



Farmer-saved Wheat Seed in Oklahoma: Questions & Answers

Jeff Edwards
Small Grains Extension Specialist

What is the difference between farmer saved seed and certified seed?

Certified wheat seed has gone through a certification process overseen by a state agency such as the Oklahoma Crop Improvement Association. In this process, a grower wishing to produce and sell certified seed purchases seed of known variety and purity from the Oklahoma Foundation Seed Stocks. The growing crop is then monitored by Oklahoma Crop Improvement Association (OCIA) staff for contamination by weeds, disease, and other varieties. After the crop is harvested, samples are sent to the OCIA for purity and germination analysis to determine if the seed meets OCIA standards. In summary, the certification process is a system of checks that ensures seed sold as a certified class is of high quality and suitable for sowing by the purchaser.

Farmer-saved seed can be divided into two classes: bin-run seed that has not been cleaned; and custom-cleaned seed that has been processed by a local seed cleaner (in some cases, the producer). Bin-run seed is frequently contaminated by weed seed and inert matter and often has low germinability and vigor. This can result in poor emergence, reduced forage production, and low grain yield. The quality of custom-cleaned seed in relation to certified seed depends on the quality of seed prior to cleaning and the efficiency of the cleaning process at removing small and/or light seeds. In summary, the quality of farmer-saved seed is only as good as the quality-control measure used in seed production and the cleaning process used post-production. It may be very high quality or very poor quality.

Am I allowed to save seed from PVPA protected varieties?

Yes. Wheat varieties protected under the 1994 Plant Variety Protection Act (PVPA) can only be sold as a class of certified seed. A grower may, however, save seed from these varieties to plant on his/her own holdings (land owned, leased, or rented). The exceptions to this rule are Clearfield® wheat varieties that have patented genetic material that confers resistance to the Clearfield® herbicide system. Since these varieties contain a patented gene, they cannot be saved by the farmer, even for use on his/her farm.

Will I suffer a yield decrease when planting saved seed?

One can find literature to support either side of this argument, but most research supports the idea that whether or not a yield penalty is associated with farmer-saved seed de-

Oklahoma Cooperative Extension Fact Sheets are also available on our website at: <http://osufacts.okstate.edu>



Certified seed is produced under strict quality control guidelines to ensure seed meets minimum quality standards.

pend almost exclusively on the seed production and storage practices of the individual producer. A three-year experiment evaluating the performance of farmer-saved wheat seed in Oklahoma revealed the majority of farmer-saved seed samples performed comparably to their certified counterparts in terms of grain yield and forage production (Figure 1). Grain yield disadvantages of 15 percent and forage yield disadvantages

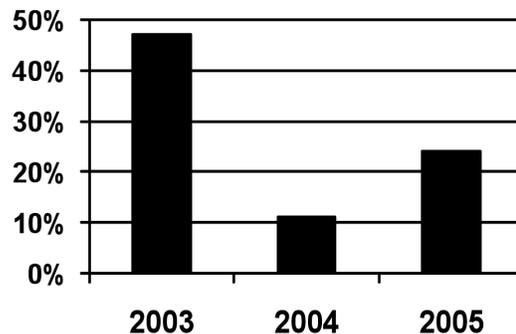


Figure 1. Percentage of farmer-saved wheat samples producing grain yield less than certified samples of the same variety at least one test site. A total of 19 farmer-saved samples were tested at four locations in 2003, 27 farmer-saved samples were tested at three locations in 2004, and 17 farmer-saved samples were tested at two locations in 2005.

of 27 percent, however, were observed for some of the poorest quality samples. Weed seed were removed from the farmer-saved wheat samples, so these results do not account for any yield disadvantages that might have occurred due to weed interference associated with weed-infested samples.

What is Quality Seed?

Several factors influence the quality of wheat seed for planting, but paramount among these are:

1. Free of weed seed
2. Purity
3. High germination percentage
4. High vigor
5. Free of foreign material
6. Free from small and/or shriveled kernels

How do I manage for quality seed?

The easiest way to ensure good seed quality for planting is to purchase certified seed from a supplier with a good reputation and history of quality seed. There are, however, some guidelines that can be followed to ensure that farmers wishing to save their own seed are successful in this endeavor. Among these are:

1. Sow enough certified seed each year to provide seed for sowing the following year. This ensures varietal purity and provides access to new varieties.
2. Only save seed from weed-free fields and clean all harvest equipment thoroughly before entering seed wheat fields.
3. Apply a fungicide and don't save seed from fields infested with loose smut or common bunt.
4. Store seed in a low-moisture environment and protect from insects.
5. Always perform a germination test and seed count (seeds per pound) prior to sowing and adjust seeding rates accordingly.
6. Apply a fungicide or insecticide seed treatment to aid with seedling establishment and survival.

Can I apply seed treatments to my saved seed?

Many seed cleaners are equipped to apply fungicide or insecticide seed treatments, but one can apply his/her own seed treatment as long as thorough coverage of the seed is obtained. To assist with this task, there are auger-mounted seed treaters available that can apply a treatment to the seed as it is augered into the drill. Finally, read and follow labels carefully as there are many different formulations of seed treatments. Some require dilution with water and some do not. Know which system works best for you and how to calculate the cost per unit of active ingredient to accurately compare prices among products.

