



Youth Participant Handbook

Wheat Variety

Plot

Kansas 4-H
Youth Development



Reviewed January 2019

4-H Wheat Variety Plot Handbook

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Introduction

4-H Wheat Variety Plot Handbook

All Kansas 4-H and FFA members are encouraged to become active participants in the Kansas 4-H/FFA Wheat Variety Plot Program.

This educational “growing experience” adds another dimension to the usual project.

Members who enroll are provided 10 pounds each of five varieties of certified wheat, supplied by donors.

A 2- by 3-foot baked enamel steel plot sign, with space for the member’s name, is provided one time to designate the variety plots. In addition, five smaller steel signs identify each individual variety for comparison and observation during the growing season.

Participants are encouraged to use approved practices in soil preparation, planting, fertilization, and harvesting of their wheat plots. In addition, a wheat variety plot record is provided to encourage observation and recording of varietal information throughout the growing season.

Each participant is encouraged to develop a 4-H wheat variety display for the local county fair to inform the general public about wheat production, wheat quality, varietal differences, yields, mill-bake qualities, and marketing.

The top 4-H wheat variety display at each county fair is eligible to enter the state 4-H wheat variety display competition at the Kansas State Fair in Hutchinson. The exhibitor must be 9 to 18

years old before January 1 of the exhibit year and must meet all other criteria listed in the Fair Premium book.

Section 1

Goals and Purposes

1. To learn through observing and recording differences in wheat varieties relative to germination, seedling vigor, winter hardiness, drought, lodging and disease resistance, tillering, height, head type and length, yields, and grain quality. Participants should become familiar with the unique characteristics of each variety representing hybrids, semi-dwarf, standard, etc., as expressed by each entry in the variety plot.
2. To increase understanding of wheat quality through comparison of protein, mill, and bake characteristics of the respective varieties.
3. To gain a greater understanding of wheat production practices, costs, and environmental influences.
4. To increase understanding of factors relative to markets and marketing of quality wheat.
5. To stimulate interest and increase recognition for 4-H/FFA wheat plot project involvement.
6. To share information gained in the project with the general public through growing test plots, news releases, and fair booth exhibits which display wheat quality, production practices, and varietal differences.
7. To become more knowledge-

able. The selection of varieties in the wheat plot is based upon the unique characteristics of each variety. Participants should study the history of each entry and observe these differences in the field, record them, and build the display around them.

Section 2

Why Enroll?

Here’s your chance to try something different from the regular Plant Science Project. Participants are not required to enroll in the 4-H Plant Science Project. However, the Wheat Variety Plot activity does fit in well with crop production.

Incentives

Involvement gives you public exposure. Your friends and neighbors can see your wheat plots of five certified seed varieties throughout the growing season.

A large steel sign with your name identifies your variety plots, and individual variety signs identify each one. Best of all, seed and signs are free to you, provided by the donors. Pre-printed variety names and family name are provided to stick on the signs.

In case you are trying for a 4-H scholarship, trip or awards, this activity increases your chances by strengthening your total 4-H learning experiences. You may become a wheat expert by knowing more about the five varieties in your plot than most wheat producers.

And that’s not all! You are urged to exhibit a special 4-H

Section 3

Establishing 4-H Wheat Variety Plots

For many years, local Extension agents have established demonstration plots involving crop varieties. These experiences have established ways of locating, planting, showing, and harvesting plots. This activity will help you as a 4-H/FFA member improve practices and learn more about various varieties of wheat.

Your local Extension agent or FFA advisor is able to help you by answering questions and interpreting these suggestions:

1. You have applied for the wheat variety package. Your set of seed (10 pounds of five varieties) will be picked up at the Kansas State Fair by your local Extension agent.
2. Select the location of your demonstration plot on a well-traveled, all-weather road, if possible.
3. Successful wheat production in most areas of Kansas requires a fertilizer program using nitrogen, phosphorus, and potash. A general soil fertility test should be made to determine the type and amount of fertilizer required. It requires at least two to three weeks to have a soil sample tested and the information returned to you. Your county Extension agent or FFA advisor will tell you how to correctly sample your field. He or she also can help you interpret the plant nutrient requirements.

wheat variety display at the county fair for many people to see. Who knows? Your wheat display may be one selected for Kansas State Fair competition in Hutchinson.

