



THE COMPLETE HEMP GROWING GUIDE

Tips from the Field, Courtesy of High Grade Hemp Seed

As hemp enthusiasts, we at High Grade Hemp Seed understand how intimidating this crop can seem for farmers.

While hemp has been cultivated for centuries, it lost its footing in the U.S. and many other countries over the past 100 years. With a new hemp resurgence beginning in 2014, the industry is growing exponentially and shows great promise for the future, but after years of dormancy farmers have a lot to learn (and relearn) about how to successfully cultivate hemp.

High Grade is committed to supporting our customers and community in any way we can. With each growing season, our partners and farmers are learning more and more about how to cultivate properly for the highest yield and profitability. We need to share our best (and worst) ideas as farming best practices are reestablished for hemp.

Becoming a successful hemp farmer is possible! And we believe there's no better time to get started. Grow with us and share your expertise.

THE HIGH GRADE TEAM



**HIGH GRADE
HEMP SEED**
A SANTA FE FARMS COMPANY

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CONTACT US: [HIGHGRADEHEMPSEED.COM](https://highgradehempseed.com) OR (833) 867-7333

TIPS FOR A SUCCESSFUL SEASON

- Start with what you want to achieve and work backwards.
- With competition and options increasing, there has never been a more critical time to focus on top quality genetics. Sourcing your seeds and starts from a reputable partner is crucial.
- SOP's just became more important.
- Determine your crop and labor plan before planting, and ensure you have resources in place to carry you through the end of the season.
- Identify your irrigation and nutrient plan, and monitor throughout the season.
- Make sure you have a plan in place for testing and compliance.
- Build trust and stay close with your buyers so you can sell your crop for a strong price at the end of the season.



HOW SHOULD I USE THIS GUIDE?

There are many ways to reach success farming hemp. Regional differences are very nuanced, so we always recommend collaborating with the farmers around you and contacting your local Department of Agriculture for guidance. And remember that there is no 'right way' to grow hemp. It is important to conduct your own research and planning, make the best use of the equipment and resources you have, and follow your own real world experience. This guide is intended to raise common issues, share best practices, and provide broad education. It is not intended to solve every problem, answer every question, or outline the only way to grow hemp.

INTRODUCTION: THE POWER OF HEMP

Hemp is the most genetically diverse plant in the world. This crop is revitalizing agriculture and delivering life-changing returns for farmers. Conservative figures say CBD and other cannabinoids sales will bring in more than 13.9 Billion by 2022. (Source: Brightfield Group, 2019)

SEED GENETICS

Work with a partner who has a proven track record and is dedicated to helping you reach your desired outcomes. Premium genetics like High Grade's ensure you are starting each season with the right investment. Since 2011, we've been driving hemp seed genetics and have a proven track record.

SEED STORAGE

High Grade seeds are packed in shelf-stable packaging. Once you receive your seed, we recommend storing it in a dry, cool place until planting. Hemp seeds should be kept away from high and low temperatures and direct light.



SEEDS, STARTS, OR CLONES?

SEEDS VS. SEED STARTS

This is a question our sales team responds to all the time: “Should I purchase seeds or starts?” While there are certainly scenarios that make direct seeding a good choice, if possible, we recommend starting seeds before planting. And in most situations, we recommend starting in a greenhouse versus outdoors. This allows time for germination and allows plants to establish a healthy root zone.

For farmers who do not have greenhouse infrastructure, we encourage seed starts over traditional seed. You often get better performance in the field and remove the demand of nursery infrastructure for starting plants. We also find that starts are typically less susceptible to pathogens and mold. Please keep in mind that seed starts are sensitive to overwatering and underwatering, so it is important to check them daily and adjust your watering cycle accordingly.

Once seed starts are received, you should notice that each has a strong root system. Typically the taproot forms several weeks after germination, making your starts ideal for planting when you receive your order. Most farmers will harden their starts with some time outdoors in direct sunlight prior to transplanting to the field. Remember that it’s important to get seed start plugs into the soil before the tap root becomes root bound.





