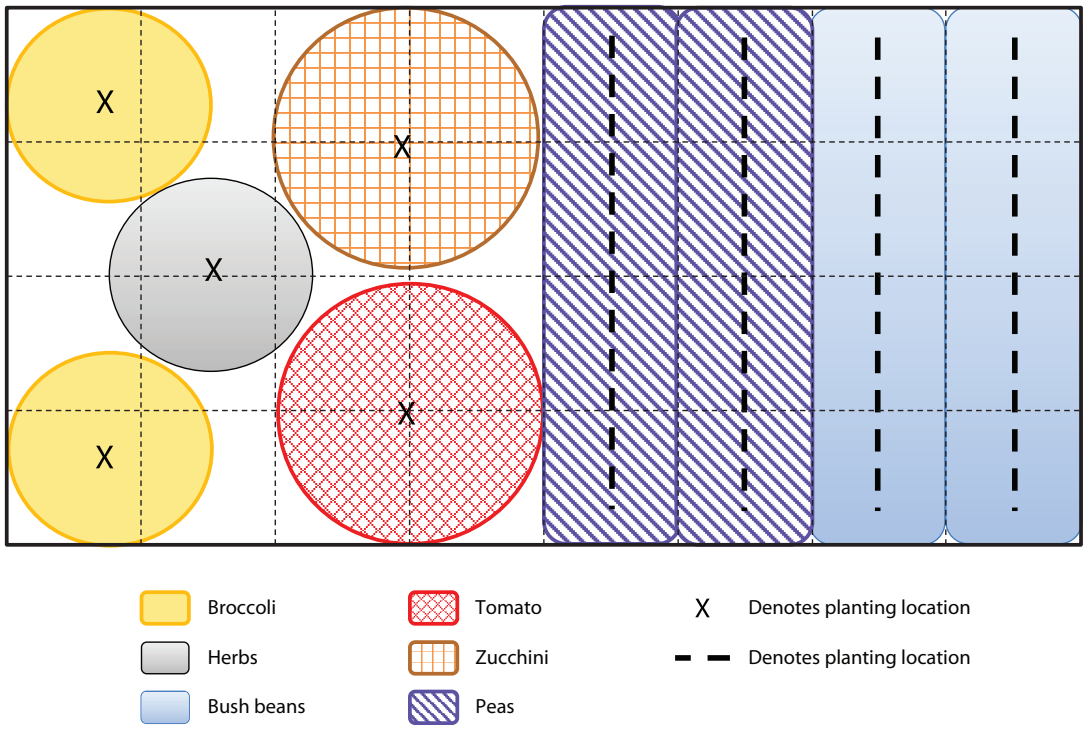
Vegetable	Alternative Plants
Carrots	kohlrabi, purple top turnips, bulbing fennel, onions, beets, leeks
Lettuce	spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy
Zucchini or Summer Squash	cucumbers (grown on trellis), tomatoes. Could replace with peppers, amaranth, or Malabar spinach, but those plants are less likely to have production during the June programming window that this garden plan targets.
Cucumber	zucchini or summer squash
Herbs	annual flowers, kale, Swiss chard
Potatoes (Irish)	No comparable substitutes. Other root vegetables could be used if needed. Peas could also serve as a replacement.
Tomato	cucumbers (grown on a trellis), zucchini or summer squash. Could replace with peppers, amaranth, or Malabar spinach, but those plants are less likely to have production during the June programming window that this garden plan targets.

JN-4

Moderately complex

Planted in March-May, with the intention of primary harvests occurring during mid- to late June, although some harvesting could be done in May, before the end of the school year.

Active maintenance needed at least through June, with the potential for some plants to carry over to the fall semester with minimal additional maintenance.



JN-4. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Broccoli	Late March to early April	Transplants in garden (Can be started indoors in Feb. for additional projects)	Any variety, but shorter days to maturity and heat tolerance are preferred.
Zucchini or Summer Squash	May	Seeds directly in garden	Any variety.
Peas	March	Seeds directly in garden	Any variety.
Herbs	May	Transplants in garden	Any variety. Suggestions include: basil, thyme, oregano, agastaches, flowering sages, etc.
Bush Beans	Mid-April to early May	Seeds directly in garden	Any variety.
Tomato	May	Transplants in garden	Any variety, but indeterminate cherry tomatoes will give best results.

JN-4. Alternative Plants for the Garden Plan

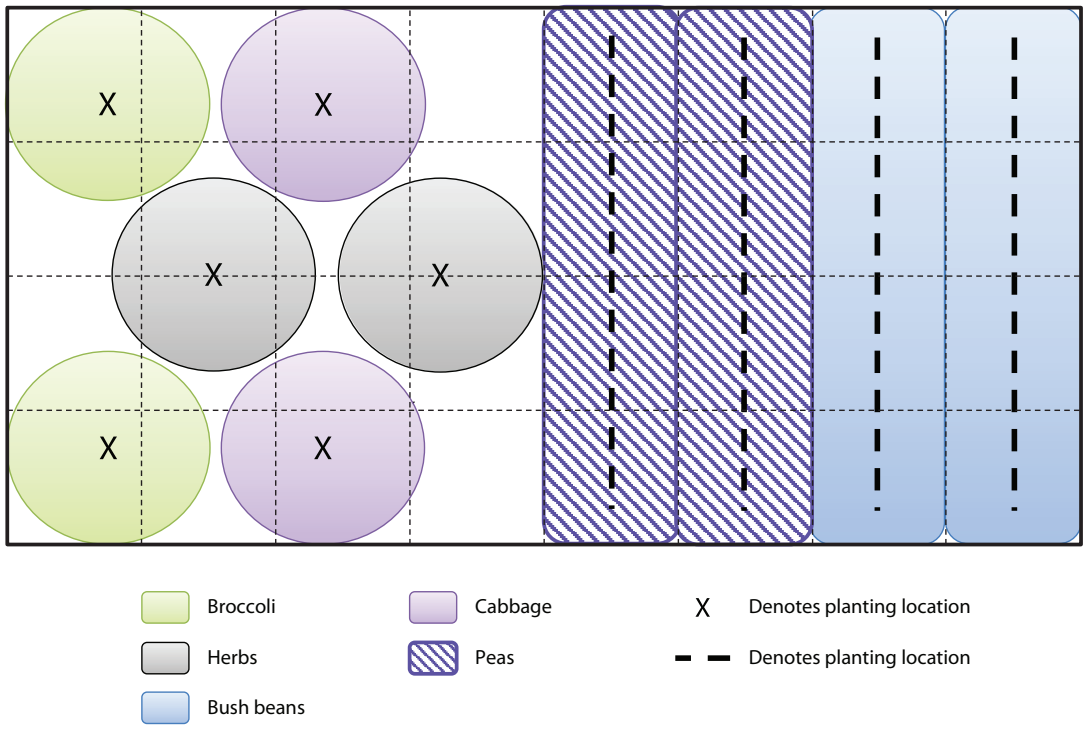
Vegetable	Alternative Plants
Broccoli	sprouting broccoli, cabbage, cauliflower
Zucchini or Summer Squash	cucumbers (grown on trellis), tomatoes. Could replace with peppers, amaranth, or Malabar spinach, but those plants are less likely to have production during the June programming window that this garden plan targets.
Peas	No comparable substitutes. Bush beans or pollenless sunflowers could be used if planted later. Leafy greens or root vegetables could be used instead.
Herbs	annual flowers, kale, Swiss chard
Bush Beans	No comparable substitutes. Peas could be used if planted earlier. Leafy greens or root vegetables could be used instead. Pollenless sunflowers may also be planted as a replacement.
Tomato	cucumbers (grown on a trellis), zucchini or summer squash. Could replace with peppers, eggplant, amaranth, or Malabar spinach, but those plants are less likely to have production during the June programming window that this garden plan targets.

JN-5

Moderately complex

Planted in March-May, with the intention of primary harvests occurring during mid- to late June, although some harvesting could be done in May, before the end of the school year.

Active maintenance needed at least through June, with the potential for some plants to carry over to the fall semester with minimal additional maintenance.



JN-5. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Broccoli	Seeds planted indoors in mid-Feb., transplants to garden in late March.	Seeds started indoors, planted out in garden as plants.	Any variety, but shorter days to maturity and heat tolerance are preferred.
Cabbage	Seeds planted indoors in mid-Feb., transplants to garden in late March.	Seeds started indoors, planted out in garden as plants.	Any variety, but shorter days to maturity and heat tolerance are preferred.
Peas	March	Seeds directly in garden	Any variety.
Herbs	May	Transplants in garden	Any variety. Suggestions include: basil, thyme, oregano, agastaches, flowering sages, etc.
Bush Beans	Mid-April to early May	Seeds directly in garden	Any variety.

JN-5. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Broccoli	sprouting broccoli, cabbage, cauliflower, flowering sages
Cabbage	sprouting broccoli, broccoli, cauliflower, flowering sages
Peas	No comparable substitutes. Bush beans or pollenless sunflowers could be used if planted later. Leafy greens or root vegetables could be used instead.
Herbs	annual flowers, kale, Swiss chard
Bush Beans	No comparable substitutes. Peas could be used if planted earlier. Leafy greens or root vegetables could be used instead. Pollenless sunflowers may also be planted as a replacement.

JN-6

Complex

Planted in March-May, with the intention of primary harvests occurring during mid- to late June, although some harvesting could be done in May, before the end of the school year.

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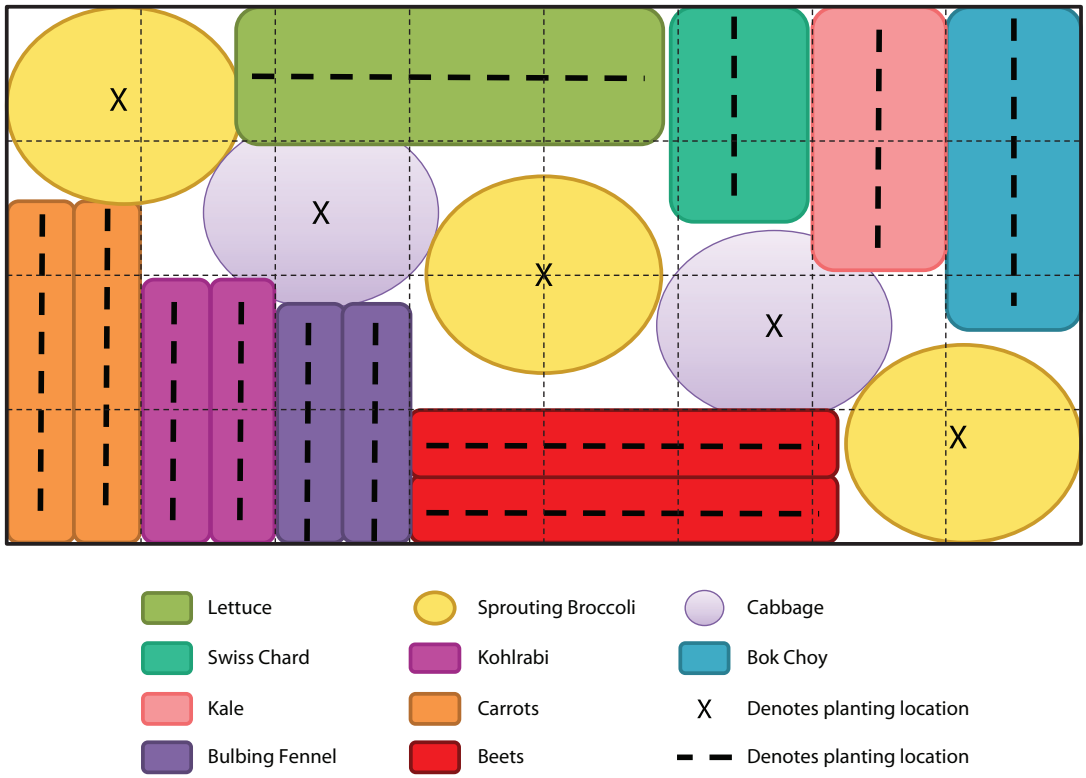

JN-6. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Mid- to late March	Seeds directly in garden	Any leaf, romaine, or butterhead type. Look for heat tolerance.
Beets	Mid- to late March	Seeds directly in garden	Any variety.
Carrots	Mid- to late March	Seeds directly in garden	Any variety.
Bok Choy	Mid- to late March	Seeds directly in garden	Any variety – < 45 days to maturity preferred.
Sprouting Broccoli	Seeds planted indoors in mid-Feb., transplants to garden in late March.	Seeds started indoors, planted out in garden as plants.	Any variety – < 55 days to maturity preferred.
Cabbage	Seeds planted indoors in mid-Feb., transplants to garden in late March.	Seeds started indoors, planted out in garden as plants.	Any variety, but shorter days to maturity and heat tolerance are preferred.
Fennel	Mid- to late March	Seeds directly in garden	Any variety.
Kohlrabi	Mid- to late March	Seeds directly in garden	Any variety.
Swiss Chard	Mid- to late March	Seeds directly in garden	Any variety.
Kale	Mid- to late March	Seeds directly in garden	Any variety.

JN-6. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Lettuce	spinach, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, Swiss chard, bok choy, collards
Beets	fall radishes, carrots, leeks, bulbing fennel, kohlrabi, purple top turnips, onions
Carrots	fall radishes, carrots, leeks, bulbing fennel, kohlrabi, purple top turnips, onions
Bok Choy	lettuce, spinach, mesclun, mustards, mizuna, arugula, kale, Swiss chard, Chinese cabbage, collards
Sprouting Broccoli	broccoli, cauliflower, cabbage, flowering sages
Cabbage	cauliflower, broccoli, sprouting broccoli, flowering sages
Fennel	fall radishes, carrots, leeks, bulbing fennel, kohlrabi, purple top turnips, onions
Kohlrabi	fall radishes, carrots, leeks, bulbing fennel, kohlrabi, purple top turnips, onions
Swiss Chard	lettuce, Chinese cabbage, mesclun, mustards, mizuna, arugula, kale, spinach, bok choy, collards
Kale	lettuce, Chinese cabbage, mesclun, mustards, mizuna, arugula, Swiss chard, spinach, bok choy, collards

K-STATE Research and Extension

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

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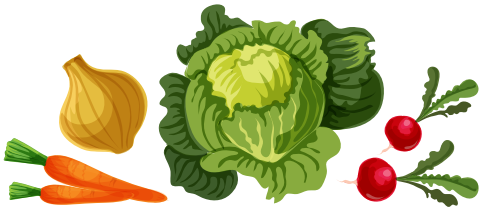
MF3590 March 2022



July Garden Templates

Planted in late spring to early summer.

How to Use the Garden Templates and Coordinating Tables

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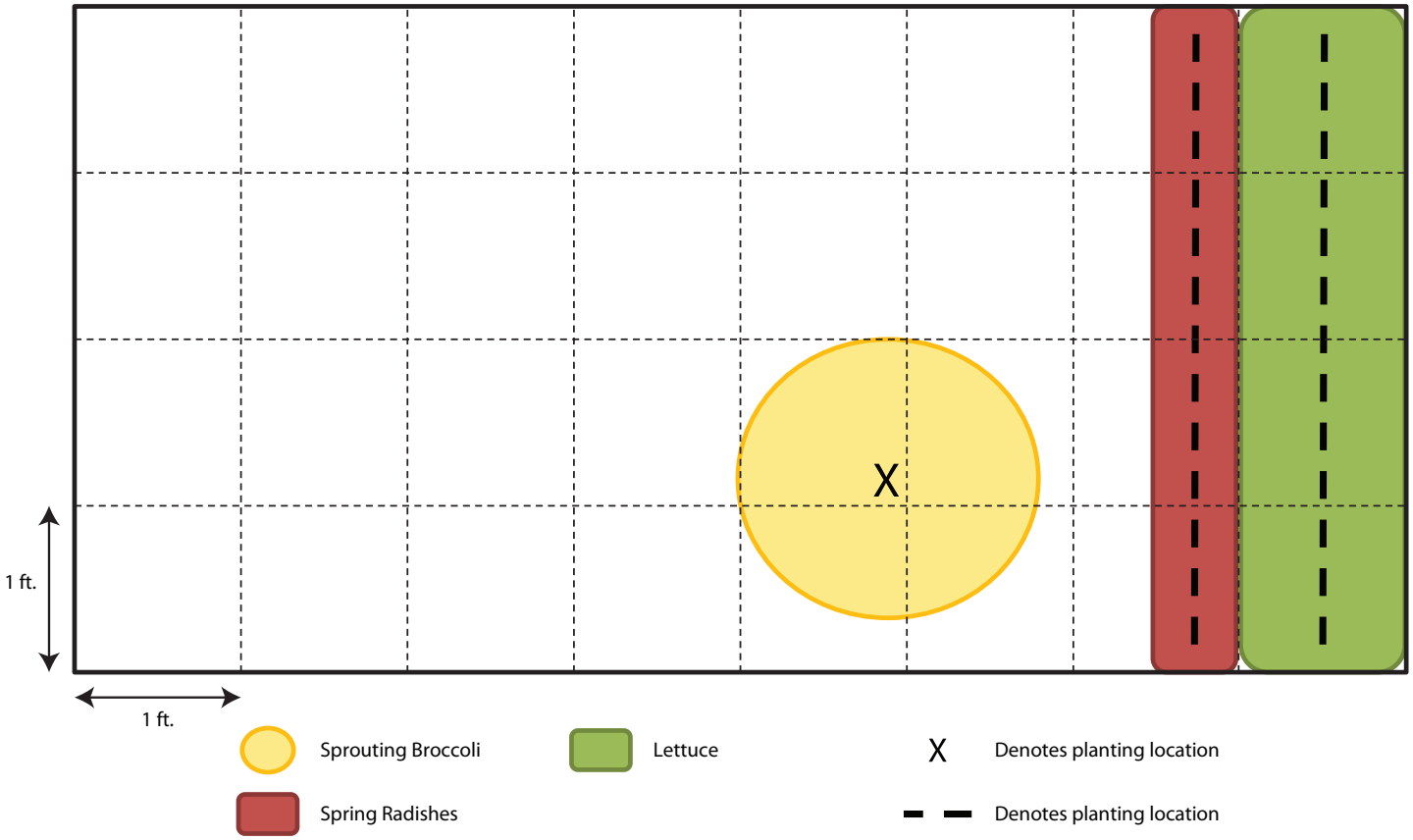

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Each template includes a chart of alternative plants. These are plants that have similar growth habits, spacing needs, and planting times to the plant originally indicated on the garden template. If there is a need to replace a particular plant with another option for whatever reason, this chart will help you determine which other plants you could consider.

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Lettuce	spinach, Chinese cabbage, mesclun, mizuna, mustards, arugula, kale, Swiss chard, bok choy
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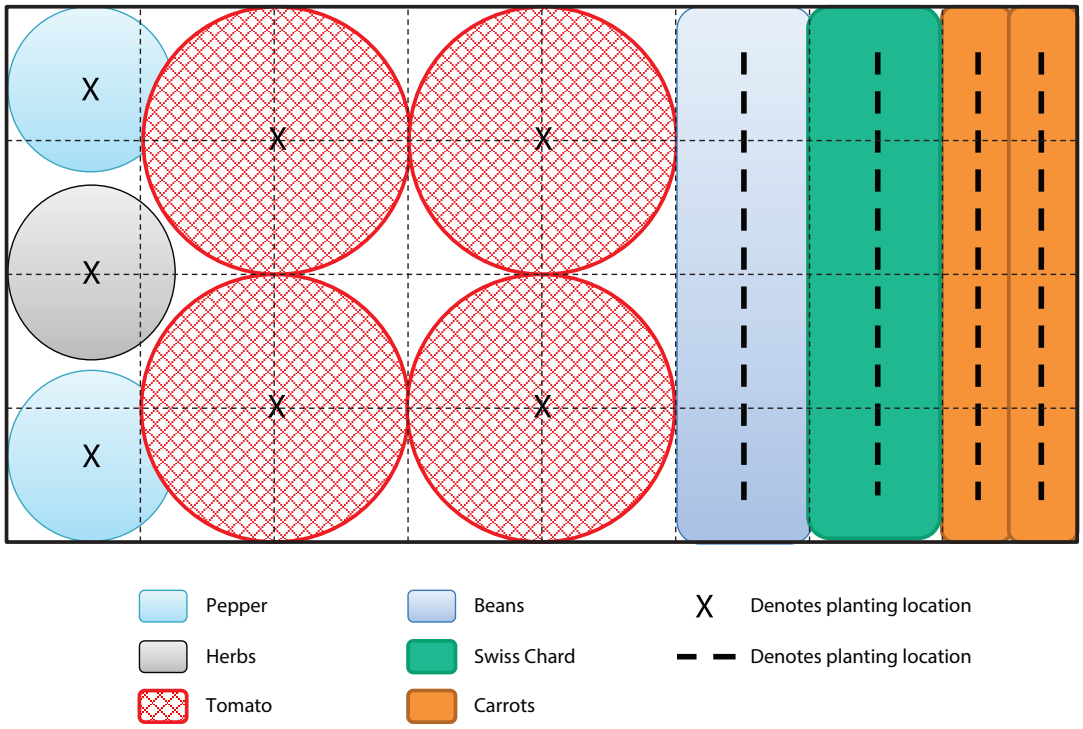
JL-1

Moderately simple

Planted in March-May, with the intention of primary harvests occurring during June and July, although some harvesting could be done in May, before the end of the school year.