So, you have a lot to gain and learn about wheat varieties and production.

Awards—State Level

In case you like to work for recognition, the wheat displays exhibited at the Kansas State Fair are eligible for the following awards: Champion, \$250 and plaque, Kansas Wheat Commission; Reserve Champion, \$150 and plaque, Kansas Crop Improvement Association; third through fifth place, plaque and cash awards, Kansas Grain and Feed Association. State Fair ribbons are awarded for each display entered.

Call your local Extension agent if you need more information or are interested in enrolling.

Enrollment deadline

Contact your local Extension office.

Enrollment procedure

Enrollment in the 4-H/FFA Wheat Variety Plot Contest is required the summer before the new growing season.

This early enrollment is necessary to allow time to locate and secure the varieties of certified seed; and to sack, package, and ship sets of wheat to each county in time for fall wheat sowing.

To enroll, contact your local Extension agent or FFA advisor by mid-July. Give them your complete mailing address and birth date.

4. Check with your local Extension agent or FFA advisor to learn when the required fertilizer must be applied to land being prepared for wheat.
5. You have until seeding time in September or October to prepare the land for planting. Proper weed control is critical for successful wheat production. Volunteer wheat and weeds use up moisture and promote the carryover of wheat diseases (streak mosaic) or insects (Hessian fly).
6. When the wheat is planted, pay attention to moisture, Hessian fly date, and the proper mechanical operation of the drill. Use the size or type of drill available; check with your local Extension agent, or FFA advisor for optimum seeding rates in your area. This will range from as little as 45 pounds to as much as 90 pounds per acre, depending on whether you live in western Kansas or the eastern part of the state. The amount of seed of each variety you receive will plant from $\frac{1}{7}$ to $\frac{1}{3}$ of an acre.
7. Plant the varieties to have an alley (one drill row not planted, about 10 inches) between the field of wheat and the first plot. This can be done by drilling wheel track on wheel track, instead of wheel track on drill row, as is customary when drilling wheat. See diagram of suggested plot.
8. The drill must be cleaned thoroughly after planting each variety. There is no easy way to do this. Any of the following ways may be used.
 - a. If a source of 110-volt

electricity is available, an attachment hose on a vacuum cleaner works best. (A hand vacuum works fine also.)

- b. Use a whisk broom or a firm paint brush to crowd the grain into the cups, and blow the remaining grain out of the cups with compressed air.
- c. Use the whisk broom or the paintbrush as you drill, (it's a good idea to do this, anyway, to avoid skipping rows) then drill into the field far enough to clean the drill by running out of seed. When you use this method, start each variety at the edge of the field where your identifying signs will be. Drill out the other end of the plots (the other end will be jagged) when you finish planting the field.
- d. On some drills, a wrench can be used to turn the shaft under the drill box to clean the drill box.

It is advisable to keep notes on the plot: when planted; seed per acre; type and the amount of fertilizer used; weed problems; harvest date, if harvested; and other interesting information. (Refer to record sheets.)

Mow between the fence and the start of the plots before showing to a tour group or the public.

Be sure and make a diagram of the plot showing directions and relationship of the plot to the field or farmstead. You may forget the order of planting by next spring.

The diagram below illustrates some of the ideas that have worked for farmers and educators in putting out similar demonstrations.

Always start drilling a new variety at the fence end of a plot. Drilling back and forth nearly always ends in a weed patch where you don't want it.

It is easier to plant the plots before the field is planted; if planted after the field is planted, carefully measure the area needed.

When you prepare to measure yields at harvest time, check with your local Extension agent or FFA advisor for the proper procedure.

Do not save seed wheat from these plots, because it is nearly impossible to avoid mixing varieties when harvesting small-sized plots.