CLONES VS. SEED STARTS

Clones are created with cuttings off stock plants, so you always get a genetic copy of the original plant. But unlike hearty seed starts, clones do not have taproots and will instead have shallow root systems. There are pros and cons to clones:

- With clones, feminization and genetic purity is guaranteed. But genetics can weaken over time and cause issues with the plants' ability to defend against insects, disease, and environmental stress.
- Hemp clones do not produce a taproot, which normally acts as an anchor and helps with water uptake.
- Clones are not usually the right choice for large-scale outdoor farms, but may make sense for boutique growers who want to capture premium traits within smaller growing operations.

TIPS FROM THE FIELD

SOIL & FIELD PREPARATION

Preparing your soil and field for cultivation is incredibly important. It will help encourage vigorous plant growth and ensure you reach your goals. We work with our team of agronomists and local ag departments to test soil and build a plan based on the unique factors present in each field. Each farmer should prep their fields based on regional nuances and soil conditions. For example, if you are farming on new acreage, planting should be preceded by more extensive prep than fields that have been cultivated for years. Keep in mind that hemp prefers well-drained soil.



SOIL & WATER TESTING

There is an obvious symbiotic relationship between soil, water, and plant health. As with any plant, soil and water are incredibly important. We have found that hemp grows best with the right type of soil and the right amount of water. We recommend a focus on abundant organic matter combined with the right PH.

BEFORE PLANNING YOUR CROP, IT'S IMPORTANT TO:

- Talk with an extension agent and agronomist to understand local success factors;
- Test soil and water;
- Add soil amendment to build the health of the entire field ecosystem. Leveraging the right nutrients helps ensure the best yields. Keep in mind that it can take years to change soil structure and this aspect should be approached strategically over time.

LABOR

Hemp can be a labor intensive crop, with the level dependent on your infrastructure. We've found that having knowledgeable, experienced crews makes all the difference. From crop upkeep to culling males, you need a consistent team who can help ensure that field conditions are optimal and hemp plants are thriving. We recommend checking on your plants daily.



IRRIGATION

There are several types of irrigation that are typically used in the cultivation of hemp including drip irrigation (surface and subsurface), pivot irrigation, and flood irrigation. In some regions of the country where rainfall is regular throughout the summer, irrigation may not be required. Regardless of your methodology, it is important to monitor watering cycles and moisture levels closely. Over-watering can be a huge concern for hemp farmers as too much water can cause a stress response in the plants. It also opens the door to pathogens like mold and bacteria which thrive in moist conditions. As with soil, checking the PH of your water is important. Remember that hemp plants prefer well-drained soil. Based on your irrigation plans and water availability, it's important to ensure you have enough water to carry you through the season.





FEMINIZATION & CULLING MALES

At High Grade, we have a 99.98% feminization rate. Starting with feminized hemp seed is critical to minimizing your male population in comparison to results with regular seed. Regardless of whether you plant feminized or traditional hemp seed, if you are growing outdoors you will still need to check your fields and cull males as they emerge and can be identified. Keep in mind that male hemp pollen can carry for miles, so you can spread pollen to others if males are not culled. Here's how to spot male vs. female and hermaphrodite hemp plants:

FEMALE

Females can be identified through their pistils. Typically, female plants continue to flower, forming fragrant buds until they are pollinated or harvested.

MALE

Males develop pollen sacks at the node of the plant. Once those pollen sacks mature, they spread pollen so it is essential to cull them quickly.

HERMAPHRODITES

Our genetics are feminized, but based on multiple variables, especially stress, hemp plants can express hermaphroditic traits.