Herbs, Swiss chard, tomatoes, and peppers will continue into the fall.



JL-1. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Tomato	May	Transplants in garden	Any variety, but indeterminate cherry tomatoes will give best results.
Carrots	Late March to early April	Seeds directly in garden	Any variety.
Pepper	May	Transplants in garden	Any variety. Small fruited types are more productive. Sweet types are more popular with students.
Swiss Chard	March	Seeds directly in garden	Any variety.
Bush Beans	Mid-April to early May	Seeds directly in garden	Any variety.
Herbs	May	Transplants in garden	Any variety. Suggestions include: basil, thyme, oregano, agastaches, flowering sages, etc.

JL-1. Alternative Plants for the Garden Plan

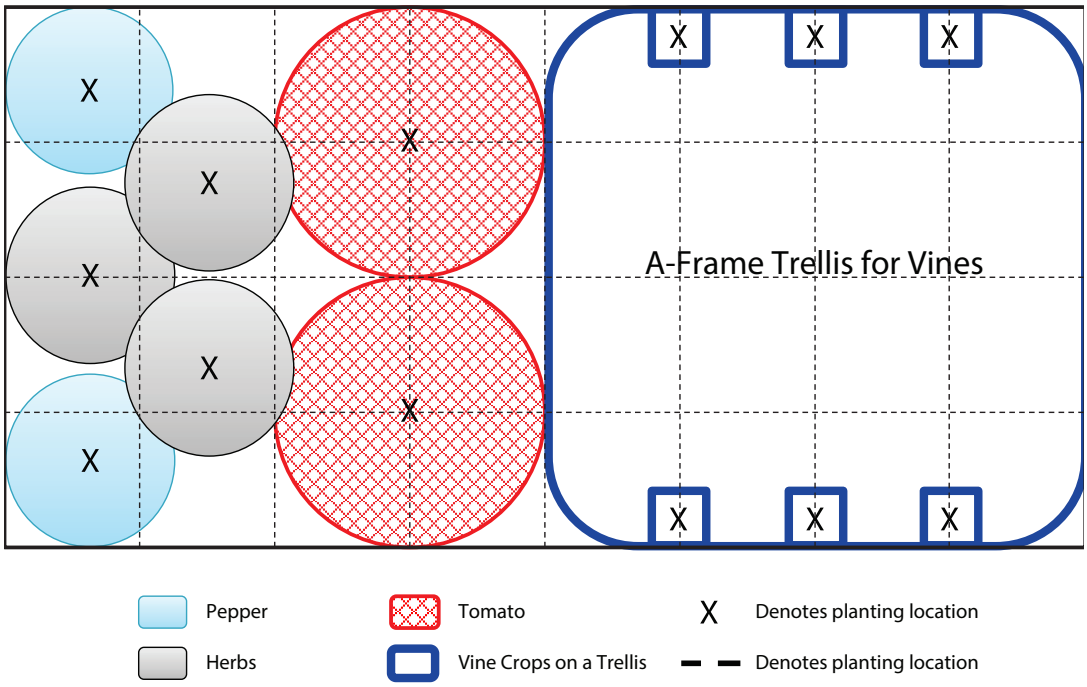
Vegetable	Alternative Plants
Tomatoes	cucumber or Malabar spinach on a trellis, pollenless sunflowers, zucchini, eggplant, amaranth, two peppers
Carrots	kohlrabi, purple top turnips, bulbing fennel, onions, beets, leeks
Peppers	herbs, kale, Swiss chard, pollenless sunflowers
Swiss Chard	kale, herbs
Bush Beans	No comparable substitutes. Pollenless sunflowers. Peas could be used if planted earlier, but will be done before July. Root vegetables, kale, or Swiss chard could be used instead.
Herbs	annual flowers, kale, Swiss chard, peppers

JL-2

Moderately simple

Planted in March-May, with the intention of primary harvests occurring during June and July, although some harvesting could be done in May, before the end of the school year.

All plants could continue into the fall.



JL-2. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Tomato	May	Transplants in garden	Any variety, but indeterminate cherry tomatoes will give best results.
Pepper	May	Transplants in garden	Any variety. Small fruited types are more productive. Sweet types are more popular with students.
Vines on a Trellis	May to early June	Seed directly in garden	Many varieties. Suggestions include: cantaloupe, cucumbers, other melons, winter squashes. Look for insect and disease resistance.
Herbs	May	Transplants in garden	Any variety. Suggestions include: basil, thyme, oregano, agastaches, flowering sages, etc.

JL-2. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Tomatoes	cucumber or Malabar spinach on a trellis, pollenless sunflowers, zucchini, eggplant, amaranth, two peppers
Peppers	herbs, kale, Swiss chard, pollenless sunflowers
Vines on a Trellis	No comparable substitutes. If no trellis available, plant a single vine plant in the center of the designated space and allow to grow along the ground.
Herbs	annual flowers, kale, Swiss chard, peppers

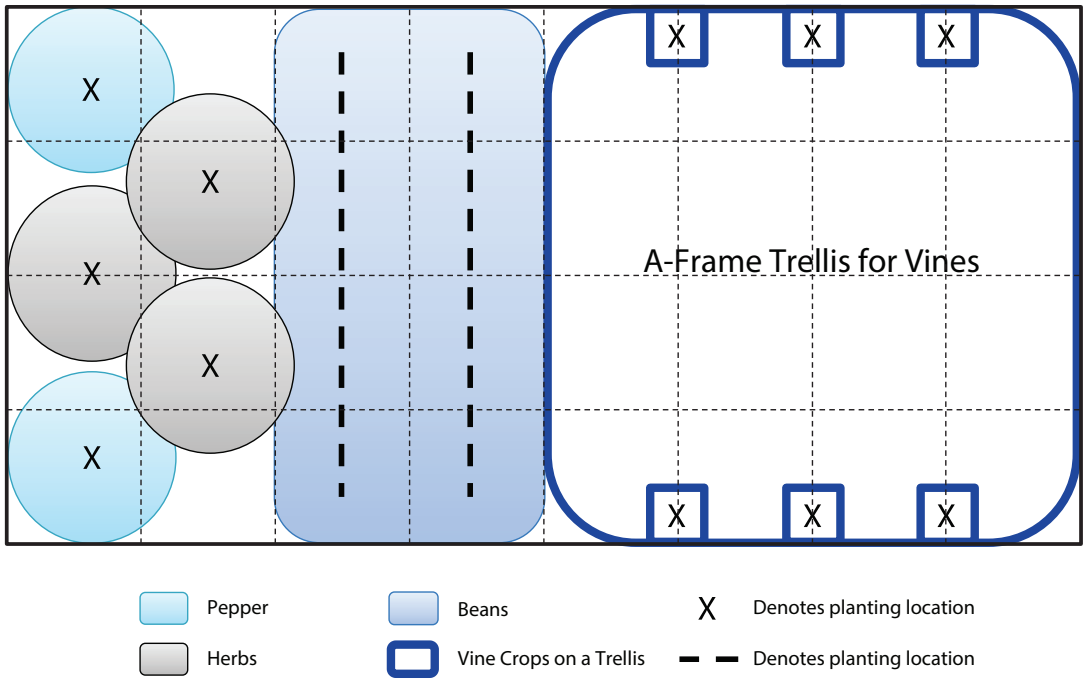
JL-3

Moderately simple

Moderately simple

Planted in March-May, with the intention of primary harvests occurring during June and July, although some harvesting could be done in May, before the end of the school year.

Vines, peppers, and herbs could continue through the fall.



JL-3. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Beans	Mid-April to early May	Seeds directly in garden	Any variety.
Pepper	May	Transplants in garden	Any variety. Small fruited types are more productive. Sweet types are more popular with students.
Vines on a Trellis	May to early June	Seed directly in garden	Many varieties. Suggestions include: cantaloupe, cucumbers, other melons, winter squashes. Look for insect and disease resistance.
Herbs	May	Transplants in garden	Any variety. Suggestions include: basil, thyme, oregano, agastaches, flowering sages, etc.

JL-3. Alternative Plants for the Garden Plan

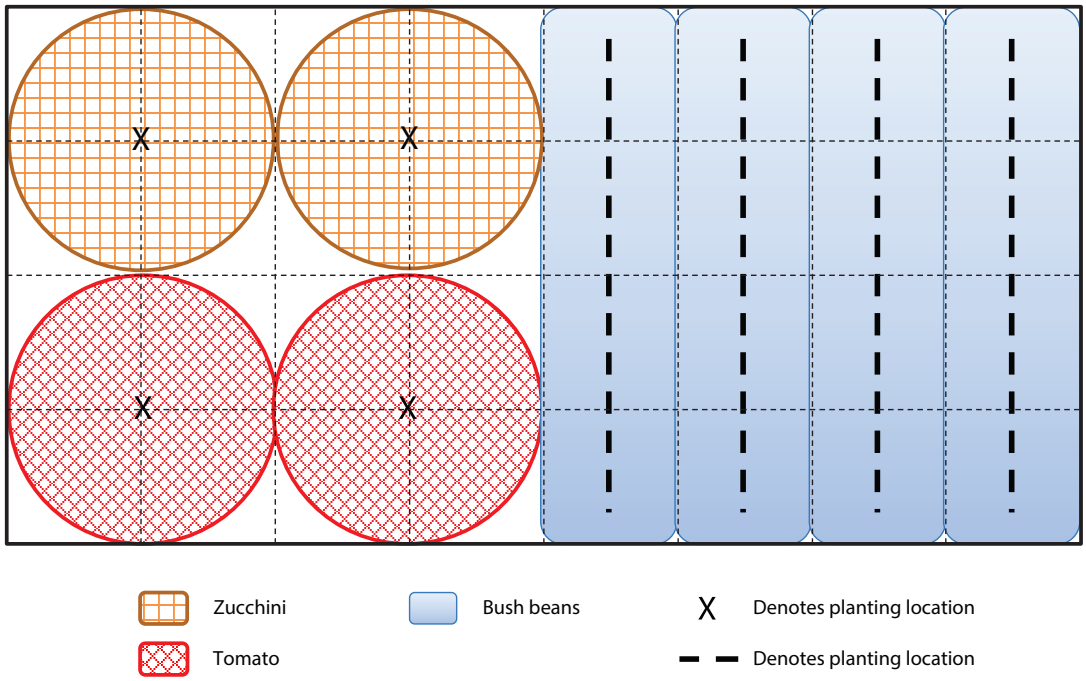
Vegetable	Alternative Plants
Beans	No comparable substitutes. Pollenless sunflowers. Peas could be used if planted earlier, but will be done before July. Root vegetables, kale, or Swiss chard could be used instead.
Peppers	herbs, kale, Swiss chard, pollenless sunflowers
Vines on a Trellis	No comparable substitutes. If no trellis available, plant a single vine plant in the center of the designated space and allow to grow along the ground.
Herbs	annual flowers, kale, Swiss chard, peppers

JL-4

Very simple

Planted in March-May, with the intention of primary harvests occurring during June and July, although some harvesting could be done in May, before the end of the school year.

Tomatoes and possibly zucchini could continue into the fall.



JL-4. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Beans	Mid-April to early May	Seeds directly in garden	Any variety.
Tomato	May	Transplants in garden	Any variety, but indeterminate cherry tomatoes will give best results.
Zucchini or Summer Squash	May	Seeds directly in garden	Any variety.

JL-4. Alternative Plants for the Garden Plan

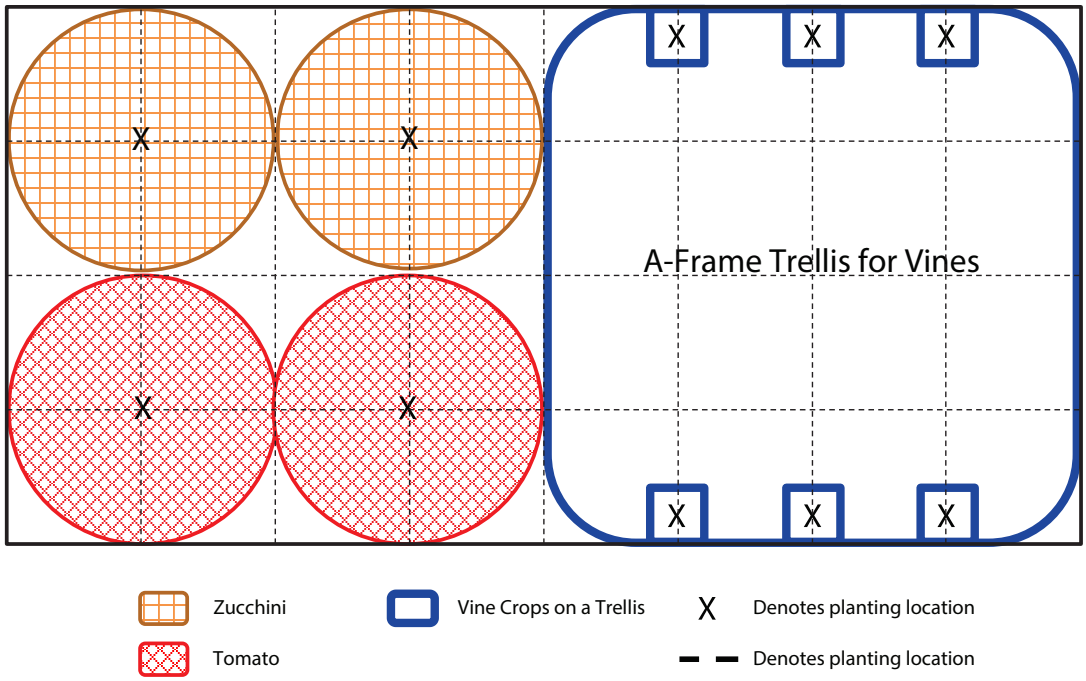
Vegetable	Alternative Plants
Beans	No comparable substitutes. Pollenless sunflowers. Peas could be used if planted earlier, but will be done before July. Root vegetables, kale, or Swiss chard could be used instead.
Tomatoes	cucumber or Malabar spinach on a trellis, pollenless sunflowers, zucchini, eggplant, amaranth, two peppers
Zucchini or Summer Squash	cucumber or Malabar spinach on a trellis, pollenless sunflowers, tomato, eggplant, amaranth, two peppers

JL-5

Simple

Planted in March-May, with the intention of primary harvests occurring during June and July, although some harvesting could be done in May, before the end of the school year.

Vines, tomatoes, and possibly zucchini could continue into the fall.



JL-5. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Vines on a Trellis	May to early June	Seed directly in garden	Many varieties. Suggestions include: cantaloupe, cucumbers, other melons, winter squashes. Look for insect and disease resistance.
Tomato	May	Transplants in garden	Any variety, but indeterminate cherry tomatoes will give best results.
Zucchini	May	Seeds directly in garden	Any variety.

JL-5. Alternative Plants for the Garden Plan

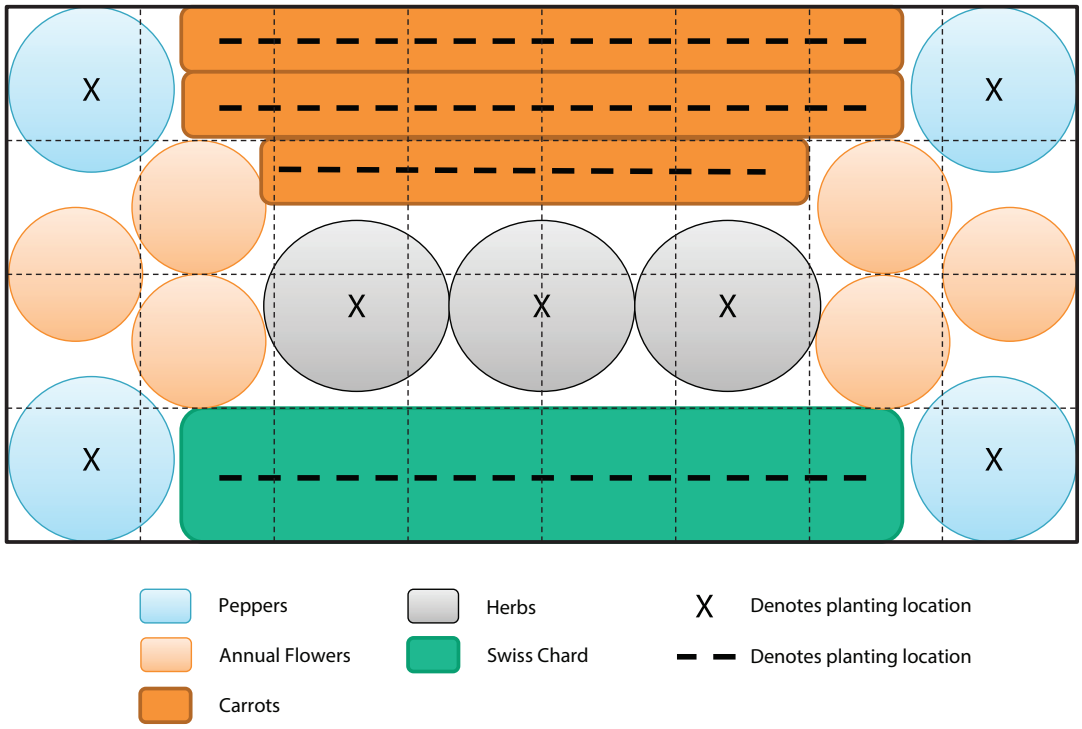
Vegetable	Alternative Plants
Vines on a Trellis	No comparable substitutes. If no trellis available, plant a single vine plant in the center of the designated space and allow to grow along the ground.
Tomatoes	cucumber or Malabar spinach on a trellis, pollenless sunflowers, zucchini, eggplant, amaranth, two peppers
Zucchini or Summer Squash	cucumber or Malabar spinach on a trellis, pollenless sunflowers, tomato, eggplant, amaranth, two peppers

JL-6

Moderately simple

Planted in March-May, with the intention of primary harvests occurring during June and July, although some harvesting could be done in May, before the end of the school year.

Flowers, herbs, peppers, and Swiss chard could continue into the fall.



JL-6. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Tomato	May	Transplants in garden	Any variety, but indeterminate cherry tomatoes will give best results.
Carrots	Late March to early April	Seeds directly in garden	Any variety.
Pepper	May	Transplants in garden	Any variety. Small fruited types are more productive. Sweet types are more popular with students.
Swiss Chard	March	Seeds directly in garden	Any variety, but shorter days to maturity preferred.
Annual Flowers	May	Transplants in garden	Many varieties. Suggestions include: Vinca, lantana, zinnias, celosia, gaillardia, gomphrena
Herbs	May	Transplants in garden	Any variety. Suggestions include: basil, thyme, oregano, agastaches, flowering sages, etc.

JL-6. Alternative Plants for the Garden Plan

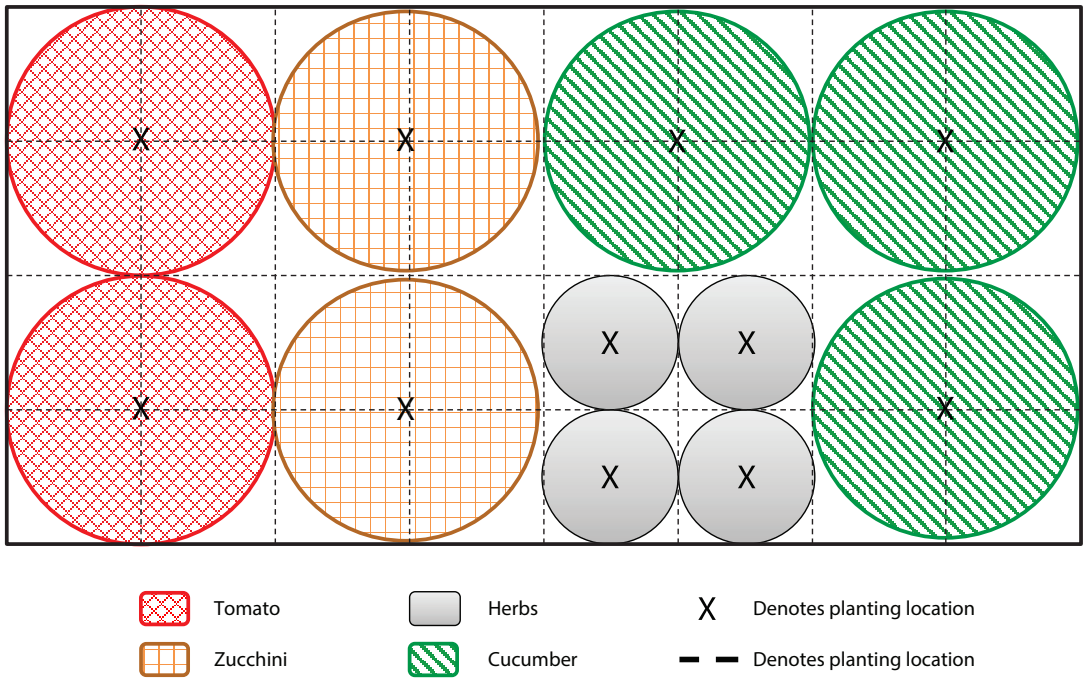
Vegetable	Alternative Plants
Tomato	cucumber or Malabar spinach on a trellis, pollenless sunflowers, zucchini, eggplant, amaranth, two peppers
Carrots	kohlrabi, purple top turnips, bulbing fennel, onions, beets, leeks
Pepper	herbs, kale, Swiss chard, pollenless sunflowers
Swiss Chard	kale, pollenless sunflowers, herbs, peppers
Annual Flowers	peppers, herbs, kale, Swiss chard
Herbs	annual flowers, kale, Swiss chard, peppers

JL-7

Moderately simple

Planted in March-May, with the intention of primary harvests occurring during June and July, although some harvesting could be done in May, before the end of the school year.

