

Certified Seed and Variety Selection

Lesson 4: Certified Seed and Variety Selection

Quality crops begin with quality seed. This may sound like a simple statement, but it is not. The process of providing quality seed involves an entire area of agricultural expertise in agricultural research. Agricultural researchers have devoted considerable time and effort to provide dependable, quality seed to farmers. This seed is known as certified seed. This lesson will discuss the characteristics of certified seed, the classes of seed certification, benefits of using certified seed, and factors to consider when selecting a crop variety.

Quality Seed Characteristics

Careful consideration should be given to selecting crop seed. Quality crops possess specific characteristics as do quality seed. Using quality seed improves crop yields an estimated 10 to 20 percent over crops produced from poor seed.

When purchasing seed, farmers should select seed from a good variety. A good variety would be one that has the reputation of producing a quality crop. Good germination is another desirable characteristic. Seeds that fail to germinate are worthless. Other characteristics of quality seed are proper size and development; uniformity in size and shape; absence of seed-borne diseases and insects; absence of prohibited, noxious, and other weed seeds; absence of mixtures with other crop seeds and other varieties; and absence of inert materials.

Seed Certification


The main objective of seed certification is to monitor the seed production process to ensure that genetic purity is maintained. Agencies that certify seed work with agricultural experiment stations, agronomists, and experienced growers under strict guidelines to produce pure seed varieties.

Certification programs have four classes of seed: breeder seed, foundation seed, registered seed, and certified seed. For seed to be certified, specific criteria must be met. Criteria for certified seed are: 1) the seed must be grown from registered or certified seed stock; 2) the crops produced must pass an inspection for mixtures, weeds, and diseases in the field; and 3) the harvested crop must attain the standard of perfection set by the seed association.

Each seed class must meet specific requirements for certification. Breeder seed is controlled by the originating plant breeder. Breeder seed is used in the production of foundation seed. Although breeder seed does not require identification tags or labels, foundation seed, registered seed, and certified seed do require labels or tags. Only small quantities of breeder seed are produced by commercial seed companies.

Foundation seed is owned and supervised by the original plant breeder (usually an agricultural experiment station). Foundation seed is the parent line for registered and/or certified classes of seed. Foundation seed requires a white identification tag or label. See Figure 4.1.

Figure 4.1 – Foundation Seed (white)

FOUNDATION SEED					
 MISSOURI SEED IMPROVEMENT ASSN. 3211 Larkmore Ind. Bldg. Columbia, MO 65201-4845	Labeled By Missouri Seed Company 12345 Example St. Example, MO 65999			Lot # Example Date Tested 8/08 Net Wt. 50 LB. MO. Permit 456 789 Out State # AR R000	
	Kind: Soft Red Winter Wheat Variety: Roane				
	PURE SEED 99.50 %	INERT 0.50 %	OTHER CROP 0.00 %	WEED SEED 0.00 %	
	GERMINATION 90 %	HARD SEED 0 %	DORMANT SEED 0 %	TOTAL 90 %	
	Nox Weeds/Lb 0	Seeds/Lb 12500	Test Wt 61lb/Bu	Origin Missouri	
UNAUTHORIZED PROPAGATION PROHIBITED-TO BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED-U.S. PROTECTED VARIETY-1994 PVPA 2007-2008 375416					
<small>In lieu of all other warranties, expressed or implied (including any implied warranty of merchantability or fitness for a particular purpose), and all other obligations or liabilities, we warrant to the extent of the purchase price that the seed we sell are as described by us on our container within recognized tolerances. Our liability whether contractual, for negligence or otherwise, is limited in amount to the purchase price of the seeds under all circumstances and regardless of the nature, cause or extent of the loss, and as a condition to any liability on our part, we must receive notice by registered mail of any claim that the seed is defective within 30 days after the defect on the seed becomes apparent. Seeds not accepted under these terms and conditions must be returned at once in original unopened containers and the purchase price will be refunded.</small>					
MEMBER OF ASSOCIATION OF OFFICIAL SEED CERTIFYING AGENCIES					

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Registered seed is produced from foundation seed that meets genetic purity and identity guidelines. Registered seed is tagged with a purple identification tag or label. See Figure 4.2. Registered seed may be used to produce certified seed or sold directly to farmers.

Certified seed is produced from foundation or registered seed that meets genetic identity and purity guidelines. Certified seed is tagged with a blue identification tag or label. See Figure 4.3.

The steps in the production of certified seed are diagrammed in Figure 4.4. The arrows indicate where the seed is used. For example, registered seed can be sold for the production of certified seed or for the production of field crops by farmers.