Identification of 4-H/FFA Wheat Variety Plots

Observation of your wheat demonstration plots also is an educational experience for county residents, neighbors, and friends. Ideally, your plots should be located near a well-traveled road where they can readily be seen.

The large 2- by 3-foot steel plot sign bearing your name should be mounted securely at the plot site after drilling is completed.

The individual 4- by 14-inch variety signs also should be staked directly in line with each respective variety for positive identification.

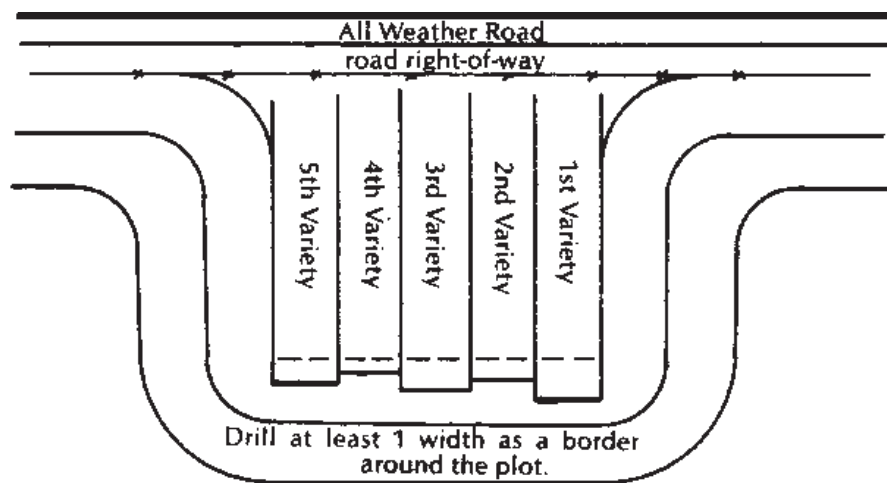
Section 4

Observing and Record Keeping

All participants are encouraged to observe the growing wheat throughout the entire season.

A record sheet is furnished to help you keep track of varietal differences such as:

- germination
- seedling vigor
- winter hardiness
- disease resistance
- tillering
- drought resistance
- lodging
- height of growth
- head type and length
- yield



Section 5

Harvesting Wheat Variety Plots

Tips for Calculating Yields

Listed below is a simple formula you can use to determine the bushel yield of each variety:

1. Multiply width of plot harvested by the length of the plot harvested = square feet of plot harvested.
2. Divide 43,560 (square feet in an acre) by square feet in the plot harvested = part of an acre that was harvested.
3. Divide part of the acre harvested by 60 = factor.
4. Multiply the factor by pounds of wheat from the plot = pounds of wheat per acre.

The example below illustrates a harvested plot 14 feet wide and 100 feet in length, yielding 70 pounds of grain.

1. $14' \times 100' = 1,400$ sq. ft.
2. $43,560 \div 1,400 = 31.11$
3. $31.11 \div 60 = .52$ (factor)
4. $.52 \times 70$ lbs. = 36.4 bushels per acre

Section 6

4-H Wheat Variety Plot Displays

Why Have a Wheat Display?

A wheat display tells the public in a graphic way the story of your wheat production experience. The display helps relay information to others who may know little about wheat or wheat varieties.

Creating a display helps you develop skills in creativity, design, color combinations, and pleasing arrangements. The exhibit arouses viewers' interests in what you have learned and increases their knowledge of wheat, as well.

A quality display has about 60 seconds to grab hold of the average fairgoer. Therefore, it must arouse interest, stimulate thought, and present information in clearly defined terms.

A wheat display may: compare differences in wheat varieties; present striking facts; compare results of various production practices; and show various results in wheat yields, quality, and milling characteristics.

A wheat variety display score sheet is included for reference and indicates factors judges will consider when evaluating your booth exhibit.