Tomatoes and herbs could continue through the fall. Zucchini and cucumbers could in some years.



JL-7. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Tomato	May	Transplants in garden	Any variety, but indeterminate cherry tomatoes will give best results.
Carrots	Late March to early April	Seeds directly in garden	Any variety.
Pepper	May	Transplants in garden	Any variety. Small fruited types are more productive. Sweet types are more popular with students.
Swiss Chard	March	Seeds directly in garden	Any variety, but shorter days to maturity preferred.
Annual Flowers	May	Transplants in garden	Many varieties. Suggestions include: Vinca, lantana, zinnias, celosia, gaillardia, gomphrena
Herbs	May	Transplants in garden	Any variety. Suggestions include: basil, thyme, oregano, agastaches, flowering sages, etc.

JL-7. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Tomato	cucumber or Malabar spinach on a trellis, pollenless sunflowers, zucchini, eggplant, amaranth, two peppers
Carrots	kohlrabi, purple top turnips, bulbing fennel, onions, beets, leeks
Pepper	herbs, kale, Swiss chard, pollenless sunflowers
Swiss Chard	kale, pollenless sunflowers, herbs, peppers
Annual Flowers	peppers, herbs, kale, Swiss chard
Herbs	annual flowers, kale, Swiss chard, peppers

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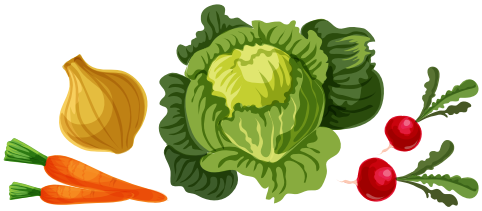
MF3590 March 2022



Low Maintenance Summer Garden Templates

Planting in the late spring or early summer.

How to Use the Garden Templates and Coordinating Tables

The templates are divided by growing season. Each template is designed to be a stand-alone garden plan. However, it may be possible to use multiple templates in the same garden space over the course of a year. In a larger garden, several templates could be used each year or even in each season. The templates are not designed to be the only way or even the best way to plant a garden for your specific school. The templates are a guide to get you started with some options for what to plant and when. As you gain experience and confidence from successes, you can adjust and adapt your planting plans as needed.

The layout of the garden templates was designed with several things in mind. Some templates prioritize diversity of plants and others prioritize simplicity. In many cases, the garden layout is not designed to be efficient or high yielding, but rather to allow for effective learning and hands-on activities to be done with various sizes of groups. Some templates are designed for visual interest and inciting wonder in children rather than maximizing the yield.

If your garden is used for middle school or high school age students, planning and designing their own garden layouts can be a critical part of the learning process. These templates could serve as great starting points for students to study plant spacing and planting times, but do consider having them develop their own plans, research different planting options, or develop alternatives to compare results.

Each template tells a little bit about how easy or difficult it would be to implement the garden, as well as what the expected planting and harvesting window would be for the template. Be sure to pay attention to whether a template requires pre-planting indoors or prior to the school year, purchasing plants, or other preparations. The complexity level indicated reflects both the difficulty of managing the planting times and the difficulty of implementing the layout of the garden.

After each template, there are two tables. The first table provides more information about the recommended planting time, how to plant, and short notes on choosing a good variety. The second table gives alternatives to substitute for each plant recommended in the template. This allows for each garden to be adjusted to meet the needs of the school or student group.

For more information about each recommended plant in the guide, refer to the "Notes on Plant Choices" section of this publication. This document will provide more guidance on planting and growing each

crop, choosing varieties to grow, things to watch for, and ideas about learning opportunities related to the various plants.

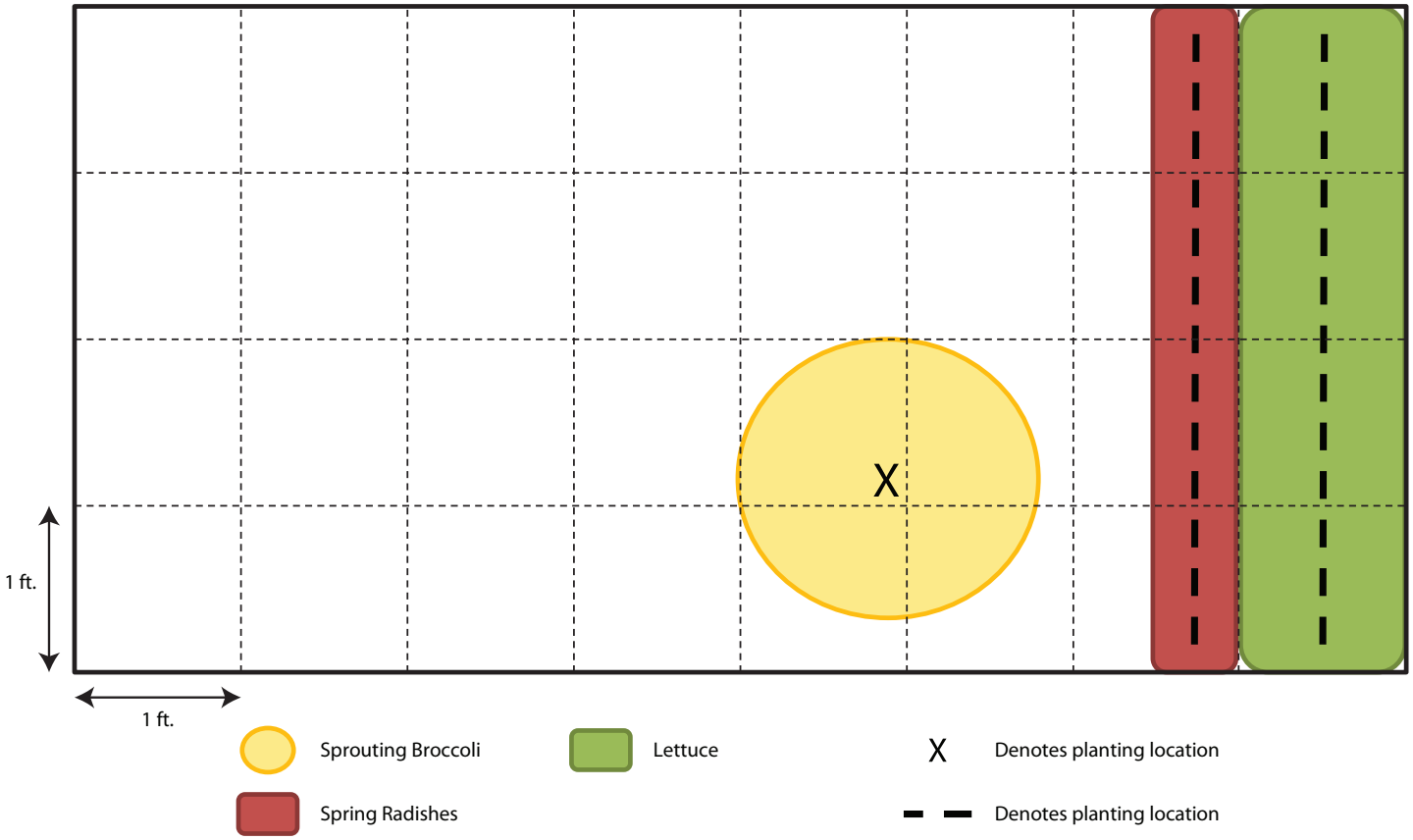
For tips on starting a garden and related resources, refer to the K-State Research and Extension publication, *Considerations and Curriculum Resources for School Garden Design in Kansas*, MF3589.

For lesson plans and educational activities, check out the chapter on "School Garden Curricula and Lesson Plan Options" in MF3589.

How to Read the Garden Templates

Each template is 4 feet by 8 feet. Each foot is marked by a gridline. A colored block that fills a whole square width is expected to be 1 foot wide, with the planting line denoted in the center of the block — allowing about 6 inches on either side of the planting location. A colored block that fills half a square is expected to be 6 inches wide, with planting in the center. These are typically where seeds are planted.

A circle or square with an "X" in the center will typically be where a single plant is transplanted. The plant will go on the "X," with the space of the circle or square the expected mature size of the plant. The key at the bottom shows what plants are planned for each space.



How to Read the Planting Schedule

Each template includes a Planting Schedule chart. This chart lists the ideal window when each type of plant should go into the garden. Bear in mind that every year is different from a weather standpoint, so a planting date that works well one year may not work as well in another year, especially at the extremes.

The planting type — either direct seeding in the garden or transplanting in the garden — is noted. In some cases, there may be special instructions for certain plants.

In the last column are some short variety notes. These notes are specific to the time of year and template, so may change from one chart to another. For more detailed information on variety selection for certain plants, refer to the "Notes on Plant Choices" section.

How to Read the Alternative Plants

Each template includes a chart of alternative plants. These are plants that have similar growth habits, spacing needs, and planting times to the plant originally indicated on the garden template. If there is a need to replace a particular plant with another option for whatever reason, this chart will help you determine which other plants you could consider.

In some cases, especially in the summer templates, there are few easy alternatives that have close characteristics to the original plant options. Alternatives may not need the exact same type of trellising or have slightly different planting dates. If you are unsure about a replacement plant, ask an experienced gardener for advice. Also refer to the "Notes on Plant Choices" section for more insight into certain types of plants.

Key-1. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Lettuce	Mid-Aug. to early Sept.	Seeds directly in garden	Any leaf, romaine, or butterhead type.
Spring Radishes	Mid-Aug. to mid-Sept.	Seeds directly in garden	Any variety < 35 days to maturity.

Key-1. Alternative Plants for the Garden Plan

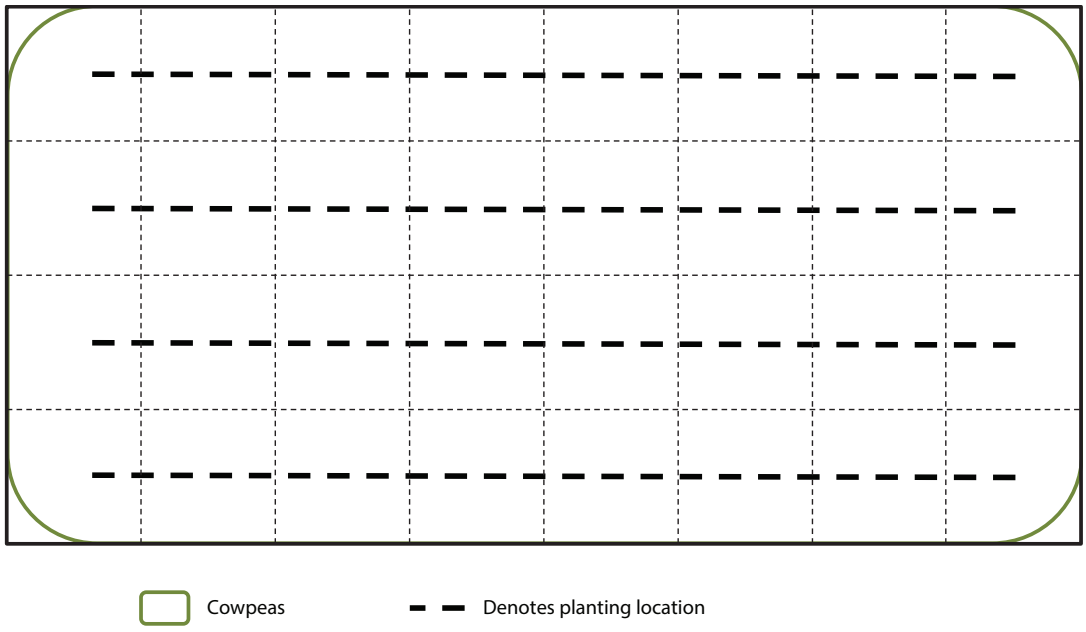
Vegetable	Alternative Plants
Lettuce	spinach, Chinese cabbage, mesclun, mizuna, mustards, arugula, kale, Swiss chard, bok choy
Spring Radishes	kohlrabi, salad turnips, purple top turnips, green onions (sets), pansies (purchased plants)

LMS-1

Very simple

Planted in May, near the end of the school year.

Minimal maintenance over the summer. Watering will vary depending on location and summer weather. Plants can be removed and composted before the school year starts or with students when school starts.



LMS-1. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Cowpeas	May to early June	Seeds directly in garden	Any variety. May want to look for eating varieties rather than forage varieties.

LMS-1. Alternative Plants for the Garden Plan

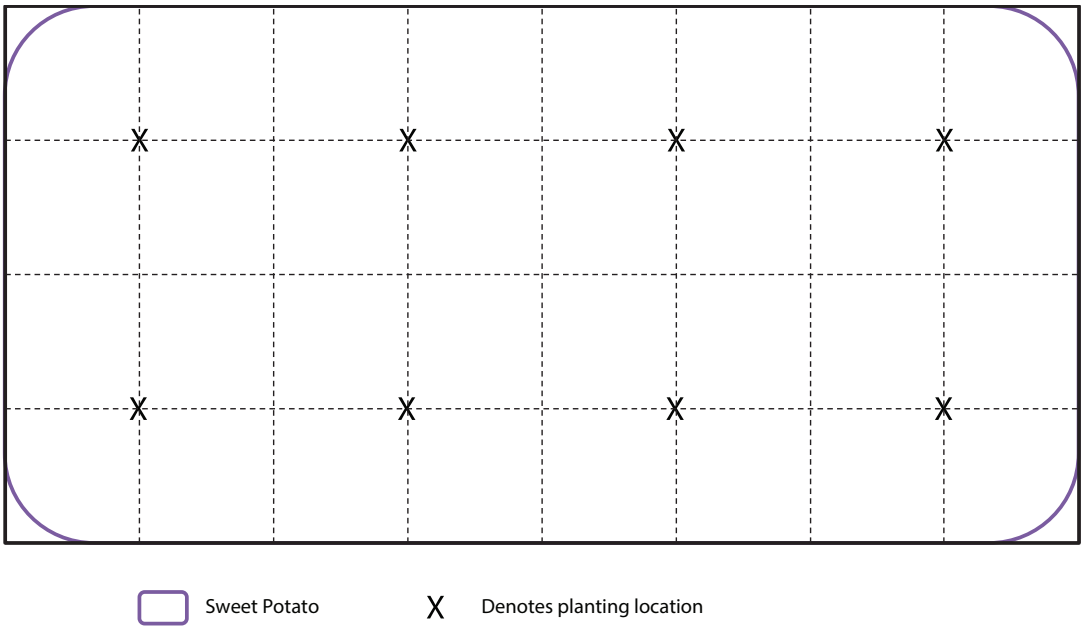
Vegetable	Alternative Plants
Cowpeas	sorghum, millet, amaranth, corn (not sweet corn), sesame, soybeans

LM-2

Very simple

Planted in May, near the end of the school year.

Minimal maintenance over the summer. Watering will vary depending on location and summer weather. Plants can be removed and composted before the school year starts or with students when school starts.



LMS-2. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Sweet Potato	May to early June	Plant from slips (cuttings) directly in the garden.	Any variety. Consider growing slips in the classroom from a sweet potato to plant.

LMS-2. Alternative Plants for the Garden Plan

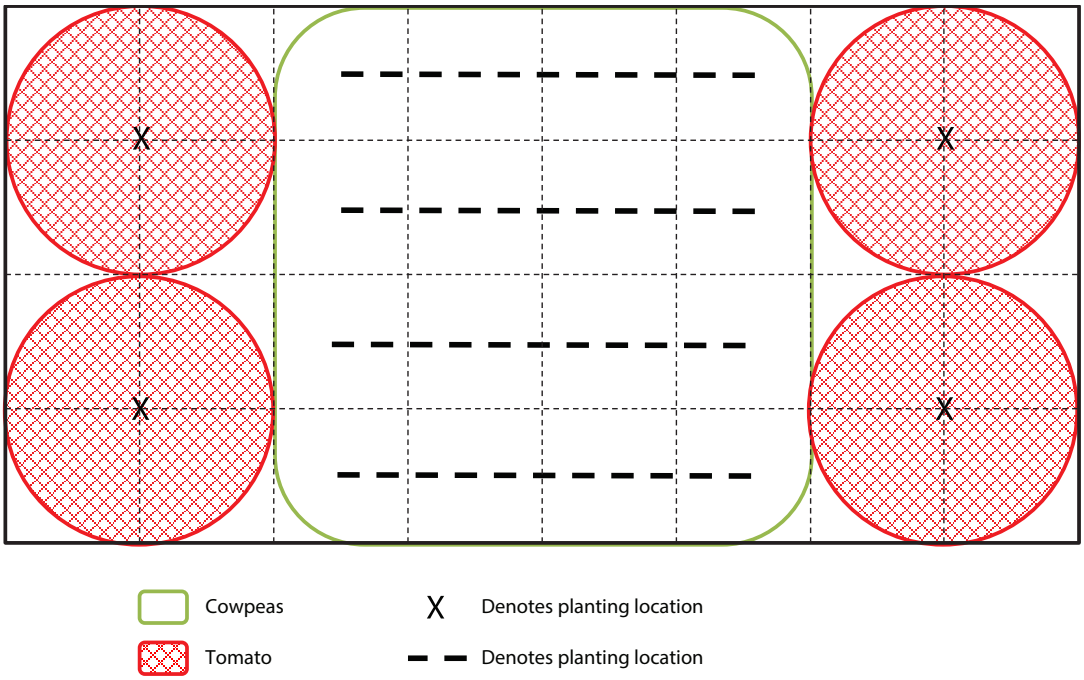
Vegetable	Alternative Plants
Sweet Potato	No comparable alternatives.

LMS-3

Very simple

Planted in May, near the end of the school year.

Minimal maintenance over the summer. Watering will vary depending on location and summer weather.



LMS-3. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Cowpeas	May to early June	Seeds directly in garden	Any variety. May want to look for eating varieties rather than forage varieties.
Tomato	May	Transplants in garden	Any variety, but indeterminate cherry tomatoes will give best results with low maintenance.

LMS-3. Alternative Plants for the Garden Plan

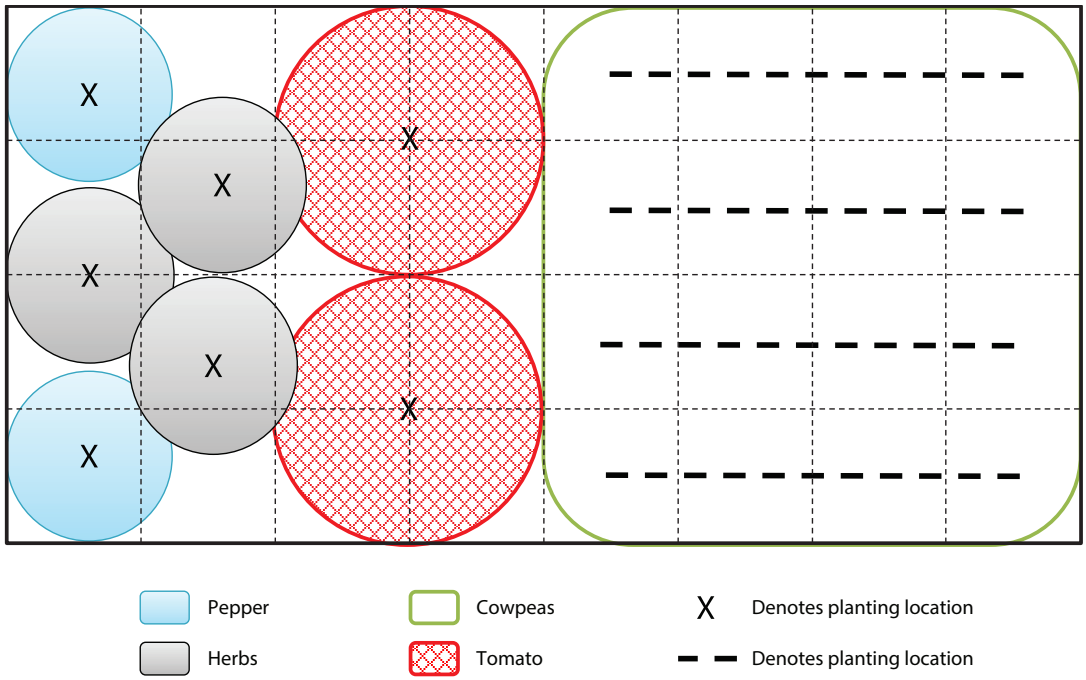
Vegetable	Alternative Plants
Cowpeas	sorghum, millet, amaranth, corn (not sweet corn), sesame, soybeans
Tomato	amaranth; malabar spinach grown on a tomato cage; a single tomato plant could be replaced with 2-3 pepper plants

LMS-4

Moderately simple

Planted in May, near the end of the school year.

