



Feminized Seeds: Improving Production and Being A Good Neighbor

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Poll Question

YES

NO

Have you grown hemp before?



Brief overview of feminized seed production and discussion topics



What is feminized seed?



How GoodHemp's seed varieties are produced



Mitigating true male pollen is beneficial for all



Testing high feminization rates in GoodHemp seeds



Considerations when choosing seeds



Why to grow feminized seed



What is feminized hemp seed?



- True male staminate flowers
- Pollen detrimental to seed production and hemp fields



- Pistillate flowers
- Seed bearing plant



- Presenting clustered staminate flowers
- Pollen is utilized in feminized seed production



A stylized white line drawing of a hemp plant with large, serrated leaves and a flowering stalk, positioned on the left side of the slide. The background is a dark green textured surface.

Poll Question

If you plan to grow hemp, when do you plan to plant?

- June
- July
- August
- September/October
- November/December
- January/ February
- March/ April
- May
- Learning more in order to decide

A white line-art illustration of a hemp plant with serrated leaves and a flowering stalk is positioned on the left side of the slide, partially overlapping the yellow text box. The background is a dark green field of hemp plants.

Poll Question

If you are growing hemp, will you be planting

- Clones
- Feminized seed
- Non-feminized seed
- Not planting hemp in 2020

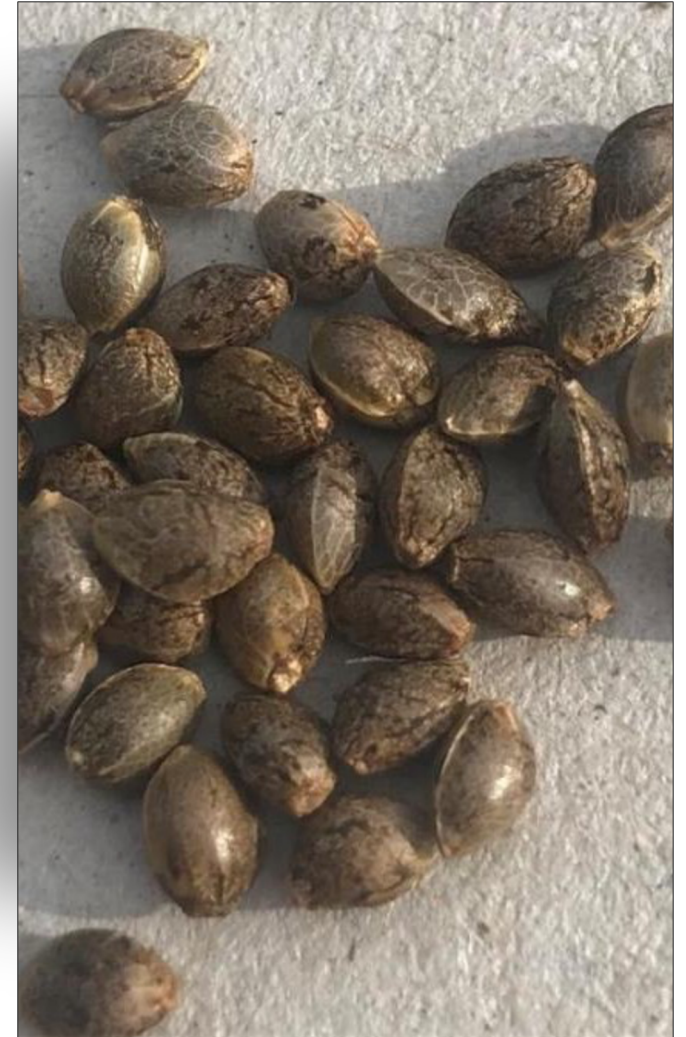
Can you tell which hemp seed is feminized and which is non-feminized?