Variety Plot Displays at Kansas State Fair

The free standing displays must not exceed the overall dimensions of 48 inches wide \times 36 inches high — the size of a commercially available standard display board. Care should be taken to select durable materials that will withstand state fair conditions. Displays must not require the use of electricity. If the display exceeds overall dimensions, ribbon placing will be dropped by one place.

1. Each county or school with members participating in the wheat variety plot may enter one display.
2. These displays will have been

planned and prepared by 4-H/FFA members enrolled in the wheat variety plot project.

3. Minimum age for state fair display exhibitors is 9 years before January 1 of the current year.
4. All displays must be in place and completed by 6 p.m. the day before the judging and remain in place until the exhibits are released.
5. Participants need to be present for the awards presentation with the donors. All displays will receive a purple, blue, red, or white ribbon. Purple and blue ribbon displays will be considered for additional recognition.
6. Former first place state fair wheat variety display winners are eligible to be awarded a top award again.

4-H Wheat Variety Display Exhibit Score Sheet

Basis for Award:

I. Educational Value70%

- Is the main idea of the display specific? Was the title or theme emphasized?
- Is the idea presented so clearly, so simply, so forcefully, that it will stop the casual observer?
- If the passerby stopped, did the display give the observer additional facts in a clear, concise way? For example, varietal differences in wheat, economic gains from the adoption of desirable practices, etc.

II. Quality of Display

Material30%

- Size, style, and neatness of lettering.

- Proportion of models and lettering balanced.
- Workmanship (including handouts, if used).
- Charts, models, and lettering used effectively to teach ideas.
- Colorful, artistic, neat and well balanced.

Section 7

Comments from Former 4-H Wheat Variety Plot Participants

“4-Hers can help by planting the plots for area people to view and preparing a display using the information they have learned from the project to help wheat growers in Kansas.”

“The knowledge I gained from the plot site tour helped me to understand the value of wheat production and marketing techniques needed to prepare me in the future for farming. I encourage other 4-Hers to enter in the Wheat Variety Plot Contest, because it is a great experience and there are lots of new people to meet.”

“The Wheat Variety test plots are a great opportunity to observe, and learn how the wheat you are growing reacts to your area’s temperature, climate and soil conditions. Overall, this project was a tremendous learning experience that all 4-Hers interested in wheat should consider.”

“One of the most challenging responsibilities associated with the wheat project was the construction of a display.”

“It helps me keep records and learn what varieties produce the best. It showed me how the newer varieties produced more than the old ones.”

“It gave me a chance to compare how different varieties do in the same field and to test newer varieties on our own farm conditions. By being in this event, it made the wheat project a lot more interesting.”

“I learned different varieties of wheat and how they differ from each other. Over the years of planting these wheat plots, I found varieties of wheat that I hadn’t previously known about.”

“It was from using test plot information that helped my decision making on what varieties to plant. I also learned to make a wheat display that was both attractive and interesting, and what type of information was needed to be a top-notch display.”

Comments from Kansas State Fair Judges on 4-H Wheat Variety Plot Display Exhibits

“Present information clearly and large enough so that it is easy to read. Signs placed on the sides of the display are more difficult to read. Include all valuable information. Graphs show an attractive comparison of the varieties. Use costs and returns information. Be sure to include fertilization information, also. Don’t overcrowd your display.”

“Make sure handout sheet fits your theme. Be sure to carry out the theme in your display. Use a theme that will attract the viewer’s attention. Be original.”

“Use photographs that are clear and large enough that they can be viewed easily. Use photos that tell the viewer something.”

“Color can be used to effectively show differences in varieties. Use contrasting colors.”

“Make sure lettering is straight and signs aren’t overcrowded.” Try to use the same style of lettering throughout. Make sure lettering is uniform. Make sure all lettering and information can be read from different angles, and that it is not covered up by some other portion of the display.”

“Too much information can overwhelm the viewer.”

“Do not use copyrighted or trademarked materials in your display.”

This publication has been reviewed to ensure that the contents reflect current research and practice.

Reviewer: **Chris Mullins, 4-H Youth Development Specialist;**

Review Date: **January 2019**

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