Minimal maintenance over the summer. Watering will vary depending on location and summer weather.



LMS-4. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Cowpeas	May to early June	Seeds directly in garden	Any variety. May want to look for eating varieties rather than forage varieties.
Tomato	May	Transplants in garden	Any variety, but indeterminate cherry tomatoes will give best results with low maintenance.
Pepper	May	Transplants in garden	Any variety. Smaller fruited sweet or hot peppers are likely to give better results with low maintenance.
Herbs	May	Transplants in garden	Any variety. Suggestions would include basil, thyme, oregano, agastaches, flowering sages, etc.

LMS-4. Alternative Plants for the Garden Plan

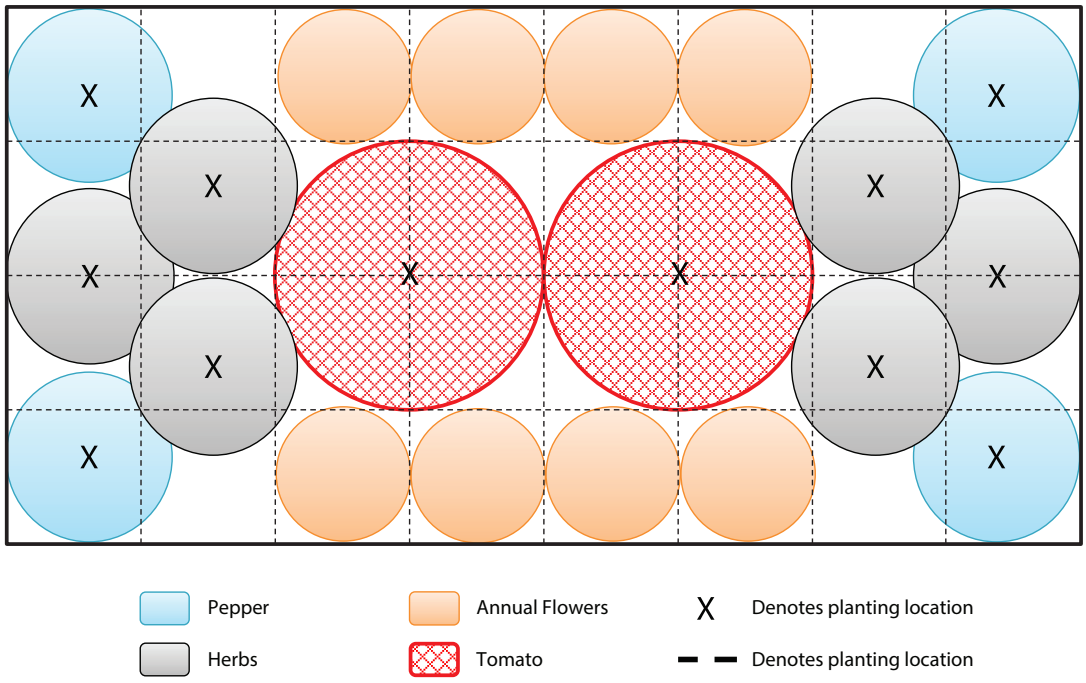
Vegetable	Alternative Plants
Cowpeas	sorghum, millet, amaranth, corn (not sweet corn), sesame, soybeans
Tomato	amaranth; malabar spinach grown on a tomato cage; a single tomato plant could be replaced with 2-3 pepper plants
Pepper	herbs, annual flowers, kale, Swiss chard
Herbs	peppers, annual flowers, kale, Swiss chard

LMS-5

Moderately simple

Planted in May, near the end of the school year.

Minimal maintenance over the summer. Watering will vary depending on location and summer weather.



LMS-5. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Tomato	May	Transplants in garden	Any variety, but indeterminate cherry tomatoes will give best results with low maintenance.
Pepper	May	Transplants in garden	Any variety. Smaller fruited sweet or hot peppers are likely to give better results with low maintenance.
Herbs	May	Transplants in garden	Any variety. Suggestions include: basil, thyme, oregano, agastaches, flowering sages, etc.
Annual Flowers	May	Transplants in garden	Many varieties. Suggestions include: Vinca, lantana, zinnias, celosia, gaillardia, gomphrena, begonias

LMS-5. Alternative Plants for the Garden Plan

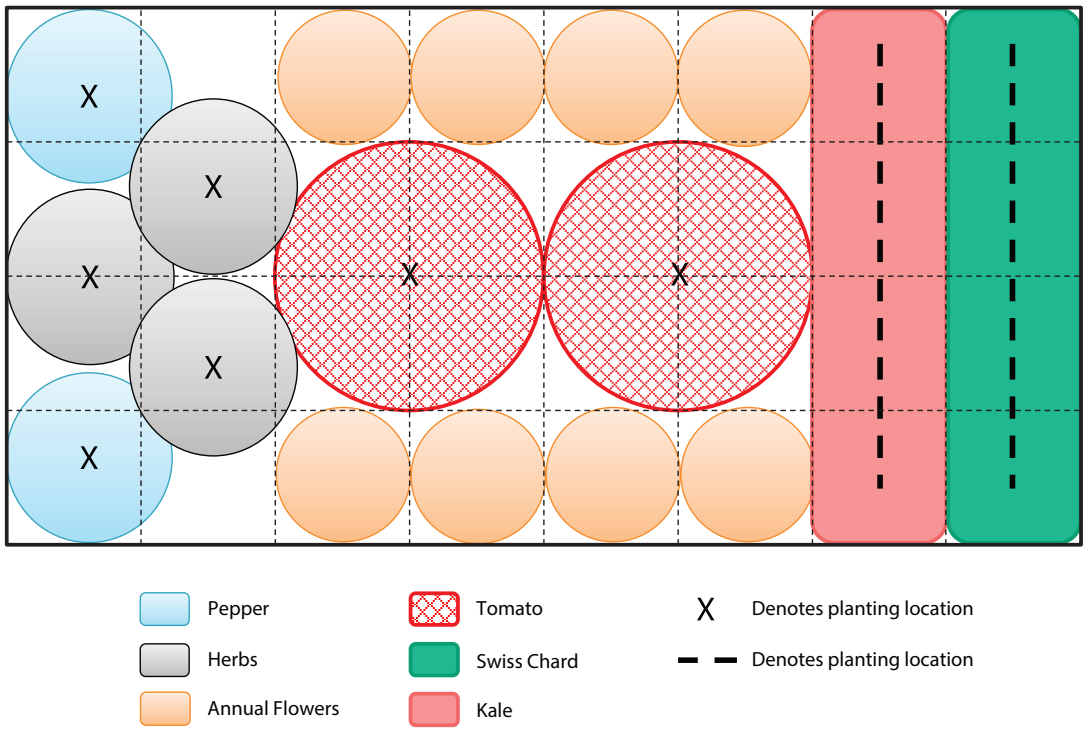
Vegetable	Alternative Plants
Tomato	amaranth; malabar spinach grown on a tomato cage; a single tomato plant could be replaced with 2-3 pepper plants
Pepper	herbs, annual flowers, kale, Swiss chard
Herbs	peppers, annual flowers, kale, Swiss chard
Annual Flowers	herbs, peppers, kale, Swiss chard

LMS-6

Moderately simple

Planted in May, near the end of the school year.

Minimal maintenance over the summer. Watering will vary depending on location and summer weather.



LMS-6. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Tomato	May	Transplants in garden	Any variety, but indeterminate cherry tomatoes will give best results with low maintenance.
Pepper	May	Transplants in garden	Any variety. Smaller fruited sweet or hot peppers are likely to give better results with low maintenance.
Herbs	May	Transplants in garden	Any variety. Suggestions include: basil, thyme, oregano, agastaches, flowering sages, etc.
Annual Flowers	May	Transplants in garden	Many varieties. Suggestions include: Vinca, lantana, zinnias, celosia, gaillardia, gomphrena, begonias
Kale	Mid-March to mid-April	Seeds directly in garden	Any variety.
Swiss Chard	Mid-March to mid-April	Seeds directly in garden	Any variety.

LMS-6. Alternative Plants for the Garden Plan

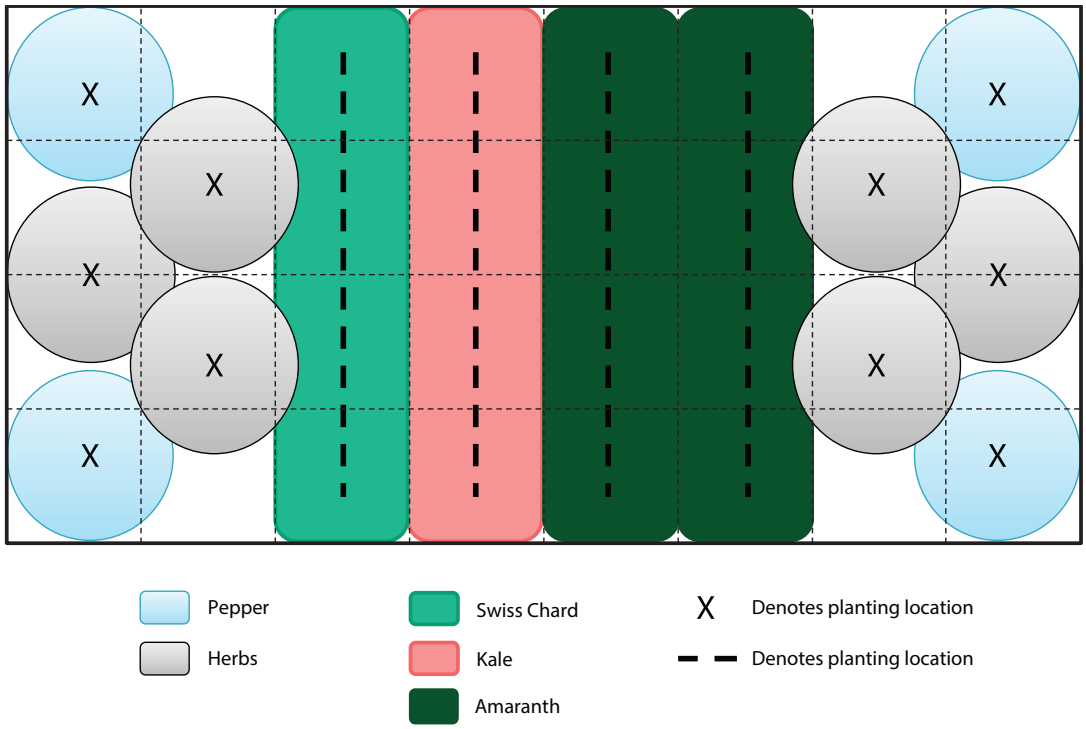
Vegetable	Alternative Plants
Tomato	amaranth; malabar spinach grown on a tomato cage; a single tomato plant could be replaced with 2-3 pepper plants
Pepper	herbs, annual flowers, kale, Swiss chard
Herbs	peppers, annual flowers, kale, Swiss chard
Annual Flowers	herbs, peppers, kale, Swiss chard
Kale	herbs, peppers, annual flowers, Swiss chard, carrots, fennel
Swiss Chard	herbs, peppers, annual flowers, kale, carrots, fennel

LMS-7

Moderately simple

Planted in May, near the end of the school year.

Minimal maintenance over the summer. Watering will vary depending on location and summer weather.



LMS-7. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Amaranth	May	Transplants in garden or seeds directly in garden	Any variety, but types with showy blooms will be more fun in the fall.
Pepper	May	Transplants in garden	Any variety. Smaller fruited sweet or hot peppers are likely to give better results with low maintenance.
Herbs	May	Transplants in garden	Any variety. Suggestions include: basil, thyme, oregano, agastaches, flowering sages, etc.
Kale	Mid-March to mid-April	Seeds directly in garden	Any variety.
Swiss Chard	Mid-March to mid-April	Seeds directly in garden	Any variety.

LMS-7. Alternative Plants for the Garden Plan

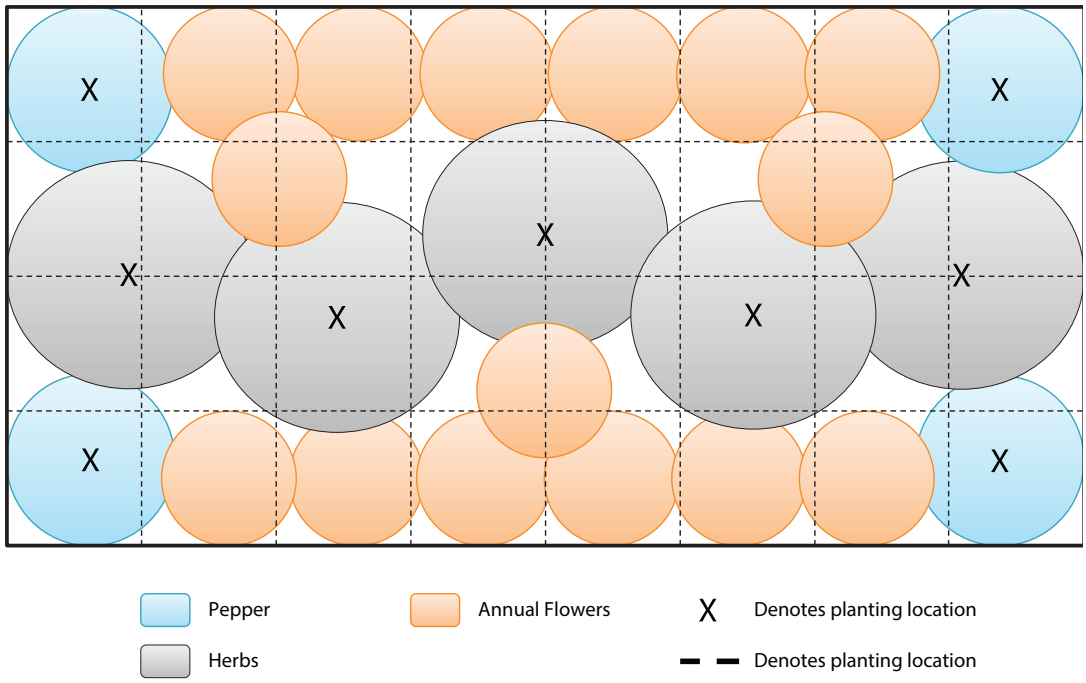
Vegetable	Alternative Plants
Amaranth	ornamental millet, larger herbs or annual flowers, popcorn, Malabar spinach on a trellis, sesame
Pepper	herbs, annual flowers, kale, Swiss chard
Herbs	peppers, annual flowers, kale, Swiss chard
Kale	herbs, peppers, annual flowers, Swiss chard, carrots (allowed to bolt), fennel (allowed to bolt)
Swiss chard	herbs, peppers, annual flowers, kale, carrots (allowed to bolt), fennel (allowed to bolt)

LMS-8

Moderately simple

Planted in May, near the end of the school year.

Minimal maintenance over the summer. Watering will vary depending on location and summer weather.



LMS-8. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Pepper	May	Transplants in garden	Any variety. Smaller fruited sweet or hot peppers are likely to give better results with low maintenance.
Herbs	May	Transplants in garden	Any variety. Suggestions include: basil, thyme, oregano, agastaches, flowering sages, etc.
Annual Flowers	May	Transplants in garden	Many varieties. Suggestions include: Vinca, lantana, zinnias, celosia, gaillardia, gomphrena, begonias

LMS-8. Alternative Plants for the Garden Plan

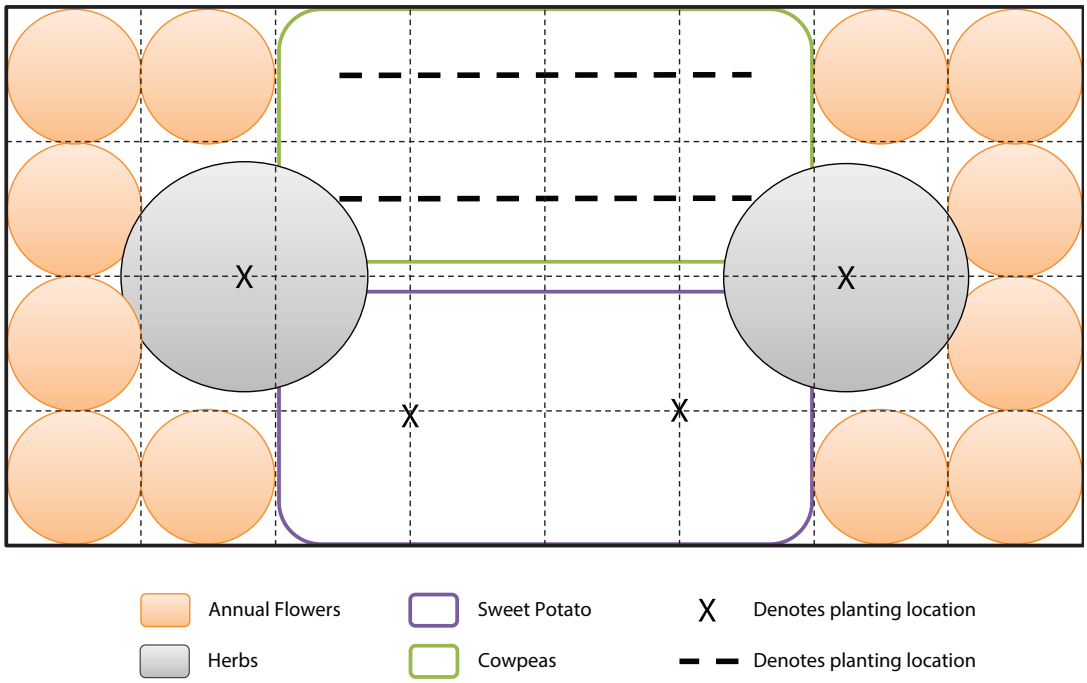
Vegetable	Alternative Plants
Pepper	herbs, annual flowers, kale, Swiss chard
Herbs	peppers, annual flowers, kale, Swiss chard
Annual Flowers	peppers, herbs, kale, Swiss chard

LMS-9

Moderately simple

Planted in May, near the end of the school year.

Minimal maintenance over the summer. Watering will vary depending on location and summer weather.



LMS-9. Planting Schedule and Information

Vegetable	Planting Range	Planting Type	Variety Notes
Sweet Potato	May to early June	Plant from slips (cuttings) directly in the garden.	Any variety. Consider growing slips in the classroom from a sweet potato to plant.
Cowpeas	May to early June	Seeds directly in garden	Any variety. May want to look for eating varieties rather than forage varieties.
Herbs	May	Transplants in garden	Any variety. Suggestions include: basil, thyme, oregano, agastaches, flowering sages, etc.
Annual Flowers	May	Transplants in garden	Many varieties. Suggestions include: Vinca, lantana, zinnias, celosia, gaillardia, gomphrena, begonias

LMS-9. Alternative Plants for the Garden Plan

Vegetable	Alternative Plants
Sweet Potato	No comparable alternative
Cowpeas	sorghum, millet, amaranth, corn (not sweet corn), sesame, soybeans
Herbs	peppers, annual flowers, kale, Swiss chard
Annual Flowers	peppers, herbs, kale, Swiss chard

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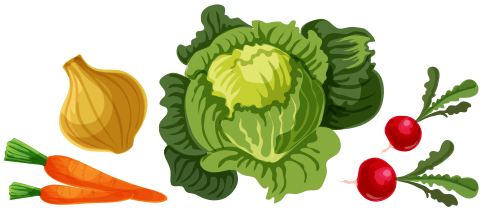

Plant Choices and Learning Connections

General Comments

The garden plans are quite general to provide the maximum amount of latitude for the teacher or garden coordinator. Likewise, the discussion of varieties is very general, as well, because there may be a wide range of availability across the state. That said, the more diversity that can be included in a garden, the more opportunities you and your students will find for learning and discovery. It is comfortable to plant green leaf lettuce and orange carrots. The joy and wonder of planting lettuce in multiple colors and textures, carrots of different shapes, colors, and sizes, will yield a much greater harvest than just food. In this section, there is both practical advice for success as well as considerations for choices that might yield more learning outcomes for you and your students.

Some Words to Know

Here are a few horticultural terms that you may find helpful as you read through this guide.

Days to maturity

This term refers to the number of days from planting to the expected first harvest of a particular plant. If the crop is typically planted directly in the garden from seed, that number refers to growing days from seed. If the crop is typically planted into the garden with an already growing seedling plant (transplanted), the number refers to the growing days from transplant date. Most seed packets, catalogs, and plant labels will include a days to maturity number, sometimes written as "75 days" or similar.

