



BEST MANAGEMENT PRACTICES FOR HEMP SEED PRODUCTION

Seed Quality is Now More Important than Ever

Hemp seeds have great potential for production agriculture across the nation. There is no doubt that hemp presents a new opportunity for U.S. growers to expand or supplant their existing cropping base. However, it is critical that seed producers supplying the basis for these crops ensure both purity and quality of seed.

As all seed professionals know that quality seed doesn't just happen. Stages of production include choosing the appropriate species for production; constantly managing production to reduce impacts from diseases, pests and weeds; roguing off-type males and females, properly cleaning and handling seed to maintain quality and performance; and testing to ensure high-quality standards are met. Experienced seed companies also work to ensure the best seed for the local geography, climate, and other environmental factors that impact success.

The American Seed Trade Association (ASTA) has prepared "Best Management Practices for Hemp Seed Production" to assist seed producers in maintaining the integrity of their fields and maximizing production results. It is designed to serve as a reference document for companies developing individual quality management practices and operating procedures to be consistent with their respective research, development and seed production systems. It is equally as important that seed buyers be knowledgeable about the seed used in production. As such, this document is for distribution throughout the industry as a reference for seed producers and seed buyers alike.

It is important to recognize that these BMP's are not a substitute for Certified Seed standards administered by the Association of Official Seed Certifying Agencies (AOSCA). Seed certified through the AOSCA standards is verified for varietal purity, which is a critical factor in establishing quality seed for hemp production. As states are preparing their hemp-cropping regulations, in compliance USDA's mandate in the 2019 Farm Bill to enable production, they are considering the requirement for AOSCA Certified Seed. This guarantee of varietal purity is significant toward compliance consideration requirements for legal THC levels. While cannabinoids like THC and CBD are not present within the seed, they are produced throughout the lifecycle of the plant, most concentrated in the trichomes that develop within the flower, and a minor percent that may be found in some variety's fan leaves and stems. Therefore, it is not possible to test hemp seed for THC or CBD levels; that can only be done through a crop grow-out.

Best Management Practices for Hemp Seed Production

1. **Written Procedures:** Establish written procedures and documentation for seed production. Maintain records of employee training, field mapping, field management and inspection, weed presence, equipment use and cleaning, and phytosanitary risks.
2. **Seed Sourcing:** The goal of seed production is to produce genetically viable, pure seed. Verify seed identity for purity.
3. **Site Preparation:** When choosing a site for preparation, it is important to consider purpose of grow. Hemp is naturally dioecious, and most seed-based hemp production utilizes this type of seed. (A small percentage uses "feminized" seed, which has been chemically treated to create only female plants). Since hemp pollen is very small and can travel quite far, pollen transfer is an important factor that needs mitigation if you are creating seed for regermination. Consider the AOSCA recommended isolation distance from other hemp production, even if you are not creating certified seed. Hemp is a very robust species and next season "volunteers" are common. If your purpose is to create seed for regermination, it is best practice to rotate and not replant your hemp on the same field. The resulting crop's genetics can easily be tainted by volunteers from the prior production season. If you are simply growing for grain, fiber

or CBD production, this isolation and cross-pollination issue is not as impactful. Know which weeds are already present in the soil. Inspect and manage fields prior to planting. Consider a one- to two-year rotation of agronomic or cover crops to mitigate weed presence. Also consider the use of appropriate herbicides as an alternative to soil tillage. The goal of site preparation is a clean field. If applicable, establish an isolation distance between a prepared field and non-prepared land.

4. **Weed Control:** Weeds compete with hemp plants for resources, and the presence of weed seeds can contaminate a seed crop if it occurs during harvest. Before planting, scout fields for the presence of weeds, and remove as necessary. Use appropriate herbicides and consider other methods of weed control such as weed fabric, mulching, and hand weeding when traditional control methods are unavailable. Ensure borders are maintained between adjacent fields to decrease risk of crosspollination from weed seeds. During production, continue to actively monitor fields for undesirable plantings, like weeds. Remove as necessary.
5. **Pest Management:** Be mindful of plant pests in hemp seed fields. Take appropriate steps to remove insects, utilizing insecticides when appropriate.
6. **Roguing:** Roguing refers to removing plants with undesirable characteristics from fields to preserve seed purity. When creating seed, roguing off-types of both males and females is recommended.
7. **Harvest:** If harvesting mechanically via swathers, seed strippers, or combines, ensure your equipment is clean and free of weed seed both pre-and-post harvest.
8. **Equipment Cleaning:** Establish cleaning procedures for all equipment used during seed harvest. This should be done pre-harvest and post-harvest to ensure unwanted seed is not present. If weed seed is found during cleanout, ensure it is destroyed, and clean equipment again.
9. **Seed Cleaning:** Several different factors determine the amount of seed cleaning needed, including harvest method, desired purity, and seed characteristics. The first step of cleaning (threshing) can be done via machine or by hand. After threshing, most seeds will require additional cleaning to remove excess awns, hairs, and other extraneous materials.
10. **Seed Conditioning:** Utilize the appropriate equipment to remove the extraneous materials that are lighter than the seed, thus cleaning the remaining seeds to a high level of purity.
11. **Seed Storage:** If stored properly, many hemp seeds will maintain high viability. Proper storage will also slow the decline of germination rates. Seed should always be kept in breathable bags in a cool, dry, rodent-proof facility.
12. **Container Cleaning:** Ensure seed containers are properly cleaned prior to seed harvest. Closing mechanisms for seed containers should function so seed cannot be contaminated once in the containers.
13. **Testing:** Pursuant to the Federal Seed Act, all seed sold must be tested for germination and purity, by an AOSA certified seed laboratory. A copy of the test results and sample of the seed should be maintained by the company.
14. **Labeling:** Seed producers must follow guidelines in the Federal Seed Act when labeling seed. The presence of any seed comprising five percent or more of the seed mix must be clearly stated on the label. All seed offered for sale must comply with state requirements for purity and germination testing. These results are conveyed on the seed tag.

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