NUTRIENTS

Plants prefer to absorb some nutrients through foliage vs. roots. This requires different types of nutrients for foliar or root feeding. There are many products available to meet the needs of hemp plants. While all plants need the right nutrients to thrive (both at the root and through their foliage), we believe that less is more and nutrients should be delivered according to a plan and based on requirements. Organic farmers have had success leveraging beneficial bacteria and nutrients along with compost to support healthy growth. We recommend consulting with agronomists or a local extension agent to ensure you have the right nutrient plan for your area and field conditions. With cash crops like hemp, it pays to have the proper expertise and customize your approach.

PATHOGENS & PESTS

Keeping your plants healthy and safe is a top priority. Farmers know that pests are part of farming and pathogens are an unavoidable reality. Most pathogens impact plants that are already experiencing trauma and stress, so it's important to monitor vigilantly and consider environmental factors that could be negatively affecting the health of your hemp plants. For both pests and pathogens, there are resources available. Farmers are encouraged to develop an integrated pest management strategy when approaching a pathogen or pests.

TESTING

With USDA rules, compliance testing is increasingly important. Monitoring your plants is critical to your success and profitability. After the first month, we recommend testing at least every two weeks and potentially increasing your testing frequency as you get closer to harvest.





PLANTING DEFINITIONS FOR HIGH GRADE VARIETALS

PHOTOPERIODS & PLANTING DENSITY

Hemp is a versatile crop that thrives in many different climates. It is considered an annual that grows based on photoperiods, meaning that in most varieties flowering begins with seasonal change when days shorten and nights are extended. As an example, we typically see pre-flowering occur in late July in Colorado. But these cycles vary widely based on the varieties you plant and their unique growing environment. Also remember that greenhouses can have very different cycles vs. field plants that are cultivated outdoors. Below, we have shared guidelines for planting density based on the type of hemp you are growing and environmental considerations.

AUTO FLOWER

Since this variety is day neutral and will essentially go into bloom shortly after establishing the tap root, we have seen the best performance through direct seeding and irrigating with drip tape or pivot irrigation. If this type of irrigation is not an option, still propagate in Ellepot, but it is crucial that the starts are transplanted within two weeks of emergence so they can establish their roots prior to flowering. Often, planting density is tighter as you will try to shade out weeds before the canopy grows. We recommend 10,000-20,000 plants per acre. When planting auto flower hemp varieties, we recommend prime and coated seed into direct ground with plant tape application and/or using a precision planter to skip the step of going into flats.



FULL TERM VARIETALS

In Colorado, our growing season requires us to plant in late spring. We typically start our full term varieties in greenhouses in flats in early May. This allows us to get full propagation veg time in before we transplant to the field. We recommend starting seeds in flats if you have infrastructure to do so, if not, we recommend considering seed starts, as they have an established root zone and will perform more reliably throughout the season. For planting density we recommend 3-5 ft centers with between 2,000-3,000 plants per acre (depending on plant spacing), with some farmers experimenting with up to 5,000 plants per acre.



EARLY VARIETALS

As with full term, we recommend starting seeds in flats if you have infrastructure to do so, if not, we recommend considering seed starts. For planting we recommend 3-4 ft centers with between 2,500-5,000 plants per acre depending on plant spacing, with some farmers experimenting with higher density.



ADDITIONAL SUPPORT & RESOURCES

At High Grade Hemp Seed, we are committed to the success of our customers and the hemp industry as a whole. If you have questions, would like to discuss options, or are ready to purchase seeds or starts, don't hesitate to reach out to our team at:

[HIGHGRADEHEMPSEED.COM](https://www.highgradehempseed.com) OR (833) 867-7333.

HELPFUL RESOURCES & LINKS:

<https://www.ams.usda.gov/rules-regulations/hemp>
<https://www.rhizosciences.com/>
<https://www.csupueblo.edu/institute-of-cannabis-research/>
<https://www.colorado.gov/pacific/agplants/industrial-hemp>
<https://www.netafimusa.com/>
<https://hempinsects.agsci.colostate.edu/>