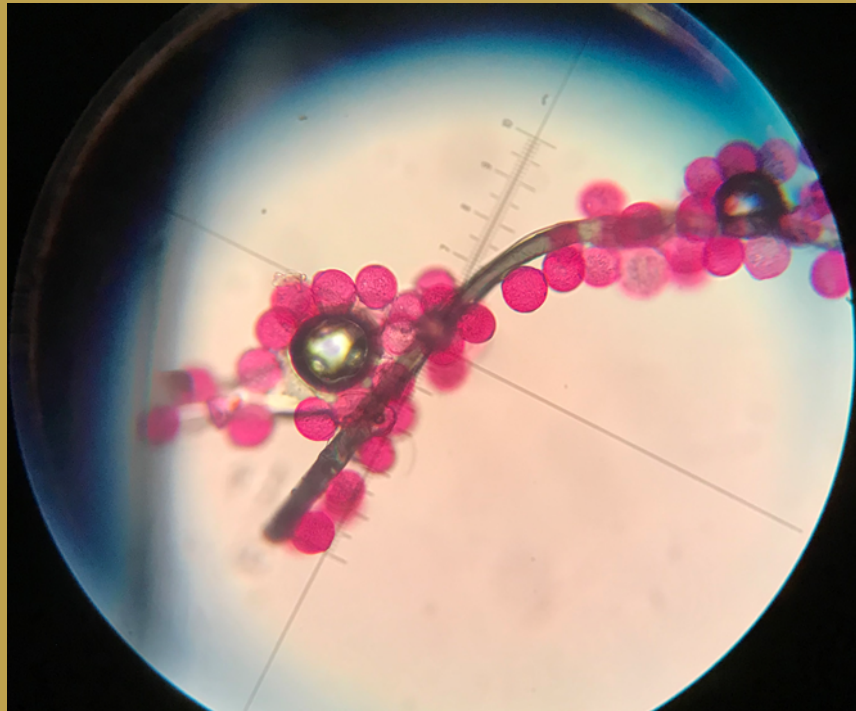
Visually unable to differentiate until you're in the midst of your field season or through genetic testing

50%

of non-feminized seed will be males on average



Staminate flowers have an abundance of pollen that can be small in size and travel far



Microscopic view of pollen



Close up of pollinated female flowers



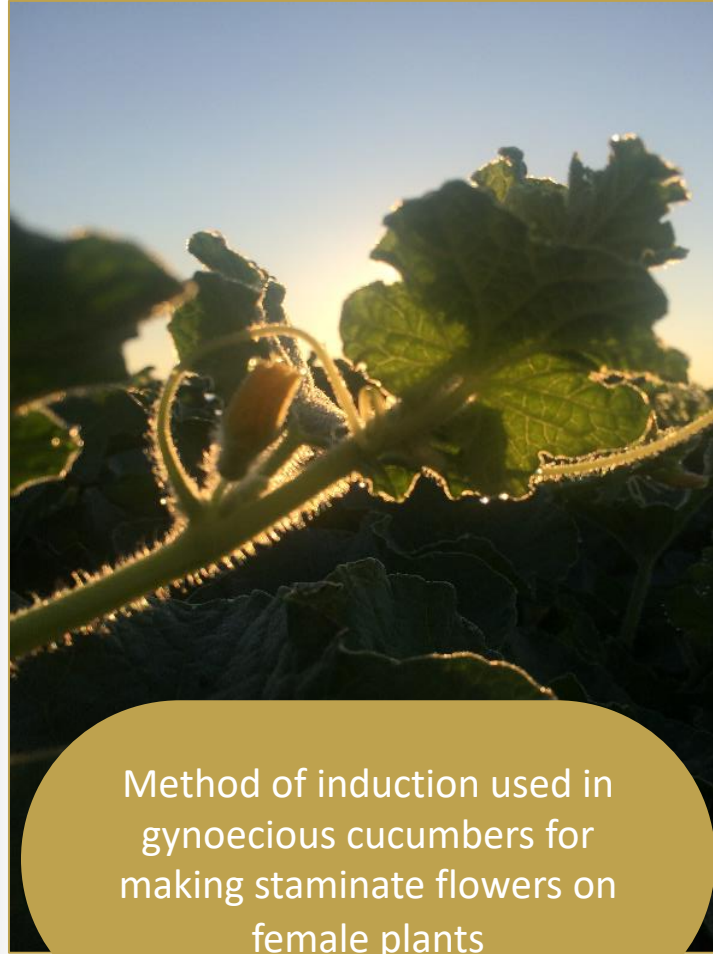
A single true male (XY) can produce hundreds of thousands of pollen grains