Bolting

Bolting is a term for when a plant, usually a leafy green or root vegetable, sends up a flower stalk, flowers, and sets seed. When a leafy green or root vegetable bolts, it usually loses edible quality by either increased bitterness or toughness. Often this is caused by hot temperatures or weather fluctuations. Because Kansas often experiences weather fluctuations in both spring and fall, including unseasonable heat, it is often a good choice to look for leafy greens and root vegetables that indicate they are "slow to bolt," "bolt-resistant," or "heat tolerant."

Brix Level

Brix is a measure of dissolved solids in a liquid. It is especially used to measure dissolved sugars in fruits and vegetables. For many crops, a higher Brix level is equated with higher quality and better flavor.

Leafy Greens

Most of the planting guidelines for leafy greens found in the garden plans call for planting seeds directly in the garden. This is the simplest option with the least need for pre-planning and will yield good results for most gardens, simply because leafy greens can be harvested and eaten at virtually any stage of development.

However, if the option exists to start the seeds indoors (ideally under lights) at least 4 to 6 weeks before the normal outdoor planting date, it will result in larger plants when it is time to harvest, especially if the window for gardening is relatively short in either spring or fall. The plants will also likely be spaced better and be able to develop their characteristics shapes and colors. Any time outdoor seeding of a leafy green is recommended, it is possible to start those seeds indoors 4 to 6 weeks in advance and transplant instead.

Lettuce

Lettuce is one of the most versatile vegetables for a school garden. In Kansas, most varieties will be successful if planted at the right time. Avoid iceberg type head lettuces, as the growing season is typically not long enough for head development. Leaf, romaine, butterhead, and other types that either form loose heads or no heads can be good choices. There are dozens of choices for lettuce varieties, ranging from the slightest tinge of reddish-brown to dark mahogany on the red side and from lime green to forest green on the green side. There are also increasing choices for highly frilled leaves, oakleaf shapes, sword shapes, and soft butterheads. Planting at least one red and one green lettuce, with different leaf textures, adds a lot of beauty and visual interest to a garden.

Learning Connections

- Lettuce will not reliably overwinter in Kansas without some protection. Many varieties will perform well under row covers or low tunnels into the winter. However, there is a lot of variation between different types and varieties of lettuces. A simple activity could be to leave several heads of different types of lettuce outdoors in the garden all winter with different types of protection and see what (if anything) is still alive come spring.
- Another learning opportunity is to observe the changes in growth habit, leaf thickness, flavor, and color as the weather gets cooler in the fall or warmer (hotter) in the spring.
- Consider planting the same variety of lettuce at two-week intervals throughout the spring or fall. Record the soil and air temperatures daily and observe the growth habits and patterns of the earlier versus later planted sections.

Spinach

The main choice when it comes to spinach is looking for a variety that indicates it will overwinter well (for fall planting) or that it is highly bolt-resistant (won't go to seed) for spring planting. The other consideration is between smooth leaves and savoy (crinkly).

Planting Spinach

Spinach is one of few leafy greens that does not respond well to transplanting. It is certainly possible to transplant, but it will not perform as well as other leafy greens. This is also the leafy green that can be most successfully planted very early in the spring or very late in the fall with some expectation of success.

Learning Connections

- Consider planting the same variety of spinach at two-week intervals throughout the spring or fall. Record the soil and air temperatures daily and observe the growth habits and patterns of the earlier vs later planted sections.
- Spinach can reliably overwinter with minimal protection outdoors in much of Kansas, depending on the winter weather. It is a great lesson about the resiliency of plants. Spinach will also get much sweeter as it gets colder, which can be a new tasting adventure for students. Overwintered spinach will also tend to become infested with aphids as the weather warms up in

the spring, and the aphids are often followed by ladybugs looking for a feast — a wonderful opportunity to talk about life cycles and food chains!

- With older students, if you have access to a handheld refractometer in the science lab, you could test the Brix (sweetness) levels of the leaves at different times throughout the fall as it gets colder. Press leaves in a garlic press, then use cheesecloth to strain the pulp to get the juice for use in the refractometer. *https://ohioline.osu.edu/factsheet/hyg-1653*

Bok Choy

Also known as Pac Choi, and several other spellings. This Asian leafy green brings a very different look and texture to the garden, with vase-shaped plants, thick crunchy stems, and spoon-shaped leaves. You can find varieties that have green or white stems and green or red leaves. Variety options also range from 4 to 6 inches tall to 15to 18 inches tall. The crunchy stems can be eaten like celery, and the young leaves are often used fresh in salad mixes.

Learning Connections

- A member of the Brassica family, bok choy can sometimes become a favorite of both flea beetles and cabbageworms or loopers. If holes start appearing in the leaves, it would be a great time for a scavenger hunt!

Chinese Cabbage

Chinese cabbages come in both non-heading leaf-types and the more common heading Napa types. Heading types are both green and red. Quick to germinate and start to form heads, they can be a good choice for a school garden. The heading types have very crinkled leaves and wide, white stems. The interior of the heads will blanch, turning the leaves yellow or bright pink. Even if the heads do not have time to form, the leaves can be harvested for salad or coleslaw at almost any stage.

Learning Connections

- The natural blanching characteristics of the heads can yield a good opportunity to talk about photosynthesis and chlorophyll. The quick head development can also provide opportunities to compare the rate of growth in different varieties, including measurement of the heads as they grow.
- A member of the Brassica family, Chinese cabbage can sometimes become a favorite of both flea beetles and cabbageworms or loopers. If holes start appearing in the leaves, it would be a great time for a scavenger hunt!

Mizuna

This mild-flavored mustard green has become common in many salad mixes. Its leaves have a characteristic oakleaf shape. It is also very quick to germinate and grow, reaching harvestable size in as little as 21 days and full size in as little as 40 days. There are several varieties available, including green and purple types, as well as types with pink stems and green leaves.

Learning Connections

- A member of the Brassica family, mizuna can sometimes become a favorite of both flea beetles and cabbageworms or loopers. If holes start appearing in the leaves, it would be a great time for a scavenger hunt!

Arugula

A peppery, strong-flavored green that is either loved or hated by adults — and usually hated by children! However, as a fast growing green with interesting leaf shapes and a very distinctive flavor, it is worth considering, especially with older children or if there is a culinary learning component to the garden. In the spring, as the weather warms quickly in late April and May, some varieties may bolt (send up a flower stalk).

Learning Connections

- If the plants bolt (flower) in the later part of the spring, there will be opportunities to talk about reproduction and pollination, reactions to the environment, as well as genetic differences if some plants bolt and others do not.
- If there is a culinary learning component to the garden, this green provides a strong flavor profile that is hard to find elsewhere. It is also worth noting that the flowers are also edible and can be used in cooking.

Swiss Chard

This leafy green is a member of the beet family and the young leaves will have a similar look and flavor to beet greens. It can be grown and harvested young as a fresh salad green or allowed to grow to maturity. While it does not seem like this green would be a great choice for children, the visual impact and heat tolerance both make this green worth considering. Most varieties of Swiss chard are mixes that include brightly colored stems of pink, red, white, orange, and yellow. A swath of mixed chard grown to full size is visually stunning.

The other benefit to Swiss chard is that it is very heat tolerant and can grow through the summer with a little bit of water. Depending on the year, the leaves may have some foliar diseases or insect feeding damage. Removing old leaves will usually allow new, healthy leaves to grow from the crown.

Depending on the winter, with mulching, the crown can survive the winter and put on new growth in the spring.

Learning Connections

- The different colors can provide plenty of scope for art and science. The large mature leaves can be used for wraps in cooking.
- In some years, Swiss Chard can be enjoyed by a wide variety of insects and also birds. If you are seeing holes in the chard leaves, try sneaking up to the garden quietly to see if birds fly away from your chard plants.

Kale

Kale is another love-to-hate green. There are several types of kale – both red and green. The highly curled types of red and green kale can be stunning in the fall and will continue into the winter with minimal protection. The grey-green Lacinato or "dinosaur" kale is favored for the best flavor, but may not be quite as cold hardy. There are also non-curled Russian types of kale that have more tender leaves than the curled types.

Kale can be harvested and eaten fresh or cooked at virtually any size. Baby leaves can be harvested as early as 21 days after planting, but the plants will continue to growth through the spring and summer and into the fall. Red kales will develop better color as the weather gets cold. All kale will get sweeter as it gets colder.

Learning Connections

- Some years, kale can become infested with an insect called the Harlequin Bug. This colorful true bug has an incomplete metamorphosis life cycle, in contrast to many of the popular insects that experience complete metamorphosis. The insects are most prevalent in the summer, so kale that is allowed to grow over the summer might be the best option for getting some to show up.
- As kale has become popular for its healthfulness, new recipes have also been developed. A common recipe to make with children is "kale chips," made by baking the individual leaves in the oven until crispy and then seasoning them.

- With older students, if you have access to a handheld refractometer in the science lab, you could test the Brix (sweetness) levels of the leaves at different times throughout the fall as it gets colder. Press leaves in a garlic press, then use cheesecloth to strain the pulp to get the juice for use in the refractometer. *https://ohioline.osu.edu/factsheet/hyg-1653*

Mustards

Mustard greens may be primarily familiar in growing larger leaved varieties for braises or sautés. Those types of mustard greens will do well in Kansas, but there are more options. In recent years, new mustard varieties have been developed primarily for harvest and consumption at the baby leaf stage in salads. These varieties may be red and green as well as highly frilled and lobed. Some are spicier than others. They all grow quickly and add beautiful color and texture to the garden. They are not as cold tolerant as some of the other leafy greens can be.

Learning Connections

- If the plants bolt (flower) in the later part of the spring, there will be opportunities to talk about reproduction and pollination, reactions to the environment, as well as genetic differences if some plants bolt and others do not.
- If there is a culinary learning component to the garden, this green provides a strong flavor profile. It is also worth noting that the flowers are also edible and can be used in cooking.

Collard Greens

Collards are similar to cabbage and kale in certain ways, but do not form the tight heads that we would expect from cabbage. Because they are loose leaf, they can be harvested and eaten at any stage. While they can be grown in both spring and fall, the flavor and sweetness of the leaves will be superior if grown in the fall and allowed to stay in the garden through light frosts and freezes. Most sources will just have some basic green varieties. If you search out some southern heirloom seed sources, you will find more variation in what is available, including purple veins, white variegation, and resistance to cabbageworms.

Learning Connections

- With older students, if you have access to a handheld refractometer in the science lab, you could test the Brix (sweetness) levels of the leaves at different times throughout the fall as it gets colder. Press leaves in a garlic press, then use cheesecloth to strain the pulp to get the juice for use in the refractometer. *https://ohioline.osu.edu/factsheet/hyg-1653*
- Collards are extremely cold tolerant, but there are still differences between different varieties. Record temperatures in the late fall to early winter and observe damage and continued growth to different varieties.
- Have students research and study the culinary and cultural history of collard greens in the American South. Consider trying some different varieties to compare. *https://heirloomcollards.org/*

Root Vegetables

The majority of the most common root vegetables are planted by seed directly into the garden, and most of the seeds are quite small, making them a challenge for small fingers. Unlike leafy greens, which will produce reasonably well even when crowded, root vegetables will not develop as well if crowded too much. While thinning overcrowded plants can be a great activity for older students, it is a lot to expect for younger students (and their teachers)! One recommendation for easing the way with these seeds is to create seed tapes in the classroom on a rainy day (or have an older classroom assist). Seeds can be glued onto strips of toilet paper with white school glue, using various measurement tools to assist in the spacings. Then the seed tapes can be planted out in the garden in the desired location with much more ease and expectation of growing success.

A few of the plants in this section can be started by seed indoors and transplanted. Those are noted below.

With the exception of spring radishes, which are very quick maturing, many root vegetables will struggle to mature fully in the time available during the school year. Planting in late July before school starts will allow for a longer growing season that will give full size or closer to full size vegetables by late fall. Planting in mid- to late August will not always give full size vegetables by the end of the growing season, nor will planting in mid- to late March produce full size roots by the end of the school year. However, most root vegetables will be perfectly edible at any size, even very small sizes.

While many root vegetables (turnips, beets, radishes) are unpopular with adults, let alone children, they also can be great choices for school gardening activities because of the diversity of colors, speed of growth, and cold hardiness.

Beets

After some of the leafy greens, beets are probably the least popular vegetable with children. However, the diversity of types of beets as well as the color in the stems and leaves can make them a great visual choice for a garden. Don't stop with just red beets, but consider gold, white, and candy stripe beets that all have sweeter flavors than traditional red beets. They also have the benefit of lacking the finger- and clothing-staining red juice!

Beets are tasty at all sizes, and the tops are also edible. If watered regularly, it is possible that a spring planting of beets may last all the way until the start of the school year, although they roots may get tough or pithy.

Learning Connections

- Beets are unique in that the seeds are multi-germ, meaning that each "seed" will grow multiple plants. Different varieties and colors show different seedling vigor and number of seedlings per seed. This could lend itself well to an activity with older children that already understand that one seed typically grows a single plant.
- Beets are often used as a natural dye and could add a lot to art or social studies lessons. Culinarily, there have been many recipes developed beyond the typical beet dishes you may be familiar with. Consider introducing a beet smoothie or beet ice cream as a way to get students to try the beets.

Carrots

Without question, carrots are the most popular root vegetable with children, and the one they most likely are willing to eat. There is also nothing like harvesting carrots with a group of children, when you go from the frilly green tops to seeing (what you hope) is a beautiful carrot. Don't just stick with orange carrots. Now there are many excellent varieties in red, yellow, white, purple, and black-purple to consider.

The challenge with growing carrots in a school garden is two-fold. The first is that many varieties take 60 to 80 days to mature — longer than is typically available in a school garden, unless you plant before school starts in the fall or have a use for harvest in June to July. The best solution to this dilemma is to either choose varieties that mature in 40 to 55 days (usually smaller varieties) or to simply harvest early when the carrots are still baby size (2 to 4 inches long). The other challenge is that carrot seeds are very small and can be difficult to get started, especially in the mid- to late summer for a fall crop. Frequent watering and straw mulch can help overcome these challenges for fall plantings.

Carrots will also successfully overwinter in a Kansas garden if they are mulched as it gets cold. Look for varieties that are specifically recommended for fall planting, winter harvest, or overwintering.

Learning Connections

Non-orange carrots can be more prone to bolting (flowering) than orange varieties, especially if planted in the spring. The carrot is typically no longer edible at that point, but it can be worth it to leave these plants in the garden, even through the whole summer. The result will be a 3- to 4-foot tall plant with multiple branches of umbel-shaped white flowers that will attract hordes of pollinators, flies, and beneficial insects by the time school opens again in mid-August.

Carrots not only come in a variety of colors, but the roots grow in a variety of different shapes and sizes as well. If it is possible to plant multiple different varieties, there will be many opportunities to taste test, practice measurement, and even measure sweetness using refractometers.

Fennel, Bulbing

Fennel doubles as both an herb and a root vegetable, depending on the variety chosen. For bulbing fennel, the variety will say that it develops a white bulb on top of the soil. The entire plant, including the flowers and seeds are edible, so even if the bulb doesn't fully develop the plant is usable.

If planted in the spring, fennel can be left in the garden and allowed to flower and set seed over the summer and into the fall. It will continue to grow with minimal care. If planted in the fall, the fennel may survive the winter with a little bit of mulch around the crown, and then it will flower and set seed in the spring.

Planting Fennel

Fennel can be successfully started indoors and transplanted outside. The benefit of doing this in the spring is that it can increase the maturity of the plant by the end of the school year. The benefit of transplanting in the fall is that the larger plants can withstand a bit of caterpillar feeding that young seedlings would not tolerate.

Learning Connections

- With the ease of growing the plant through its entire life cycle in a single growing season, this plant is a good choice to use to discuss life cycles of plants. Another benefit is that fennel is a major food source for the swallowtail butterfly caterpillars. By having fennel in the garden from spring through fall, the chance of finding caterpillars and butterflies increases significantly.
- Bulb fennel is common in traditional Italian cuisine, but is very uncommon in the U.S. Raw, it has a mild anise flavor and a crunch like celery. Roasted it becomes even more mild. The leaves and flowers can also be used as herbs in salads, dressings, or marinades.

Garlic

Garlic is easy to plant and grow, and has the benefit of being planted in the fall of the school year and harvestable (even if not fully mature) before the end of the school year. There are hundreds of varieties of garlic available, so it can be difficult to choose. Hardneck varieties tend to perform best in Kansas, although some softneck types will also grow well. Depending on your budget and learning objectives, you may be just as happy buying a few heads of garlic from the grocery store and planting them rather than spending time and energy researching varieties. However, be sure to purchase organic heads because they haven't been treated with anti-germination chemicals and will likely grow better.

Planting Garlic

Garlic should be planted in October, although it can be planted in late September or early November if needed. Each head of garlic should be divided into individual cloves (with the papers left on), and planted with the flat end down and the pointed end up. You should see some growth in the fall, but the quick growth will occur as the weather warms in the spring.

Learning Connections

- Garlic is a monocot and could be used in botany lessons about monocots and dicots.
- The cloves could be dissected with students to see the where the roots start to grow and also where the leaf shoots are developing. This will also help with understanding the planting orientation of the cloves. Garlic cloves can easily be planted close together in pots in the classroom and then pulled out for further dissection and study once they have been growing for 2-3 weeks.
- Plant garlic at different spacings or with different fertilizer regimens (best paired with a soil test) to observe differences in growth and productivity over a longer period of time. (This is similar to activities recommended with radishes or turnips below, but will take the entire school year to finish.)
- The different varieties of garlic and the social and botanical history behind them could be used as possible connections to other topics with older students.

Kohlrabi

Another uncommon root vegetable, the "bulb" develops above ground (actually a swollen stem), with the leaves growing out of it. This gives it a rather space alien type appearance, which can be a hit with kids. There are both purple and green varieties, including some green types that can grow to be about 2 pounds. A member of the cabbage family, it is sweet and mild. It can be eaten both raw and cooked.

Planting Kohlrabi

Kohlrabi can be successfully started indoors and transplanted out into the garden, both in spring and fall. The benefit of transplanting is that the plants will be able to mature faster and get larger in either growing season. It can also be seeded directly into the garden.

Learning Connections

- Because of the mild, sweet flavor and crazy appearance, this may be a vegetable that more children are willing to give a first taste to. It can be fun to pair it with apple slices.
- A member of the Brassica family, kohlrabi can sometimes become a favorite of both flea beetles and cabbageworms or loopers. If holes start appearing in the leaves, it would be a great time for a scavenger hunt!

Leeks

Leeks are a less familiar cousin of onions. They do not develop bulbs, but have straight, white stalks and large, flat, blue-green leaves. While not necessarily a vegetable that would be of great value with younger students beyond the visual appeal, it would be a great addition with older students or in partnership with a culinary program. Leeks are also monocots, a nice change from the majority of garden plants.

The other benefit of leeks is that they are very cold tolerant and can be easily overwintered by mounding them with straw.

Planting Leeks

While leeks can be planted by seed directly into the garden in the fall, they will be more successful when transplanted. It is possible to find commercially produced transplants, primarily for spring planting, which will give them a significant jump in the spring. If starting your own plants from seed indoors, they should be started as early as January for spring planting and in June for summer/fall planting. If seeding directly in the garden, plan to harvest when they are not fully developed or let them overwinter and finish growing in the spring.

Learning Connections

- Leeks develop the long white stalk through a process called "blanching" — hilling or mounding around the plants with soil or straw to exclude sunlight. This is an opportunity to talk about photosynthesis and chlorophyll with a hands-on project. Students could also experiment with other materials that could be used for blanching the stalks and see what works the best or has negative effects.

Potatoes, Irish

See the Tomato Family section

Onions and Green Onions

Onions and green onions are common vegetables that will be familiar to most students. They also have the benefit of a very different planting mechanism than most other vegetables, and a leaf type/appearance that is very different from other plants in the garden. Onions are also monocots, which is a nice change from other vegetables and can lend itself to some botany activities.

Because Kansas is in the middle of the country, finding good choices for onion varieties can be a bit tricky. Varieties that perform well further north or south do not necessarily perform well here. For best success, look for varieties that are labelled as "intermediate day" or "day neutral." Onions are available as red, white, and yellow. Some varieties will be sweeter than others.

Planting Onions

While it is possible to plant onions from seed, the Kansas growing season does not lend itself well to planting from seed unless you start them very early indoors. Most onions grown in Kansas are planted either from commercial transplants or from "sets." Sets are small, immature onion bulbs that were stored dormant and can be replanted to continue growing. Both transplants and sets can be used to grow either green onions or full-size onions. However, it is usually easier to purchase specific varieties of transplants. Sets will always successfully grow green onions, but occasionally may not produce large onions depending on the variety.