Does the purity of a variety run out over time?

This is a common myth regarding wheat seed, but it is one that can easily be busted. Quite simply, any "off types" present in seed of modern cultivars are the result of mixing

and poor seed handling procedures. This is a wide-spread problem, which adds to the confusion about seed purity. In a three-year experiment at Oklahoma State University evaluating farmer-saved seed, it was common for farmer-submitted samples to contain greater than 10 percent of other varieties and a few samples were completely misidentified. To avoid varietal mixing and misidentification, keep complete records, clean equipment thoroughly between fields, have seed cleaned by a reputable processor, and sow certified seed each year to save seed for the following year.

Does weed seed really matter that much?

Unless you are producing wheat exclusively for forage, the answer is a resounding yes! Italian ryegrass infestations as low as two plants per square foot can reduce wheat grain yield by as much as 38 percent (Appleby and Brewster, 1992) and cheat infestations of 177 seed per square foot can reduce wheat grain yield by 35 percent (Koscelny et al., 1990). In ad-



Contamination with weed seed can lead to a long-term, costly weed infestation. Several of the weed problems, such as feral rye, that can be introduced via poor quality seed are nearly impossible to control without the aid of crop rotation.

dition to direct reductions in yield, increased weed infestation results in higher weed control costs to the farmer. Therefore, any added weed control costs or yield reductions from weed interference would need to be included in the cost of farmer-saved seed.

What are the savings associated with farmer-saved seed?

Like most economic examples, the cost comparison of farmer-saved and certified seed sources will be farm-specific. The easiest way to compare the costs of the two, however, would be to create a partial budget that accurately accounts for the full cost of farmer-saved seed (Table 1). Naturally, costs vary from farm to farm and not all farmers will experience all of these expenses when saving their own seed, but it is also important to realize that the cost of farmer-saved wheat seed is not simply the production cost or the market price of wheat.

References

Appleby, A. P. and B. D. Brewster. 1992. Seeding arrangement on winter wheat (*Triticum aestivum*) grain yield and interaction with Italian ryegrass (*Lolium multiflorum*). *Weed Tech.* 6, 820-823. 1992.

Table 1. Partial budget to compare the costs of farmer-saved seed to those of certified seed.

<i>Factors to consider</i>	<i>Your costs</i>
Wheat market price per bushel	\$ _____
Seed cleaning charges	\$ _____
Value of seed removed during cleaning	\$ _____
Seed treatment costs	\$ _____
Storage costs	\$ _____
Interest cost	\$ _____
Added weed control costs	\$ _____
Farmer-saved seed total cost	\$ _____

Koscelny, J. A., T. F. Peeper, J. Solie, and S. G. Solomon, Jr. 1990. Effect of wheat (*Triticum aestivum*) row spacing, seeding rate, and cultivar on yield loss from cheat (*Bromus secalinus*). *Weed Tech.* 4, 487-492.

The Oklahoma Cooperative Extension Service

Bringing the University to You!

The Cooperative Extension Service is the largest, most successful informal educational organization in the world. It is a nationwide system funded and guided by a partnership of federal, state, and local governments that delivers information to help people help themselves through the land-grant university system.

Extension carries out programs in the broad categories of agriculture, natural resources and environment; family and consumer sciences; 4-H and other youth; and community resource development. Extension staff members live and work among the people they serve to help stimulate and educate Americans to plan ahead and cope with their problems.

Some characteristics of the Cooperative Extension system are:

- The federal, state, and local governments cooperatively share in its financial support and program direction.
- It is administered by the land-grant university as designated by the state legislature through an Extension director.
- Extension programs are nonpolitical, objective, and research-based information.
- It provides practical, problem-oriented education for people of all ages. It is designated to take the knowledge of the university to those persons who do not or cannot participate in the formal classroom instruction of the university.
- It utilizes research from university, government, and other sources to help people make their own decisions.
- More than a million volunteers help multiply the impact of the Extension professional staff.
- It dispenses no funds to the public.
- It is not a regulatory agency, but it does inform people of regulations and of their options in meeting them.
- Local programs are developed and carried out in full recognition of national problems and goals.
- The Extension staff educates people through personal contacts, meetings, demonstrations, and the mass media.
- Extension has the built-in flexibility to adjust its programs and subject matter to meet new needs. Activities shift from year to year as citizen groups and Extension workers close to the problems advise changes.

Oklahoma State University, in compliance with Title VI and VII of the Civil Rights Act of 1964, Executive Order 11246 as amended, Title IX of the Education Amendments of 1972, Americans with Disabilities Act of 1990, and other federal laws and regulations, does not discriminate on the basis of race, color, national origin, gender, age, religion, disability, or status as a veteran in any of its policies, practices, or procedures. This includes but is not limited to admissions, employment, financial aid, and educational services.

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Robert E. Whitson, Director of Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma. This publication is printed and issued by Oklahoma State University as authorized by the Vice President, Dean, and Director of the Division of Agricultural Sciences and Natural Resources and has been prepared and distributed at a cost of 20 cents per copy. 0309 GH.