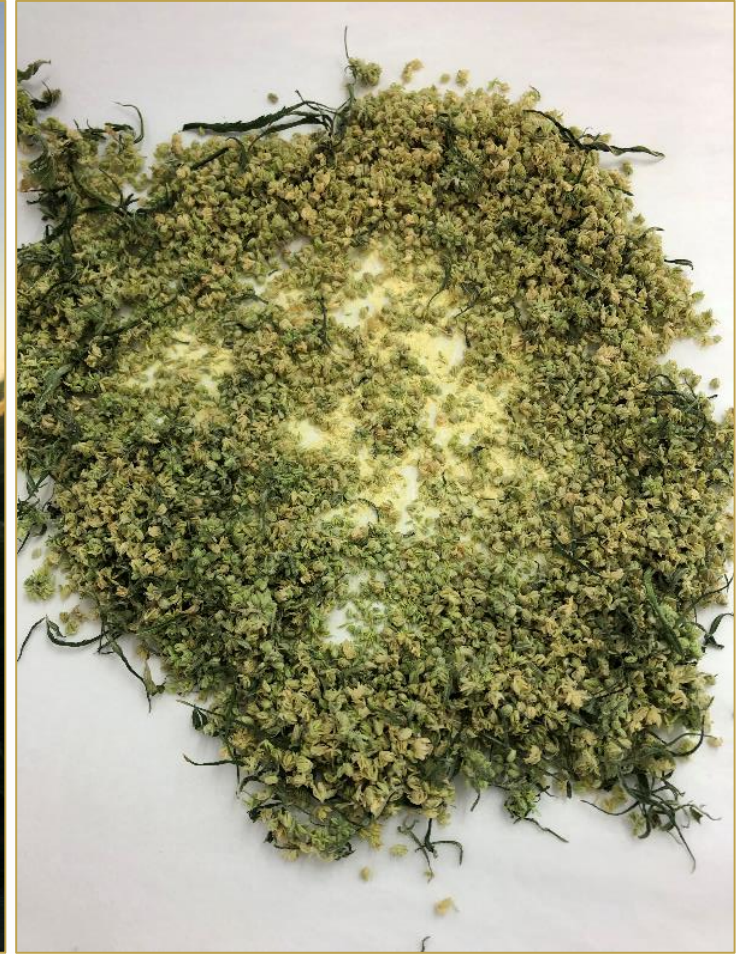
Variability of staminate flowers in different induced hemp varieties



Producing feminized seed – safety and efficacy varies



Method of induction used in
gynoecious cucumbers for
making staminate flowers on
female plants



Where is feminized seed produced?

Outdoors Seed production

Controlled pollination for a wind pollinated species can be challenging Crop damage or loss due to climatic conditions



Indoor Seed production

Scheduling temperature, lighting, watering Safeguards in place to protect against rogue pollinators Input costs



Various pros and cons associated with hemp seed production



Being a good neighbor and managing pollen flow – looking to other crops as a reference point

Corn represents an additional cross-pollinating species

Wheat and soybeans are self-pollinated species



Testing high feminization rates in GoodHemp varieties

Variety	Third Party Lab #1	Third Party Lab #2
Arcadia Variety ASG-202-2222	100%	100%
Arcadia Variety ASG-202-1111	100%	Pending
Competitor Variety Y	96.80%	Pending
Competitor Variety Z	91.90%	98%



External, third party testing results to independently verify Arcadia’s feminization rates

Internal QC lab is an additional check

Poll Question



What are the three most important factors to you in selecting hemp seed? (select 3)



Total cannabinoid content



Compliant certificate of analysis (COA)



Feminized seed



Non-feminized seed



Harvestability



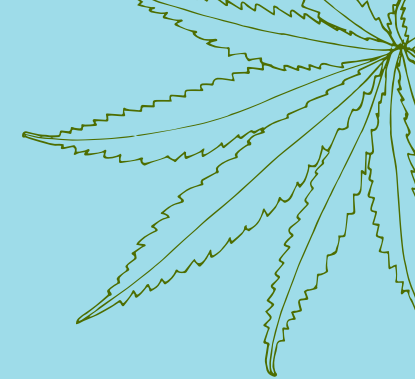
Brand



Biomass yield per acre



Germination rate



Why choose to grow feminized seed?

Developing seed on female hemp plants



Greater risk associated with non-feminized seed

- Field may be up to 50% males
- Inadvertently pollinating may lead to additional seasons monitoring for volunteers
- Seeds reduce the value of the crop
- Additional inputs and labor costs scouting + greater risk missing a male



Feminized seed mitigates risk

- Being a good neighbor and preventing pollen flow
- Less labor intensive rouging males

Considerations when selecting hemp seed



Harvest maturity
and size can be
inconsistent

May create a creative
challenge with
equipment and
planting density

GoodHemp is about bringing
consistency to the market with
coated feminized seeds

Improving production practices by selecting feminized seed



Who will be scouting?



When will fields be scouted?



Tools necessary to scout



Identifying a male

Our R&D hemp pipeline aims to address the most pressing challenges across market segments





THANK YOU

Please register and join for our next session:

**Plant Spacing:
Decisions About Your Field Design**

Thursday, June 11th, 10 am pacific time | 1 pm eastern time

www.GrowGoodHemp.com

www.HempInnovationSeries.com