Learning Connections

- As one of the most common monocots grown in a vegetable garden, consider using onions when learning about monocots and dicots.
- Because of the day-length difference in how onions perform in different regions of the country, it might be a fun project for older students to try planting onions that are recommended for different regions in Kansas to see what happens to each type. (Onions that produce bulbs during long days of summer are typically grown in more northern states. Onions that produce bulbs during the shorter days of winter are typically grown in more southern states.)
- If there is a culinary component to the garden, onions are a key cooking ingredient. Onion skins are also commonly used in natural dyes.

Radishes, Spring

Spring radishes are what most people are familiar with as radishes – colorful round roots about 1" in diameter that can have a bit of heat to them. While not popular for kids to eat, they can be fun to grow and harvest. They usually go from seed to harvest in about 30 days or so, and come in a rainbow of colors. They are also very cold tolerant, which means that it is easily possible to get a crop — or even two or three — during both the spring and the fall gardening seasons.

Learning Connections

- Consider planting the same variety of radish at two-week intervals throughout the spring or fall. Record the soil and air temperatures daily and observe the growth habits and patterns of the earlier versus later planted sections. Do they take the same number of days to mature or is it different?
- Plant sections of radishes at different spacings and then observe the differences in growth and final root quality and size.

Radishes, Fall

Fall radishes are much less common for the average American gardener (or even vegetable eater). They encompass several heirloom types of radishes as well as daikon radishes. Fall radishes are very large compared to spring radishes and usually have a milder flavor. Daikon radishes are very large, long, white roots that are very sweet and mild. There are some purple-fleshed varieties now as well. Other types of fall radishes include "watermelon" or "red meat" radishes that have hot pink interiors that are very sweet in flavor (as long as you avoid the green skin), and Black Spanish varieties, which can be very spicy.

Learning Connections

- If you choose some of the radish varieties that have colored interior flesh, in most cases you will find opportunities to discuss genetics and genetic variation. Most of these varieties are not 100% uniform hybrids, but rather open-pollinated varieties that still have differences. In addition, weather and planting locations can impact the coloration of the roots. Watermelon radishes planted from a single packet of seeds can have interior coloration ranging from a faint pink star-burst to a completely solid dark pink.
- If your garden is paired with a culinary learning experience, fall radishes offer an opportunity to explore how different cultures make use of a single vegetable in different ways.
- Some types of fall radishes are also commonly used as cover crops — primarily the large oilseed radishes. This is an opportunity to tie in soil conservation, life cycles, and the soil food web to your learning.

Shallots

Shallots are milder cousins of onions that are planted like garlic. The other interesting part about shallots is that they traditionally start from a single bulb and produce a clump of shallot bulbs by the next spring. In comparison, traditional onions only produce a single bulb per plant. Garlic will grow similarly, in that you plant a single clove and end up with a full head of garlic. The difference is that the shallots are separate bulbs by harvest.

Planting Shallots

Plant individual bulbs or "sets" in October. You should see some growth in the fall, but the quick growth will occur as the weather warms in the spring. You can find shallot seed, but it is best to plant from sets or transplants.

Learning Connections

- Because the shallots look and smell a lot like onions, it could be an interesting activity to have students predict what the harvest will look like — will there be a single large bulb? 100s of tiny bulbs? How many?
- Shallots are popular in culinary circles because they have similar flavors to onions but are much milder. Consider including shallots in the garden if your garden has a culinary component.

Sweet Potatoes

Sweet potato is one of the only warm season root vegetable options. It is very heat tolerant and low maintenance, which makes it a good choice for a garden that won't be heavily maintained over the summer. The catch is that the harvest window for sweet potato is later in September, so it may preclude most fall planting plans as well. The vines of only a few plants will completely fill a small garden space over the summer, as long as the plants are watered sufficiently to start the season. More consistent watering over the summer will result in better quality sweet potatoes, but you will get something either way.

Orange-fleshed sweet potatoes are the most common, but there are also varieties with white, yellow, and purple flesh. They have slightly different moisture levels and flavor profiles. Different cultures prefer different characteristics in their sweet potatoes.

Planting Sweet Potatoes

Sweet potatoes are planted from slips — unrooted shoots that grow from a sweet potato. The slips are planted directly into the garden as unrooted cuttings. Slips are available for purchase from garden centers in the late spring to early summer. Planting should usually take place in late May to early June. The slips will start to root in just a few days and be well on their way to growing for the summer.

Learning Connections

- You can grow your own sweet potato slips by planting whole sweet potatoes in a bucket of sand in a warm location under lights. If possible, choose an organic sweet potato that hasn't been treated to prevent shoots from growing. You can also partially suspend a sweet potato in a jar of water to get shoots. An additional classroom activity might be to compare the efficacy of the two methods.
- Older students could research the history behind sweet potatoes and yams in the United States and how food and culture intertwine. The different types of sweet potatoes that are found around the world and how they are used could also be of interest — including that in some cultures the leaves are eaten.
- Another option is to research the work of George Washington Carver, who developed 118 different products from the sweet potato.
- There are myriad culinary uses of sweet potatoes, so don't feel like your garden year has gone to waste if all you have to harvest in the fall are sweet potatoes!

Turnips, Purple Top

Turnips easily top the list of least-favorite vegetables, particularly the very traditional large, round, purple-topped type. One of the benefits of considering turnips is that they grow quickly and are extremely cold tolerant. Particularly in a fall garden in a more northern part of Kansas, those characteristics can make them helpful for garden success. Like many fall vegetables, they will become sweeter as the weather gets cold. If the traditional turnips do not seem too exciting, there are also plain white and plain gold (pale yellow) roots readily available. If you look a little further, you will also find some red skinned types and some purple top types with long, narrow, carrot-shaped roots as well.

Learning Connections

- Plant sections of turnips at different spacings and then observe the differences in growth and final root quality and size.
- In some areas, purple top turnips can be fed to fall-grazing livestock or as cover crops. These are other connections with agriculture and the natural world that could be investigated by students.
- Connect the growing turnips in your school garden with the Russian folktale The Enormous Turnip by Alexei Tolstoy for some reading, writing, math, and physics lessons!
- Fun fact: Huge turnips were carved as lanterns long before carving pumpkins became a Halloween tradition.

Turnips, Salad

There are not really big differences between purple top and salad turnips, other than the preferred harvest time and size. Most salad turnips mature in 38-42 days and are best harvested at less than 2 inches in diameter. The most popular varieties are pure white, although it is possible to find red-skinned types as well. The salad turnips are usually eaten raw, as they have a sweet, mild flavor and crisp texture. While not particularly popular with many children, like spring radishes, the speed of harvest cannot be beat.

Learning Connections

- Consider planting the same variety of turnip at two-week intervals throughout the spring or fall. Record the soil and air temperatures daily and observe the growth habits and patterns of the earlier versus later planted sections. Do they take the same number of days to mature or is it different?
- Plant sections of turnips at different spacings and then observe the differences in growth and final root quality and size.

Beans and Peas (Legumes)

Beans and peas are legumes that have longer growing seasons that leafy greens and root vegetables, but shorter growing seasons than many other vegetables. Peas are considered cool season vegetables, while beans, cowpeas, and soybeans are all warm season. However, yield will be impacted by high heat in the summer.

Peas and beans are good choices in a school garden for a couple of reasons. One is that the seeds are larger than almost any other plant, making them easy for small fingers to plant. They can also be soaked and used for dissection or even germinated in paper towels for easy indoor activities. The trick with these plants in a school garden is that when planted in the spring, harvest will usually occur after school is out. To have a fall harvest, it is necessary to plant in mid- to late July, well before the school year starts.

Typically, beans and peas are planted directly in the garden from seed. However, if you are trying to get a longer growing season, it might be worth it to try planting indoors and then carefully transplanting with your students.

When choosing both bean and pea varieties, take care to note the growth habit of the plants. Some beans and peas are shorter bush type plants that require no trellising or support. Others are pole or climbing types that will need to grow on a trellis. Climbing types also can take longer to mature than bush types.

Beans, Bush Snap

Bush beans can be a good choice for a fall garden if they can be planted in July. Look for varieties that are shorter days to maturity to ensure a good harvest before it gets cold. Spring planted bush beans will not produce until June, so are only a good choice if there will be a summer program to use the garden. Bush beans can be green, yellow, or purple podded. A few heirloom varieties have purple streaks on the pods. There are also flat-podded types, rather than the regular round-podded varieties.

Learning Connections

- Because of the ease of seed dissection, bean seeds are good choices for dissection when studying monocots and dicots.
- Beans that have similar looking pods may have different colors of seeds. Planting different varieties with different seed colors can be a way to discuss genetic variation and traits.

Beans, Pole

Pole beans usually perform best in the fall in Kansas. Because they take longer to produce, they should be started in July. Due to the climbing characteristic, it is easiest to plant seeds directly into the garden where they will grow. Plan to have some sort of trellis available to the pole beans. There are both snap beans and shelling types of pole beans. The shelling beans require a longer growing season, and so may not be a good choice in a school garden.

One type of pole bean that may be worth considering is the Chinese long bean (aka Yard Long bean, asparagus bean). This bean is a close relative to the cowpea and is very heat and drought tolerant. It is a longer season crop, but could be planted in the late spring and allowed to grow over the summer. The plants will fill the trellis and be covered in beans by fall.

Learning Connections

- Connect the growing pole beans to the story Jack and the Beanstalk.
- Pole beans can grow rapidly up a trellis. Use this growth to practice measurement and graphing.
- Because of the ease of seed dissection, bean seeds are good choices for dissection when studying monocots and dicots.
- Beans that have similar looking pods may have different colors of seeds. Planting different varieties with different seed colors can be a way to discuss genetic variation and traits.

Beans, Shelling

Shelling beans can be either bush or pole beans. They require a longer growing season than snap beans, with warm and dry weather to cure the pods, which means they do not easily fit into the school year. It is possible that spring planted shelling beans could be dried down and harvestable at the start of the school year.

Learning Connections

- There are many different colors and patterns of heirloom shelling beans with fascinating stories and cultural histories.
- Connect the growing pole beans to the story Jack and the Beanstalk.
- Pole beans can grow rapidly up a trellis. Use this growth to practice measurement and graphing.
- Because of the ease of seed dissection, bean seeds are good choices for dissection when studying monocots and dicots.
- Beans that have similar looking pods may have different colors of seeds. Planting different varieties with different seed colors can be a way to discuss genetic variation and traits.

Southern Peas (aka Cowpeas, Field peas, Black-eyed peas)

Southern peas are actually beans that are grown throughout the south and originated in Africa. They are very heat and drought tolerant, which makes them a good choice for a low maintenance summer crop. Some varieties are more bush-type and others are more vining. Vining types could be trellised, grown on cornstalks, or just allowed to grow along the ground. They are typically planted from seed a couple of weeks after last chance of frost.

The pods and beans can be harvested at the fresh shelling stage or allowed to dry down in the garden and harvest as dry beans. Sub-types include crowder peas, purple-hull peas, etc. Some varieties are primarily grown for animal feed or as nitrogen-fixing cover crops. Other varieties have better table eating quality. Depending on your goals for the garden area and purpose in planting the southern peas, you may want to choose an eating quality cultivar.

Learning Connections

- If grown over the summer, harvesting the pods and shelling the beans can be a good project for early in the school year. Pair the shelling of the beans with counting, graphing, and measurement activities, depending on the age of the students.
- Southern peas have a long history and cultural importance in many parts of the world. Studying the history and culture could be combined with nutrition and culinary activities to sample different recipes from the American South and other countries around the world.
- With older students, the nitrogen-fixing character of the Southern peas could lead to investigations of cover-cropping and understanding changes in soil nitrogen levels after different types of crops.

Peas, Sugar Snap and Snow

Sugar snap and snow peas are both edible pod peas. Sugar snap peas are especially sweet. Both are good choices in a school garden for spring planting, especially if the seeds can be planted as soon as the soil can be worked in early March and students will still be in the garden in late May. Even if the plants are just beginning to produce pods at the end of the school year, the flowers and foliage of the pea plants are also edible. Look for varieties that are the quickest to mature with short days to maturity for maximum production before the end of the school year. There are also green, yellow, and purple podded varieties for added color and interest in the garden.

Learning Connections

- Pea seeds are larger for small fingers to handle, so they will be easier for younger students to plant themselves using correct spacing.
- Peas can be planted thickly in a pot or tray indoors and allowed to sprout, then harvested for edible shoots within just a couple of weeks.

Peas, Shelling

Shelling peas do not have edible pods, so the peas must be shelled before eating. Even so, fresh peas are enticing to almost any age. Plant as soon as the soil can be worked in early March. Even if the plants are just beginning to produce pods at the end of the school year, the flowers and foliage of the pea plants are also edible. Look for varieties that are the quickest to mature with short days to maturity for maximum production before the end of the school year.

Learning Connections

- Pea seeds are larger for small fingers to handle, so they will be easier for younger students to plant themselves using correct spacing.
- Peas can be planted thickly in a pot or tray indoors and allowed to sprout, then harvested for edible shoots within just a couple of weeks.
- If the plants are producing mature pods before the end of the school year (or in early to mid-June if there are plans for the garden in the summer), then harvesting the pods and shelling the peas will be an exciting activity. Pair the shelling of the

peas with counting, graphing, and measurement activities depending on the age of the students.

- If the season, program year, and garden space allow, plant 2 to 4 varieties to allow for comparisons of growth habit, days to maturity, and peas per pod.

Broccoli Family

A large number of vegetables are in this family. However, because many of them are also leafy greens or root vegetables, you will find them in those respective sections rather than here. This section primarily addresses the heading types of vegetables in the family: broccoli, Brussels sprouts, cabbage, and cauliflower. All of these vegetables can be successfully grown, but have some challenges due to the seasonality and pests. Most of these vegetables mature in about half of a growing season. Typically, transplants would go out in the garden in mid- to late March for a June/July crop and mid- to late July for an October crop. Plants could be started indoors about 4 to 6 weeks before transplanting or purchased if available.

The challenge comes with the weather fluctuation in both spring and fall, as well as the length of the needed cool-weather growing season. Both unseasonably cold and hot temperatures, as well as the amount of fluctuation can impact the productivity of these plants. In the spring, most of these plants will not produce until June or early July, so a summer program is the best use for them in the spring. In the fall, the plants should produce in October, but earlier than normal freezes can shorten the season to the point where there is no yield. Because of these challenges, it is important to look for several different variety characteristics. In the spring, look especially for heat tolerance, bolt-resistance, and short days to maturity.

In the fall, look especially for cold tolerance and short days to maturity.

The other challenge of the broccoli family is with insect damage — primarily cabbageworm and cabbage looper. These caterpillar pests can be extremely destructive to broccoli family plants by heavy feeding on the leaves. While there is educational value in the presence of the insects in the garden, excessive damage will prevent the plants from producing or having acceptable quality vegetables.

Broccoli

With care for choosing a variety that has short days to maturity and good weather, it may be possible to have broccoli plants in the spring that are forming heads near the end of the school year. If there is not a local source of transplants for a variety that meets the needs of your garden, it will be necessary to start seeds indoors yourself. It may also be helpful in the spring to use row covers to keep the air and soil around the plants warmer and encourage faster growth. Row covers can also help reduce insect problems in both spring and fall.

For a fall garden, transplants should go in by at least the third or fourth week of July, if not slightly earlier. This means that seeds would need to be started indoors in mid-June at the latest. It may also be good to look for varieties that are more likely to produce side shoots after harvesting the main head in order to extend the harvest season. There are starting to be some purple varieties available, but it is important to consider their days to maturity before choosing them.

Learning Connections

- Be on the lookout for damage from cabbageworms or loopers. If holes start appearing in the leaves, it would be a great time for a scavenger hunt! Students can also be watching for the adult butterflies or moths.
- Use the insect pests to learn about insect life cycles. Older students can research different methods for dealing with the insects, including the organic treatment, Bacillus thuringiensis.
- The broccoli family is large, and the entire plant is technically edible, just with different parts for different plants. It can be a good opportunity to talk about the different parts of the plant we eat and how we decide to eat some things and not others.

Broccoli, Sprouting

Sprouting broccoli is another type of broccoli that produces lots of smaller side shoots rather than one large central head. In most cases, it is recommended to pinch out the central floret/head when it appears to induce more side shoots. There are both green and purple varieties. There are also some varieties that are designed for winter harvesting in mild areas, which may not perform well in Kansas. Look for varieties with shorter days to maturity. The benefit of sprouting broccoli is that days to maturity are between 30 and 45 days, making this type of broccoli much more likely to produce in the spring before the end of the school year or in the fall before a hard freeze. Seed starting and transplanting times should be similar to broccoli, above.

Learning Connections

- Be on the lookout for damage from cabbage-worms or loopers. If holes start appearing in the leaves, it would be a great time for a scavenger hunt! Students can also be watching for the adult butterflies or moths.
- Use the insect pests to learn about insect life cycles. Older students can research different methods for dealing with the insects, including the organic treatment, Bacillus thuringiensis.
- The broccoli family is large and the entire plant is technically edible, just with different parts for different plants. It can be a good opportunity to talk about the different parts of the plant we eat and how we decide to eat some things and not others.

Brussels Sprouts

Brussels sprouts typically need a long, mild growing season. They are extremely cold tolerant, with flavor improved after freezing. However, in most parts of Kansas the plants need to be grown over the entire summer, making maintenance and season-long pest control a major challenge. In most cases, Brussels sprouts are probably not a good choice for a school garden unless there is a particular purpose and plenty of summer care available.

Cabbage

Cabbage is a heading vegetable that requires about half of a growing season to fully develop. Look for varieties that are shorter days to maturity for best success. If there is not a local source of transplants for a variety that meets the needs of your garden, it will be necessary to start seeds indoors in February to be planted out in May. It may also be helpful in the spring to use row covers to keep the air and soil around the plants warmer and encourage faster growth. Row covers can also help reduce insect problems in both spring and fall. For a fall garden, transplants should go in by at least the third or fourth week of July, if not slightly earlier. This means that seeds would need to be started indoors in mid-June at the latest

There are both green and red types of cabbage, as well as smooth and savoy (crinkly) leaf types. There are also heading Napa cabbages that could be grown successfully. New varieties are becoming available that are "mini" heads, which are intended to be harvested when the heads are small. There are also pointed head varieties that could add interest to a garden.

Learning Connections

- Be on the lookout for damage from cabbage-worms or loopers. If holes start appearing in the leaves, it would be a great time for a scavenger hunt! Students can also be watching for the adult butterflies or moths.

- Use the insect pests to learn about insect life cycles. Older students can research different methods for dealing with the insects, including the organic treatment, Bacillus thuringiensis.
- Cabbage is an important vegetable in many different cultures and cuisines. If the garden has a culinary component, these recipes and uses could be researched and tried.
- Slice a head of cabbage in half. Allow groups of students to observe a half of the cabbage and dissect it to observe changes in the leaf characteristics throughout the head.

Cauliflower

Cauliflower is challenging plant to grow in Kansas, and even more so within the constraints of the school year. Cauliflower will likely be most successful planted for a fall crop, when the cooling temperatures are less likely to result in bolting or serious loss of quality. However, the growing season may not be long enough to reach mature size in some places and in some years. In northern Kansas, if the spring is long and mild, cauliflower will grow well, but it is not likely that harvest will occur before the end of the normal school year. Because of these challenges, it is necessary to look for a variety that has the shortest possible days to maturity as well as good heat and cold tolerance.

If there is not a local source of transplants for a variety that meets the needs of your garden, it will be necessary to start seeds indoors in February and transplanted outside in mid- to late March. It may also be helpful in the spring to use row covers to keep the air and soil around the plants warmer and encourage faster growth. Row covers can also help reduce insect problems in both spring and fall. For a fall garden, transplants should go in by at least the third or fourth week of July, if not slightly earlier. This means that seeds would need to be started indoors in mid-June at the latest.

In addition to the traditional white cauliflower, there are purple, orange, and green (Romanesco) cauliflowers. The orange varieties are usually the shortest days to maturity and would be most successful. There are also some very new varieties that have loose heads and mini-shoots, similar to sprouting broccoli that may be an interesting option for Kansas, although they have not been tested yet.

Learning Connections

- Be on the lookout for damage from cabbageworms or loopers. If holes start appearing in the leaves, it would be a great time for a scavenger hunt! Students can also be watching for the adult butterflies or moths.
- Use the insect pests to learn about insect life cycles. Older students can research different methods for dealing with the insects, including the organic treatment, Bacillus thuringiensis.
- Some cauliflowers naturally self-blanch (wrap leaves around the developing head to create white curds), others need to be blanched by hand by tying up the leaves. If space allows, grow a couple different varieties and allow students to blanch some and not others and see what happens.

Tomato Family

With the exception of potatoes, the plants of this family are warm season crops, which need the warmth of late spring and the heat of summer to produce. Plants in this family include tomatoes, peppers, eggplant, tomatillos, and Irish potatoes. Tomatoes and peppers are some of the most popular crops for a vegetable garden, so most people consider them an essential plant. The challenge with these plants is to successfully include them in a garden when there is minimal summer maintenance planned. In many cases, you can successfully plant tomatoes and peppers, do minimal summer maintenance, and expect the plants to recover and produce in the fall. Probably the most important consideration is at least semi-regular watering. The more maintenance you can provide for these plants over the summer, the greater learning opportunities there will be in the fall. However, you can still have good results with low summer maintenance.