Many states produce seed to be exported to other countries. The Organization for Economic Cooperation and Development (O.E.C.D.) has set forth specific minimum requirements that must be met by the seed producers

Figure 4.2 – Registered Seed (purple)

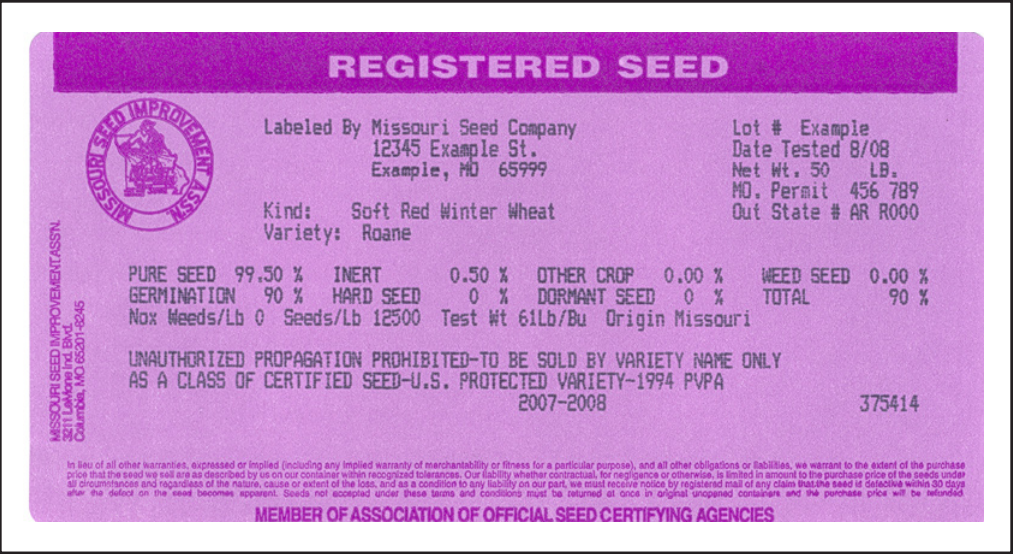
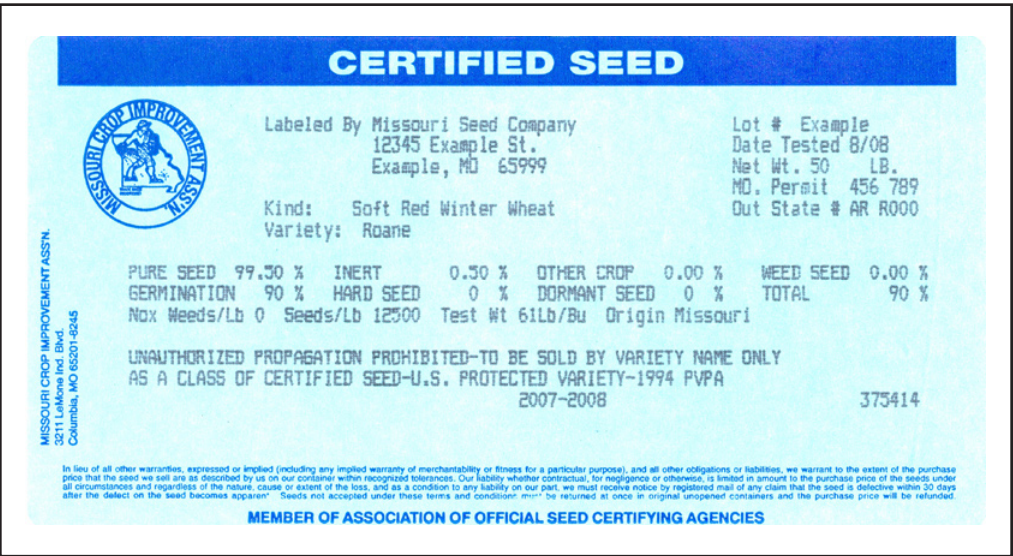
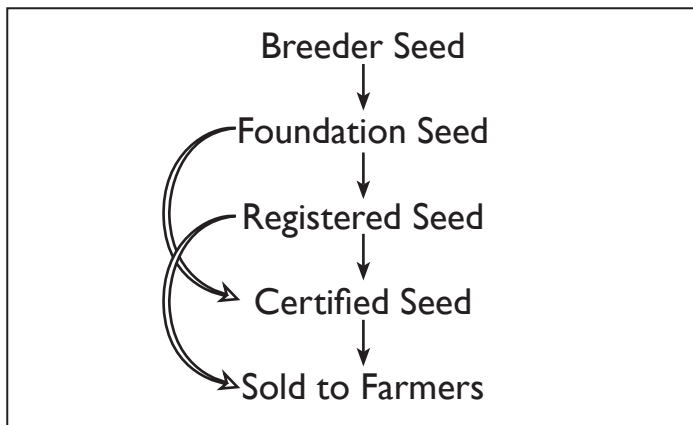


Figure 4.3 – Certified Seed (blue)



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Figure 4.4 – Steps in the Production of Certified Seed



in order to be tagged with an O.E.C.D. tag. The Missouri Seed Improvement Association working with the Missouri Agricultural Experiment Station and the United States Department of Agriculture, Agricultural Research Service, provides the needed information to Missouri seed producers for this certification.