With the exception of potatoes, which are usually planted from seed potato pieces in mid- to late March, the other plants in this family are typically started from seed indoors (or purchased at a garden center) and then transplanted into the garden in early to mid-May, whenever the soil is warm and chance of frost is past.

Tomatoes

As the most popular garden vegetable, there are good reasons to include tomatoes in a school garden. There are hundreds of different varieties to choose from, and they are relatively easy to start from seed. Tomatoes can be used in a garden that has minimal maintenance over the summer, but the best success will likely be with cherry tomatoes or other small fruited varieties. It is highly recommended to use large tomato cages for support, both to keep the plants contained in the space allowed in the garden plans and to reduce disease problems.

It would also be best to use indeterminate varieties if the goal is to have producing plants when school starts in the fall. Determinate varieties will be more likely to succumb to spider mites or disease during the

summer with minimal maintenance. Indeterminate varieties by their nature will continue to put on new growth and will likely recover from insects or disease in the fall and have another flush of fruit.

Especially with younger students, cherry tomatoes are a better choice than a larger fruited tomato. The prolific character of the cherry tomatoes gives more students the opportunity to participate in harvest and the sweet, bite-sized fruit are more likely to be enjoyed readily. Larger fruited tomatoes, especially larger fruited heirlooms, will often have low yield under the best care. Those varieties will not be good choices for a school garden, especially if there is no active summer programming. In a fully maintained garden used for summer programming, large-fruited varieties would be a good choice.

Learning Connections

- Whatever fruit type you choose, consider planting two or three different colors of fruit or at least a couple different varieties that are similar in some ways and different in others. This will allow for lots of opportunities to do comparisons and data collection activities for some or all of the following: fruit size, fruit weight, yield, flavor, sweetness, number of seeds, etc.
- Tomatoes are relatively easy to start indoors from seed, which makes a good project in mid- to late March. Consider starting extra plants and testing different potting mixes, sun/light exposures, watering practices, and more.
- Middle school or high school students may enjoy learning about and testing tomato grafting techniques.
- If there is a culinary component to the garden program, there are a plethora of options for tomatoes, ranging from salads and fresh salsas to pasta sauces and ketchup.
- Connect the growth and development of the tomato plant with learning about plant parts, pollination, and reproduction.
- Because soil temperature (and to a certain extent, air temperature) are indicators of when to plant, you can track air and soil temperatures every day to watch for when to plant. Students could choose to plant at different times and observe if there are differences in growth.
- With older elementary students or any grade that studies plant reproduction and inheritance of traits, tomatoes lend themselves well to seed saving activities. The saved seeds can then be planted the following spring for continuing garden activities. If there is continuity of programming and learning from one grade to the next and adequate garden space, try saving seeds from hybrid varieties to see what happens. (Hybrids do not come true from seed.)
- With older students, if you have access to a handheld refractometer in the science lab, you could test the Brix (sweetness) levels of different varieties. You could also use pH strips or pH meters to test the acidity of different varieties.
- Tomatoes can be prone to a wide range of insect and disease challenges. Do not be distressed! Use these as opportunities to learn about insect life cycles, insect identification, disease pathogens, signs and symptoms, and more. With older students and an equipped science lab, it may be possible to culture fungal pathogens. Fungal leaf spots or samples can be viewed under microscopes to look for fruiting bodies or hyphal structures.
- Use different colors of plastic mulch to warm the soil and row covers, cloches, water walls, or similar products to create pockets of warm air around plants in the spring. This allows for

earlier planting and faster growth. Use max-min thermometers to track high and low soil and air temperatures daily to measure the effects of different techniques. Measure the growth of the plants to see the differences.

Peppers, Sweet

Sweet peppers are more popular than hot peppers in many cases. However, large-fruited sweet peppers (such as bell peppers) are often much less productive than the average gardener expects. They will also not thrive with lower maintenance. If planting sweet peppers, consider smaller-fruited sweet peppers. There are many types of sweet snack peppers on the market now that may be productive. Sweet banana peppers and corno di toro (bullhorn) peppers are also usually more productive and resilient than regular bell peppers.

Learning Connections

- Whatever fruit type you choose, consider planting two or three different colors of fruit or at least a couple different varieties that are similar in some ways and different in others. This will allow for lots of opportunities to do comparisons and data collection activities for some or all of the following: fruit size and shape, fruit weight, yield, flavor, sweetness, number of seeds, etc.
- Peppers are somewhat easy to start indoors from seed, (harder than tomatoes) which makes a good project in mid- to late March. Consider starting extra plants and testing different potting mixes, sun/light exposures, watering practices, and more. Peppers are sensitive to temperature when germinating, which gives another area for learning.
- Connect the growth and development of the pepper plant with learning about plant parts, pollination, and reproduction.
- Because soil temperature (and to a certain extent, air temperature) are indicators of when to plant, you can track air and soil temperatures every day to watch for when to plant. Students could choose to plant at different times and observe if there are differences in growth.
- Use different colors of plastic mulch to warm the soil and row covers, cloches, water walls, or similar products to create pockets of warm air around plants in the spring. This allows for earlier planting and faster growth. Use max-min thermometers to track high and low soil and air temperatures daily to measure the effects of different techniques. Measure the growth of the plants to see the differences.

Peppers, Hot

Hot peppers are frequently very productive in Kansas, given the hot summers. Often a single hot pepper plant will yield more hot peppers than are desired. While relatively mild hot peppers should not be a problem with younger students, it may not be ideal to include peppers of moderate to extreme heat in a garden with younger students (or even older students)! Peppers such as paprika, hot banana, Italian frying, Cubanelle, Italian pepperoncini, Anaheims, poblanos, Fresnos, and jalapenos are usually mild enough that they should not cause too much concern in a school garden.

Learning Connections

- Whatever fruit type you choose, consider planting two or three different colors of fruit or at least a couple different varieties that are similar in some ways and different in others. This will allow for lots of opportunities to do comparisons and data collection activities for some or all of the following: fruit size and shape, fruit weight, yield, etc. (Handling the seeds in hot peppers can get the capsaicin on skin and fingers, so beware!)
- Peppers are somewhat easy to start indoors from seed, (harder than tomatoes) which makes a good project in mid- to late March. Consider starting extra plants and testing different potting mixes, sun/light exposures, watering practices, and more. Peppers are sensitive to temperature when germinating, which gives another area for learning.
- There are many culinary connections to make with the various types of hot peppers and different cuisines around the world. Dried hot peppers can be ground into different types of chili powders. Many hot sauces are made from different types of hot peppers.
- The hotness of peppers is rated on the Scoville Scale. Students can research the scale, what makes peppers hot, and cultural and culinary history of different types of hot peppers.
- Connect the growth and development of the pepper plant with learning about plant parts, pollination, and reproduction.
- Because soil temperature (and to a certain extent, air temperature) are indicators of when to plant, you can track air and soil temperatures every day to watch for when to plant. Students could choose to plant at different times and observe if there are differences in growth.
- Use different colors of plastic mulch to warm the soil and row covers, cloches, water walls, or similar products to create pockets of warm air around plants in the spring. This allows for earlier planting and faster growth. Use max-min thermometers to track high and low soil and air temperatures daily to measure the effects of different techniques. Measure the growth of the plants to see the differences.

Eggplant

Unlike tomatoes and peppers, eggplant are not eaten raw and are much less familiar to most students. However, the soft, silvery leaves, large purple flowers, and shiny purple, lavender, striped, and white fruit can make the plants a sensorial treat in a garden, even if the culinary potential is not particularly exciting. Most Americans are very familiar with the large Italian types of eggplant, but there are a range of shapes, sizes, and colors available. Many of these other types of eggplant originated in Asia and Africa and have different culinary uses and properties. Many of the Asian types, in particular, are more productive in Kansas than the larger-fruited Italian types.

Eggplant should not be planted out in the garden until the soil and weather are quite warm, as they will not grow well in cold conditions. They will do best if planted after soil temperatures are at least 65 degrees. Depending on the weather, your location in Kansas, and your soil type, this may not be until later in May. Eggplant can also be particularly susceptible to flea beetle damage in the spring before they start to grow quickly in the heat. It is important to keep a close eye on the plants for signs of insect feeding until they are growing well.

Learning Connections

- Because soil temperature (and to a certain extent, air temperature) are indicators of when to plant, you can track air and soil temperatures every day to watch for when to plant. Students could choose

to plant at different times and observe if there are differences in growth.

- Use different colors of plastic mulch to warm the soil and row covers, cloches, water walls, or similar products to create pockets of warm air around plants in the spring. This allows for earlier planting and faster growth. Use max-min thermometers to track high and low soil and air temperatures daily to measure the effects of different techniques. Measure the growth of the plants to see the differences.
- If you are growing different types of eggplant, connect them to the different cultures and cuisines that use them.
- Consider planting two or three different colors of fruit or at least a couple different varieties that are similar in some ways and different in others. This will allow for lots of opportunities to do comparisons and data collection activities for some or all of the following: fruit size and shape, fruit weight, yield, number of seeds, etc.
- Eggplant are harder to start indoors from seed, but not too difficult. Seeds can be started indoors about 6 to 8 weeks before planting outdoors. Consider starting extra plants and testing different potting mixes, sun/light exposures, watering practices, and more. Eggplant are sensitive to temperature when germinating, which gives another area for learning.
- Connect the growth and development of the eggplant plant with learning about plant parts, pollination, and reproduction.

Potatoes, Irish

Many people are surprised to find that potatoes are part of the tomato family. Unlike the other plants in this section, potatoes are a cool season crop that need cooler conditions for maximum production and quality. In most parts of Kansas, potatoes are planted around St. Patrick's Day in mid-March through about mid-April. In the northern parts of Kansas, potatoes can be planted in late July for a fall harvest. Fall planted potatoes are generally not particularly productive in southern Kansas, as the soil temperatures are too high for good germination and tuber development. Potatoes are typically not harvested until late June through late July, depending on variety and your location, so they will be best used in a situation where you will have summer programs.

There are many more kinds of potatoes than you may be used to seeing in the grocery store. Most people are familiar with red, white, Russet, and now Yukon Gold potatoes. There are also varieties with colored flesh — pink, blue, purple, and gold interiors. The skin colors range from typically expected colors to dark purples and variegated or splotched skin colors. There are more traditional sizes and shapes, as well as smaller sizes and fingerling types. The tubers have a wide range of moisture levels and textures when cooked and are ideal for different cooking methods.

Planting Potatoes

Potatoes are planted using seed pieces — pieces of a potato tuber that contain at least one "eye." The seed potatoes are cut into the number of pieces appropriate for the number of eyes on the potato. Often one end of the potato as more eyes than the rest of the potato. While you can buy potatoes at a grocery store, it is recommended to buy certified seed potatoes in order to ensure disease-free planting stock and have the best results.

Learning Connections

- Leave a couple of potatoes on the windowsill to watch them sprout. Have students cut potatoes into pieces with eyes and no eyes or different

numbers of eyes and then plant in potting mix in the classroom to see what happens.

- If there is a culinary component to your garden, plant a few different varieties of potatoes and then cook samples in a variety of different ways to compare the flavors, textures, and qualities.
- Plant a few different varieties to do comparison and data collection activities for tuber yield, average weight, etc. (And digging potatoes is just fun for kids!)
- There are different examples of planting potatoes in containers, stacks of tires, bags, straw bales, etc. Try planting in different systems with different mulching or hilling methods to compare productivity of the plants.
- With older students, study the impacts of storage conditions on the quality, starch, and sugar content of the tubers.

Vine Crops

Vining crops are generally popular and exciting crops for students and adults alike. However, in a school garden where there is minimal programming over the summer, let alone maintenance, they will not be a particularly good choice. The combination of insect challenges and the regular harvesting and care needed throughout the summer makes them difficult to grow. They will be popular choices, especially if there will be programming throughout the summer. Cucumbers and summer squashes can produce in June in most parts of Kansas if you choose varieties with shorter day to maturity and the weather cooperates. Cucumbers and summer squashes can also be planted in mid- to late July for a fall crop, again choosing shorter day to maturity varieties. Melons, gourds, winter squash, and pumpkins require longer growing seasons. The harvest window would often overlap with the beginning of the school year, but maintenance will be needed throughout the summer.

With the exception of most types of summer squash (which includes zucchini), most other vining crops will grow large vining plants that will require a huge amount of space. The best solution to this in a school garden is to use some type of trellis. Large (5 foot tall) tomato cages can work for some crops. A-frame trellises or vertical trellises using cattle panels, concrete reinforcing wire, or other materials can drastically increase the space for vines to grow by using the vertical space in a garden. Most vine crops will need some training and tying to get them started up the trellis, but can keep going on their own. Another benefit of the trellises is that it gets the plants up off the ground and the fruit in a place that the students can easily see without risk of trampling the growing vines.

Vine crops cannot be planted in the garden until the soil is sufficiently warm — at least 65 degrees. For most places in Kansas, that will be sometime in May. Vine crop seeds are large and easily planted from seed directly in the garden. They can be started indoors and transplanted, but there are significant challenges to doing so for beginning gardeners. Vine crops do not like to have their roots disturbed, and the fragile and brittle stems and leaves can be significantly damaged by Kansas wind if the plants are not properly hardened off before planting.

A common concern is about cross-pollination. Many of the species in this section are very closely related and can cross-pollinate. However, it is important to note that the cross-pollination should not affect fruit quality in the crop year. It will only affect the plant and fruit if seeds are saved from a particular fruit and planted the following year. If you want to attempt seed-saving as a garden project, there is a lot of research to do about keeping the seed lines pure.

Cucumbers

There are many types of cucumbers out there and a range of plant characteristics to consider when selecting varieties. There are certain varieties that have a more bush-type growth habit and would not need trellising. The majority of cucumbers will need some sort of trellis. A sampling of some of the different types found include: slicing, pickling, Oriental, English, snacking, cooking, and heirloom. While most cucumbers are green, there are types with white or yellow skin. Most cucumbers are eaten raw, but some heirloom types were developed to be cooked. Be aware that some heirloom and older hybrid varieties can be more susceptible to developing bitterness during the heat of summer or due to other stress on the plants.

If planting cucumbers for a fall crop or for early season harvest in June, be sure to look for varieties that have a short days to maturity. It may also be helpful to look for types that are more likely to perform well under cooler conditions.

Learning Connections

- Because soil temperature (and to a certain extent, air temperature) are indicators of when to plant, you can track air and soil temperatures every day to watch for when to plant. Students could choose to plant at different times and observe if there are differences in growth.
- Connect the growth and development of the cucumber plant with learning about plant parts, pollination, and reproduction.
- Cucumbers have both male and female flowers. Students can learn to identify both types and learn about the role of pollinators in development of the cucumber fruits.
- If space allows, consider planting at least a couple different varieties that are similar in some ways and different in others. This will allow for lots of opportunities to do comparisons and data collection activities for some or all of the following: fruit size and shape, fruit weight, yield, flavor, sweetness, number of seeds, etc.

Gourds

Gourds are from a range species within the Cucurbitaceae family. Many of the ornamental gourds that are familiar are still closely related to summer squashes (Cucurbita pepo). Other gourds, including bottle gourds, are from the species Lagenaria. There are also a wide range of plants from Asia that are sometimes called gourds, including luffa, wax, snake, and bitter. Many of these are also edible in their particular cuisines, although many Americans do not enjoy their flavors. A side benefit of most of the non-Cucurbita pepo type gourds is that they thrive in hot conditions and do not have the same insect challenges of other vining crops. They perform very well on trellises, to the point of completely taking over a garden space if allowed. The biggest challenge with these plants is that some of them need very long growing seasons that even Kansas weather can struggle to accommodate.

Learning Connections

- Many gourds are useful in ways other than as food. Older students can research the history of those uses. Younger students may just enjoy trying out some crafts with those gourds.
- Older students could research the edible Asian gourds and how they are used in different cuisines.

Melons

Melons can include cantaloupe, honeydew melon, a range of Asian melons, and other specialty melons. All melons need very warm soil temperatures for seeds to germinate and grow well. They also need a longer growing season before the melons are ready to harvest. Due to the needs for consistent watering and pest monitoring, you should only choose to plant melons if there will be an active garden program over the summer months or if someone will be actively and regularly caring for the garden all summer. Many melons will be harvestable at the beginning of the school year if maintained well over the summer.

There are also only one or two varieties that are more bush-type. The majority of melons will need either a large garden space or a trellis to grow on. Most small and medium-fruited melons will perform well on a large trellis, but will need regular care to start and keep them on the trellis.

Learning Connections

- Because soil temperature (and to a certain extent, air temperature) are indicators of when to plant, you can track air and soil temperatures every day to watch for when to plant. Students could choose to plant at different times and observe if there are differences in growth.
- Connect the growth and development of the melon plant with learning about plant parts, pollination, and reproduction.
- Melons have both male and female flowers. Students can learn to identify both types and learn about the role of pollinators in development of the melons.
- If space allows, consider planting at least a couple different varieties that are similar in some ways and different in others. This will allow for lots of opportunities to do comparisons and data collection activities for some or all of the following: fruit size and shape, fruit weight, yield, flavor, sweetness, number of seeds, etc.
- With older students, if you have access to a hand-held refractometer in the science lab, you could test the Brix (sweetness) levels of the melons. Newer varieties are bred for high Brix levels. In addition, more or less water during ripening can impact the Brix levels.

Squash, summer (including zucchini)

All zucchini are summer squashes, but not all summer squashes are zucchini. Summer squashes are those that are harvested and eaten at an immature stage, before the seeds are mature and fully developed and while the skins are still tender. Zucchini often have smoother and somewhat firmer skin than other summer squashes and a firmer flesh texture. Most summer squashes have more bush-type growth habits and will not require any sort of trellising. There are a few heirlooms with larger vines. There are both green and yellow skinned varieties, as well as white and pale green/gray types. Most summer squashes are the typical oblong shape, but there are also patty pan shapes, round ball types, and long-neck varieties.

Look for varieties with shorter days to maturity if you want to use zucchini for June programming or late summer planting for fall programming. Other varieties will work for July programming efforts. However, be aware that because of insect pressure from squash bugs and squash vine borer, it is unlikely that spring planted squash will survive until school starts in the fall without significant maintenance efforts – and even that may not be successful. 'Tromboncino' is large vining variety that has higher resistance to squash vine borers, but it will require a trellis.

Learning Connections

- With older students in a summer learning program, consider having them research the common squash insects: squash vine borer and squash bugs. Have them learn about different prevention and control methods and experiment with how they work.
- With younger students, use insect infestations to help them learn how to make observations and notice changes in the plants. You can also scout for insects and learn about insect life cycles using the pest insects.
- Because soil temperature (and to a certain extent, air temperature) are indicators of when to plant, you can track air and soil temperatures every day to watch for when to plant. Students could choose to plant at different times and observe if there are differences in growth.
- Connect the growth and development of the squash plant with learning about plant parts, pollination, and reproduction.
- Squash have both male and female flowers. Students can learn to identify both types and learn about the role of pollinators in development of the squash.
- If space allows, consider planting at least a couple different varieties that are similar in some ways and different in others. This will allow for lots of opportunities to do comparisons and data collection activities for some or all of the following: fruit size and shape, fruit weight, yield, insect or disease resistance, etc.

Squash, winter

Winter squashes are varieties that are allowed to mature fully on the vine, until the rinds are fully hardened and the seeds are fully mature. Examples include spaghetti, acorn, butternut, delicate, kabocha, cushaw, and buttercup squashes. Most winter squashes have medium to large sprawling vines and will need either plenty of space or a trellis. Most winter squashes will perform well on a trellis, even larger fruited types because the stems are very strong.

Because of the season length needed for mature squashes, these will likely be starting to mature about the time that school starts in August. While that could seem like a good fit, it is unlikely that these plants will survive and thrive without significant maintenance efforts over the summer due to the insect pressure. The best hope for success is to focus on butternut and cushaw squashes that have the best resistance to both squash bugs and squash vine borers. Other varieties that belong to the Cucurbita moschata and Cucurbita mixta species may also be good choices.

Learning Connections

- With older students in a summer learning program, consider having them research the common squash insects: squash vine borer and squash bugs. Have them learn about different prevention and control methods and experiment with how they work.

- With younger students, use insect infestations to help them learn how to make observations and notice changes in the plants. You can also scout for insects and learn about insect life cycles using the pest insects.
- Because soil temperature (and to a certain extent, air temperature) are indicators of when to plant, you can track air and soil temperatures every day to watch for when to plant. Students could choose to plant at different times and observe if there are differences in growth.
- Connect the growth and development of the squash plant with learning about plant parts, pollination, and reproduction.
- Squash have both male and female flowers. Students can learn to identify both types and learn about the role of pollinators in development of the squash.
- With older students, have them research the four different species that make up the squash and pumpkin cultivars: Cucurbita pepo, Cucurbita maxima, Cucurbita moschata, and Cucurbita mixta (now Cucurbita argyrosperma). Compare and contrast growth habits, fruit characteristics, origin, and insect resistances.
- In a culinary setting, there are many nutrition and cooking options for winter squashes.