Missouri seed producers presently export seed to Argentina, France, Greece, Italy, Mexico, Portugal, Spain, and Turkey. The tags that are placed on approved seed are black and blue in color with the specific information listed on the tag. See Figure 4.5.

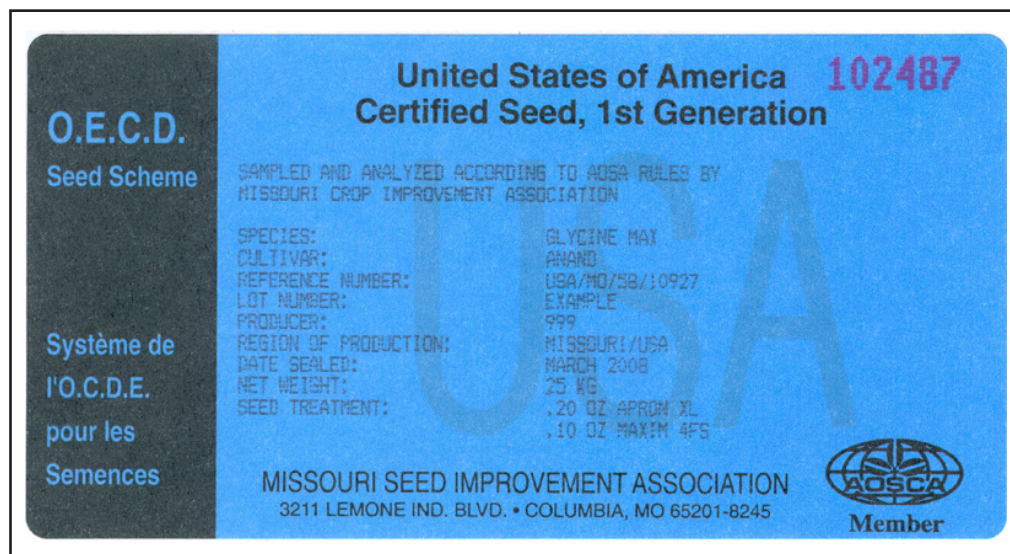
Requirements for Seed Certification

Three requirements must be met before seed can be sold to farmers as “certified” seed. First, the seed must be grown from foundation or registered seed stock. Second, the growing and harvested crop must pass an inspection for mixtures, weeds, and diseases. Lastly, the harvested crop of seed must attain the standard of quality set by the seed association. Seed which fails to meet any of the three requirements cannot be sold as “certified” seed in the state.

Benefits of Certified Seed

Farmers have found that the use of certified seed provides specific benefits. Farmers use certified seed because it is guaranteed to be the variety it is advertised to be. Certified seed guarantees no unexpected varieties. The minimum germination rate is guaranteed as listed on the tag. Therefore, the buyer is assured of the viability of the seed that is purchased. Using certified seed guarantees a high quality seed that is free of weed seeds, disease organisms, and insects. However, the cost of certified seed is often more than uncertified seed.

Figure 4.5 – O.E.C.D. Tag (black and blue)



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Crop Variety Selection

Many factors should be considered in selecting a crop variety. The environment is one very important factor. Environmental factors such as growing season length, annual precipitation, and the soil type affect the growth and development of crops. Unfortunately, most environmental factors cannot be controlled.

Seed selection should consider cost of varieties and adaptability to local growing conditions.

When selecting seed, it is helpful to know the characteristics of a crop variety. Certified seed provides this information to the buyer. When selecting a crop variety, consideration should be given to the adaptability of the variety. The ability of the variety to adapt to local soil and environmental conditions is vital.

Another important consideration is the yield potential. Matching the variety with the local growing conditions will help to ensure the crop meets its yield potential. Other

considerations are purity of the variety, quality of the crop (e.g., protein content and resistance to lodging), disease and insect resistance, and the crop's maturity date.

Summary

Quality seed should be used to produce a quality crop. Using certified seed assures the purchaser of certain quality and purity standards. Selecting varieties according to the cost, adaptability, yield potential, purity, crop quality, and disease and insect resistance is important. Farmers can reduce risk and produce quality crops through the use of certified seed.

Credits

Chapman, S.R.; L.P. Carter. *Crop Production: Principles and Practices*. San Francisco, CA: W.H. Freeman and Co., 1976.

Missouri Handbook of Seed Certification Standards. The Missouri Seed Improvement Association, n.d.