Pumpkins

Pumpkins are types of winter squashes that have been selected for the characteristics we associate with pumpkins. They are allowed to mature fully on the vine, until the rinds are fully hardened and the seeds are fully mature. Most pumpkins have medium to large sprawling vines and will need either plenty of space or a trellis. Some pumpkins do better on a trellis than others, so it may require some trial and error.

Because of the season length needed for pumpkins, these will likely be starting to mature about the time that school starts in August. While that could seem like a good fit, it is unlikely that these plants will survive and thrive without significant maintenance efforts over the summer due to the disease and insect pressure. Be sure to look for varieties with powdery mildew resistance to help with disease challenges.

Learning Connections

- With older students in a summer learning program, consider having them research the common pumpkin insects: squash vine borer and squash bugs. Have them learn about different prevention and control methods and experiment with how they work.
- With younger students, use insect infestations to help them learn how to make observations and notice changes in the plants. You can also scout for insects and learn about insect life cycles using the pest insects.
- Because soil temperature (and to a certain extent, air temperature) are indicators of when to plant, you can track air and soil temperatures every day to watch for when to plant. Students could choose to plant at different times and observe if there are differences in growth.
- Connect the growth and development of the pumpkin plant with learning about plant parts, pollination, and reproduction.
- Pumpkins have both male and female flowers. Students can learn to identify both types and learn about the role of pollinators in development of the pumpkins.
- With older students, have them research the four different species that make up the squash and pumpkin cultivars: Cucurbita pepo, Cucurbita maxima, Cucurbita moschata, and Cucurbita mixta (now Cucurbita argyrosperma). Compare and contrast growth habits, fruit characteristics, origin, and insect resistances.
- Some pumpkins are good for cooking and others are terrible. Even if you do not grow your own pumpkins, you can try a taste test of roasted pumpkin!

Watermelon

Watermelons are extremely popular with children, but can be tricky to grow in a school garden setting. Like other vines, watermelon needs very warm soil temperatures for seeds to germinate and grow well. They also need a longer growing season before the watermelons are ready to harvest. Due to the needs for consistent watering and pest monitoring, you should only choose to plant watermelon if there will be an active garden program over the summer months or if someone will be actively and regularly caring for the garden all summer. With a little bit effort to determine the ideal timing for planting, watermelon can be ready to harvest near the beginning of the school year.

There are also only one or two varieties that are more bush-type. The majority of watermelons will need either a large garden space or a trellis to grow on. However, be aware that many watermelon varieties do not perform as well on trellises as other types of melons and vining crops. The vines are much more brittle and prone to breakage before the fruit is ripe, especially with larger fruited varieties. If you have the space and capacity to plant watermelons, be sure to consider some of the newer varieties that have yellow or orange flesh. There are also many unique heirloom varieties as well as seedless varieties to look at.

Learning Connections

- Because soil temperature (and to a certain extent, air temperature) are indicators of when to plant, you can track air and soil temperatures every day to watch for when to plant. Students could choose to plant at different times and observe if there are differences in growth.
- Connect the growth and development of the watermelon plant with learning about plant parts, pollination, and reproduction.
- Watermelons have both male and female flowers. Students can learn to identify both types and learn about the role of pollinators in development of the fruit.
- If space allows, consider planting at least a couple different varieties that are similar in some ways and different in others. This will allow for lots of opportunities to do comparisons and data collection activities for some or all of the following: fruit size and shape, fruit weight, yield, flavor, sweetness, number of seeds, etc.
- With older students, if you have access to a hand-held refractometer in the science lab, you could test the Brix (sweetness) levels of the melons. Newer varieties are bred for high Brix levels. In addition, more or less water during ripening can impact the Brix levels.
- Older students can also research seedless watermelons and how they are developed and grown.

Herbs

Herbs can play multiple roles in a school garden, to the extent that it would be well worth considering designating a part of the garden to perennial herbs that can grow every year. Herbs have many culinary uses, although the strong flavors of raw herbs are not often enjoyed by younger students. But the other sensory qualities of herbs make them worth growing as well. Left to themselves, most herbs will also bloom in the summer or fall and provide important food sources for many insects and pollinators which can then be studied during the fall semester.

Many herbs are easier to grow by purchasing plants of specific varieties that you want to have, although some, such as basil, parsley, dill, and cilantro, can be grown from seed with ease. Other herbs, such as thyme, oregano, lavender, and rosemary, can be very difficult to grow from seed, despite the wide availability of generic seeds.

Most herbs are also drought tolerant and low maintenance, making them a good option for a garden that requires less summer maintenance.

Learning Connections

- Herbs can be used for a variety of activities related to their sensory characteristics – taste, smell, touch, color, etc.
- Allow students to harvest culinary herbs and choose their own seasoning mixes for vegetable dips or to create herbal teas.
- Older students can explore plant propagation by both seed saving and taking cuttings of herbs to propagate.
- Because many herbs are perennials rather than annuals, they make good plants for learning about different plant life cycles.

Agastache

Agastaches, including anise hyssop, are a group of fragrant, pollinator-friendly perennial plants with attractive flowers in the summer and fall. Many of them have anise-flavored leaves and flowers. They also are quite heat and drought tolerant. Anise hyssop will reseed itself freely if given the opportunity.

Basil

The most popular culinary herb, there are many types of basil available. Some varieties are more popular for culinary uses, while others are more ornamental, and some fulfill both functions with ease. Genovese and other Italian types will have the most familiar culinary flavor. There are both green and purple leaved varieties available. For something a little different, consider lemon, lime, cinnamon, or Thai basils — all excellent for culinary purposes but with quite different flavors. 'Cardinal' basil and 'Siam Queen' Thai basil both have large, showy flower clusters on the plants, rather than the rather unlovely individual green spikes of other varieties. African Blue Basil is not particularly delicious to eat, but the large, heat tolerant plant covered with blue-purple flower spikes will also be covered with bees, butterflies, and other pollinators in the late summer and fall.

Bee Balm (aka Monarda or bergamot)

Bee balm is a perennial with showy flowers that is a good choice for pollinators and for those with an interest in tea. The distinctive scent of the plant is either loved or hated, and it is commonly made into tea.

Chives

Chives are a perennial herb that have round purple flowers in the spring. Chives have any oniony scent and flavor, making them popular in cooking. Garlic chives have white flowers in the fall, and the leaves have a garlicky scent instead.

Cilantro

Popular as a flavoring herb in salsa, cilantro is easy to grow if you understand the growing season. As a cool weather herb, it grows in the early spring and usually bolts (flowers) by late spring or early summer. It sets seed and then dies by the heat of mid-summer – the time when we want to harvest it for salsa. The seeds will drop and germinate in the fall after the weather is cool, allowing for annual crops in the same spot each year. The flowers and seeds are also edible and usable, but with a slightly different flavor. The dried seeds are called coriander, another common spice.

Dill

Dill is an annual herb that will reseed itself readily. It grows in the cool weather of spring and then flowers and sets seed during the heat of the summer. After producing seed, the plants will die. If allowed to drop, the seeds will start to regrow in the fall and the following spring. The leaves, flowers, and seeds are all edible.

Fennel

Fennel grown as an herb does not develop the large bulb at the soil level. It has fern-like green or bronze leaves, followed by edible flowers and seeds in the summer. It will readily reseed itself for the following years. Fennel is a great plant to grow for attracting the swallowtail butterflies and it serves as a food source for the caterpillars.

Lavender

Some varieties of lavender are perennial in Kansas, while others do not overwinter well. Hidcote lavender is one of the most reliably overwintering types. Lavender performs best in locations that do not get too much water. It will also tolerate high heat. Unfortunately, lavender usually blooms in June and July.

Lemon Verbena

Lemon verbena is a semi-tropical, heat loving herb with a very strong lemon scent and flavor. It should not be planted until it is warm in May, but will grow without a lot of care until frost in the fall. The rough textured leaves and strong scent make it a great sensory plant.

Mint

There are dozens of different mint varieties with different scents and flavors: spearmint, peppermint, chocolate, orange, apple, pineapple, etc. These different types must be purchased as plants rather than started from seed. Be aware that mint can quickly become invasive in a garden, so it is best to plant in a large container.

Oregano

Oregano is an easy to grow, perennial herb. Most oregano is upright growing, but there are some varieties that are trailing and have attractive flowers.

Parsley

Parsley is in the same family as carrots, cilantro, and fennel, making it popular with swallowtail butterfly caterpillars (sometimes called parsleyworms). There are both flat-leaf and curled varieties of parsley, and it is typically planted in the early spring as a cool season herb. That said, it is usually quite heat tolerant through the summer. It can also be quite cold tolerant and successfully overwinter until the following spring, when it will likely bolt and produce seed. Parsley is easy to start from seed, either indoors or outdoors, as an additional project.

Rosemary

Rosemary is a slow-growing herb that is quite heat and drought tolerant. Look for varieties that are going to grow faster in order to have harvestable branches by fall. There are both trailing and upright types of rosemary. While some types are perennial in Kansas, most rosemary is not reliably perennial even in southern Kansas. It may be worth it to leave the plants in the garden to see if they will survive the winter each year, but do not plan on it.

Sages, Culinary

These sages have the traditional scent that is associated with Thanksgiving cooking. The plants rarely flower, and the leaves are usually textured and somewhat thick. The basic varieties have grey-green leaves, although there are also purple-leaved and variegated varieties. These sages are perennial and quite cold tolerant. They will overwinter in most years.

Sages, Flowering

These sages are sometimes called salvia or Autumn sage. They may have some scent to the leaves, but are primarily grown for the flowers, which are popular with pollinators. They will sometimes overwinter in southern parts of Kansas. Somewhat in between flowering and culinary types of sages is Pineapple Sage, a large, tropical sage that blooms in the fall and has sweet, pineapple-scented leaves. It is not hardy in Kansas.

Scented Geranium

Scented geraniums are plants that have the leaves and growth habit similar to a garden geranium, although rarely with showy flowers. Where they stand out is in the strong and uniquely scented leaves. Scents can include: lemon, cinnamon, nutmeg, ginger, citronella, rose, mint, strawberry, and more. The leaf size, texture, and color can vary. If you are looking for a strong sensory component to your school garden, they can check boxes for touch, smell, and sight. While less edible than other herbs, they can be steeped in water for scents and flavorings. Older students interested in plant propagation can also take successful cuttings from these plants.

Stevia

Stevia has become popular as an alternative sweetener, so it might be a fun plant to add to a garden. They are difficult to start from seed, so it will be best to find plants to purchase. Students will enjoy sampling the sweet leaves straight, but they can also be dried or steeped in water to use as sweeteners.

Thyme

Thyme is a low-growing, drought-tolerant perennial herb. It has prolific flowers in the late spring once established. There are many different varieties of thyme that have different scents and flavors – orange, lemon, rose, nutmeg, and many more. Specific varieties will need to be purchased as plants rather than grown from seed.

Grains, Row Crops, and Cover Crops

While you might not think about including grain crops, other types of row crops, or cover crops in a garden, they can play some beneficial roles from both an environmental and educational perspective. If your students are not routinely exposed to traditional Kansas farm crops, planting corn, sorghum, or winter wheat in the school garden can be a great way to connect them to Kansas history and agriculture. Other crops could be planted to explore other roles of grain crops or simply to fill the garden and keep the soil covered during either the winter or summer. Some grain crops, such as corn, have lots of history and heirloom varieties. If you do not want to grow a crop all the way to the grain stage, they can still be grown as cover crops — crops that protect and enhance soil quality that are mowed or tilled into the garden soil as organic matter before planting another crop.

Learning Connections

- Study the life cycles, production, and processing of different grain crops important to Kansas agriculture.
- Use the mature or harvested grains as a source of food for wildlife that can be studied as well.
- Study the role of cover crops in protecting and enhancing soil health in farms and gardens.

Barley and Winter Wheat

These are two cool season grain crops that can be planted in the fall. They can be used as cover crops that are turned into the soil in the early spring before they reach the grain development stage. They can also be allowed to develop into mature grain, if desired. However, depending on the year and the part of Kansas, they may not reach the ripe grain stage during the school year. It is likely that the grain heads will be formed by near the end of the school year.

Buckwheat

Buckwheat is a broadleaf plant that produces seeds used as a grain or flour. However, most of the time it is grown as a quick growing cover crop. The seeds will germinate in both cool and hot conditions. In the heat of summer, the plants will go from seed to flower in 3 to4 weeks. The flowers are a great pollen source for insects, and the plants help keep the weeds down. It can also scavenge for phosphorus. Another side benefit of buckwheat in a school garden is that the plants will decompose quickly, even if they are not chopped up heavily, making it feasible for students to cut and incorporate the plants themselves.

Corn

There are hundreds of types and varieties of corn available that could be considered in a school garden. The biggest challenge with corn, whatever type, is planting a large enough area to allow for adequate pollination. The general guideline for sufficient pollination is a 10-foot by 10-foot area planted to corn. A smaller area can be planted, but there may be ears with less fill due to poor pollination.

While sweet corn would surely be popular with students, it is only going to be a good option for a garden that has plenty of space and will have active programming during the month of July. There are dozens of varieties of sweet corn available.

On the other hand, popcorn, flint, dent, and flour corns all are grown until the kernels are dry, making for longer days to maturity. In the case of a school garden, these types of corn may be a better choice, because the corn can grow throughout the summer with minimal care or maintenance and then be harvested in the fall.

Oats

This cool season grain crop would be planted in the very early spring as either a cover crop or for exploring grain growth and production. Grain maturity would probably not occur until after the school year is over.

Millet

Millet is a warm season grass that can be grown for low maintenance summer gardens as a cover crop or a grain. There are also ornamental millets that have attractive purple foliage and seed heads. If a grain variety of millet is chosen, it will attract birds to the garden when it reaches maturity.

Sorghum (aka Milo)

Sorghum is another warm season grain-producing grass. It is a common agricultural crop in Kansas. The plants will look very much like corn. It is very heat and drought tolerant, making it a great choice for a low maintenance summer garden. Because the grain-type of sorghum is most common in Kansas, it will likely be the easiest to find. There are also sweet sorghum varieties that may be a good choice.

Flowers, Fall Planted

Fall planted flowers can fill several different roles. Some fall planted flowers are intended to overwinter and then bloom or continue growth the following spring. Others are planted with the purpose of expected bloom in the fall. In some areas, row covers or low tunnels may help with flower survival over the winter.

Learning Connections

- Study different types of flower characteristics preferred by different pollinators.
- Use the flowers for dissection to aid in study of the parts of a flower and pollination.
- Older students could research other cutting flowers that would be best planted in the fall for a spring and early summer flowering season.
- Connect flowers to descriptive or creative writing projects or art projects.

Saffron Crocus

This fall-blooming crocus produces the expensive spice, saffron. The saffron is actually the stigmas (part of the female portion of the flower), and each flower produces three. When planted in the early fall, the crocus should bloom in about 6 to 8 weeks, giving a quick turnaround for a fall garden project that can tie into both botany and social studies lessons. If in zone 6, the bulbs should overwinter in the garden and if marked and left undisturbed, should bloom again in future years.

Sunflowers

When planting sunflowers for fall bloom, be careful to look for newer varieties of cutting flowers that are typically pollenless and are about 50 to 55 days to maturity. These sunflowers can be planted from seed in mid-August, right as school starts, with the expectation of bloom by early October, before the first frost. If you are concerned about bloom occurring before a frost, the seeds can be planted before school starts. Keep in mind that there are many newer varieties that have colors other than plain yellow. Pollenless sunflowers will not produce seed, so if you want seed to harvest, plant a seed producing variety earlier in the summer.

Bachelor Buttons, Love-in-a-Mist, and Larkspur

These are three common garden cutting flowers. They are best planted in the fall, after the soil is cool. They will germinate in the late fall and then hold as young plants over the winter. In the spring, they will grow rapidly and then bloom, with a bloom time typically in mid-May to mid-June.

Pansies and Violas

Pansies and violas are very cold tolerant flowers that can be planted in both the fall and spring. It is easiest to purchase plants, although they can also be started from seed. If you want to try seed starting, allow 8 to 12 weeks before planting outdoors. In most areas of Kansas in most years, pansies and violas planted outdoors in the fall will overwinter and bloom again in the spring.

Tulips, Daffodils, and Hyacinths

These flowers, as well as other fall-planted flowering bulbs, can be a good choice for a school garden. Fall planting followed by early spring flowering allows for learning opportunities throughout the school year with students, especially for younger grades. The wide range of flower characteristics is an added benefit. Students can dissect bulbs in the fall to learn about growth and plant parts. Flowers can be dissected in the spring to learn about flower anatomy.

Flowers, Spring Planted

There are a number of flowers that can be planted either from purchased bedding plants or from seed in the spring. The flowers recommended here are plants that are heat and drought tolerant and will likely perform with minimal maintenance during the summer. Several of them are also plants that will be attractive to insects and pollinators, providing more opportunities for learning in the fall.

Plant from Seed

Plant seeds directly in the garden in May. They could also be started indoors earlier and transplanted. Options include: zinnias, sunflowers, celosia, gomphrena.

Plant from Transplants

Plant purchased plants outside in May. Some could be started from seed indoors, but others may be difficult to start. Options include: vinca, lantana, zinnias, celosia, gomphrena, begonias.

Learning Connections

- Older students can explore plant propagation through indoor seed starting, seed saving, and taking cuttings.
- Study different types of flower characteristics preferred by different pollinators.
- Use the flowers for dissection to aid in study of the parts of a flower and pollination.
- In the later summer and fall, have students investigate and journal about what insects and other life they find around the flowers. Older students can work on insect identification and classification.
- Connect flowers to descriptive or creative writing projects or art projects.

Odds and Ends

Here are a few plants that are a bit out of the ordinary for the average Kansas garden but do have potential value in a school garden.

Amaranth

Amaranth are extremely heat and drought tolerant plants that can fill the category of leafy green, grain/seed, and ornamental cut flower. The leaves are used as a heat tolerant salad green when the plants are young. The seeds are becoming more common as alternative grains/flours. Many types of amaranths have showy flower spikes that are prized for cut flowers. You may also be familiar with amaranth as a familiar garden weed — pigweed. Probably the best use for amaranth in a school garden is to plant them in the spring and allow them to grow without much care over the summer. By fall they should be large and showing the unique flower spikes. A particularly popular cutting flower variety is "Love Lies Bleeding."

Amaranth will grow successfully when planted from seed directly into the garden. However, the seeds are tiny, so it may work better to start seeds indoors so the plants can be put into the garden at the ideal spacing.

Malabar Spinach

Malabar spinach is very little like spinach, but is rather a heat tolerant vine from Asia. With bright red-purple stems and glossy green leaves, this is a beautiful plant that will grow vigorously throughout the summer with minimal care. The leaves are thick and fleshy, with a mild flavor. The vine also produces dark purple berries that can be used for natural food dye. This plant should be grown on a trellis of some sort. Unless you can find the plants at a local garden center, you will need to start them from seed indoors a few weeks before planting outdoors.

Peanuts

Peanuts are a delightful crop to grow with children. However, due to the allergy concerns, they were not included in any of the planting plans in this resource. If you are in a setting where the allergies are not a concern, you may want to consider growing some peanuts. They should be planted in the late spring after the ground is warm, and harvested in the fall near frost. Look for varieties with shorter day to maturity that will be more productive in more northern climates compared to places further south.

Sesame

While everyone is familiar with sesame seeds on top of a hamburger bun, most people have not considered where it comes from and that it is a plant that could be grown. Sesame is extremely heat and drought tolerant, which makes it a good option for a low maintenance plant over the summer. It gets 3 to 7 feet tall, and has attractive flower spikes that turn into spikes of seed pods with sesame seeds inside. It will do best if the seeds are started indoors and then transplanted outdoors, because it needs very warm soil temperatures for germination.

Strawberries, Alpine

These cultivated varieties of wild strawberries will produce ¾" delicate, sweet fruit. There are both red and yellow-fruited varieties of alpine strawberries. Unlike traditional strawberries, these plants can be started from seed. The new seedlings do require careful tending until they start growing more quickly, but then become relatively trouble-free. Alpine strawberries do not particularly like heat and drought in the summer, so they may be best planted in the fall for a fall crop and then overwintered for a spring harvest as well. They could also be started indoors in January or February and then transplanted outdoors in late March.

Strawberries, Day Neutral

If you are interested in more traditional strawberries, consider planting day neutral strawberry varieties. Rather than a short 7- to 14-day season in the spring, they will produce in the spring and again in the fall. If you have a relatively mild summer, they will also produce some fruit throughout the summer as well, although do not expect this to be a regular occurrence in Kansas. Because they can produce throughout the season and are perennial plants, they could be a good choice for a large container or an entire raised bed.

Resources for Choosing Plant Varieties

Recommended Vegetable Varieties: *https://bookstore.ksre.ksu.edu/pubs/L41.pdf*

Small and Tree Fruit Cultivars: *https://bookstore.ksre.ksu.edu/pubs/mf1028.pdf*

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