



Recognizing Male Hemp Plants in the Field: Improving Quality of Product

Madeline J. Tomka
GoodHemp Grow Operations Manager, Arcadia Biosciences



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Arcadia brings modern agriculture expertise to Good Hemp



18+ years experience improving crops and their seed performance



Bringing deep understanding of other crops to hemp



Only publicly traded company in hemp genetics



Most experienced team in hemp genetics

- More PhDs, more geneticists
- Importantly, more practical field agronomists who have grown this crop previously



Webinar discussion topics



Stages of hemp plant development



The biological terms for flower parts of male and female hemp plants



How to identify a male hemp plant



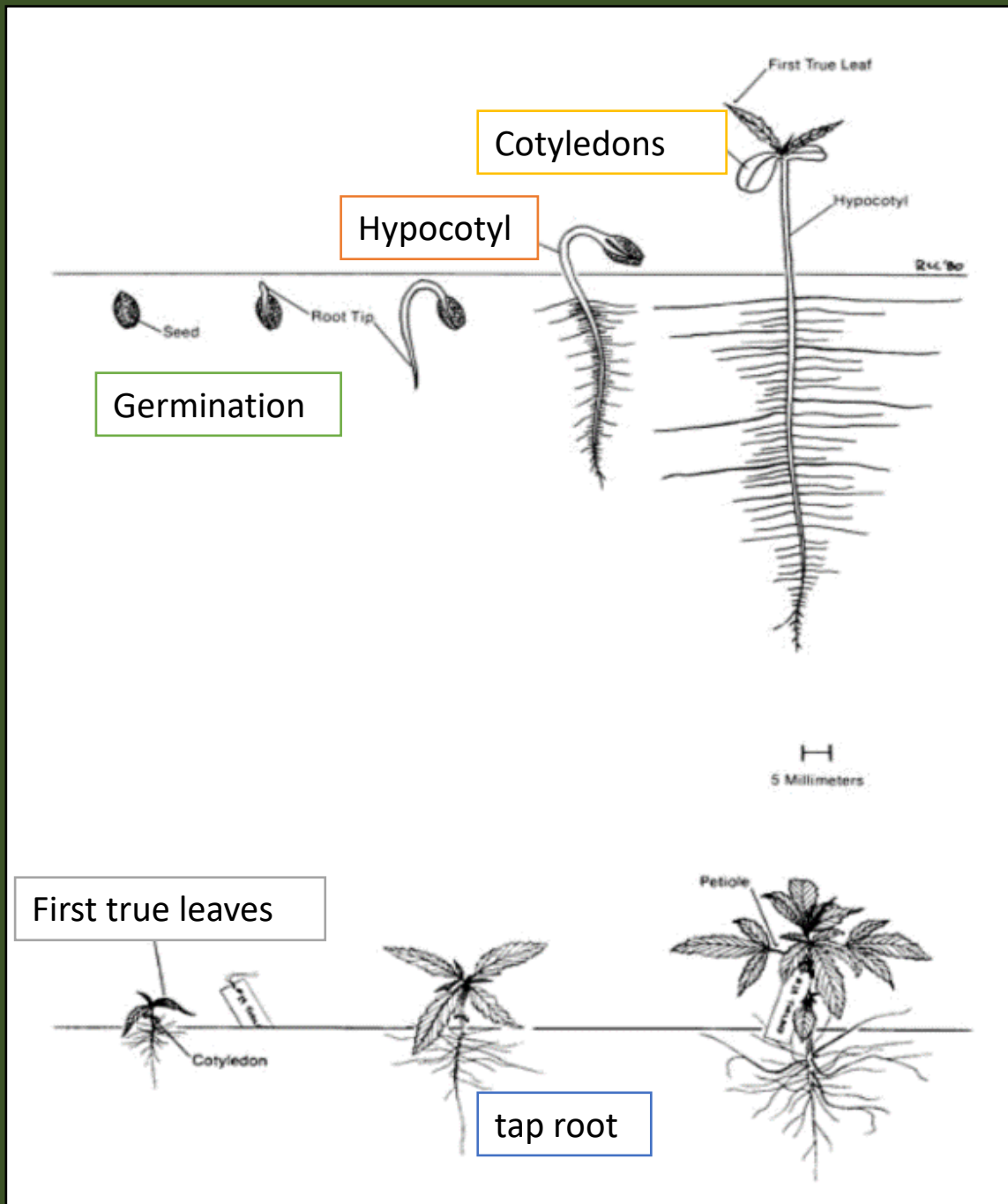
Flower initiation and timing



How males impact your crop and why it is beneficial to remove them



Beginning of hemp life cycle



- Germination can be as soon as three days
- Hypocotyl emergence can be within a week
- Seeds produce a tap root
- Cotyledons are the embryonic leaves that unfold after emergence
- First true leaves follow the cotyledons and the leaves have serrations.

A comparison of male and female hemp flowers

Male - XY Chromosome



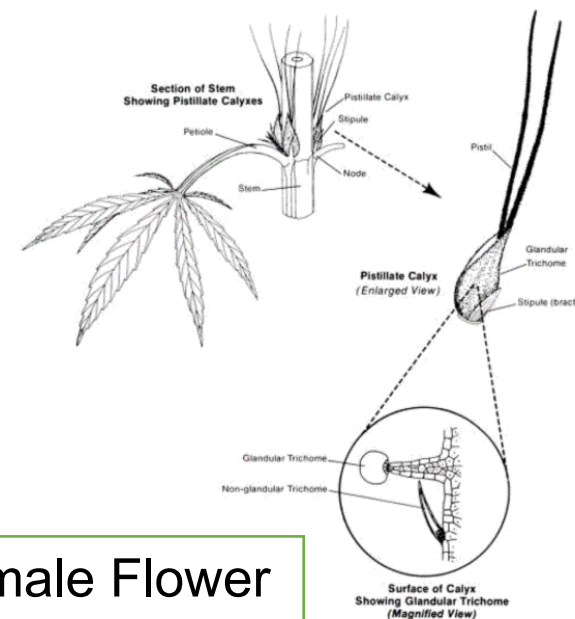
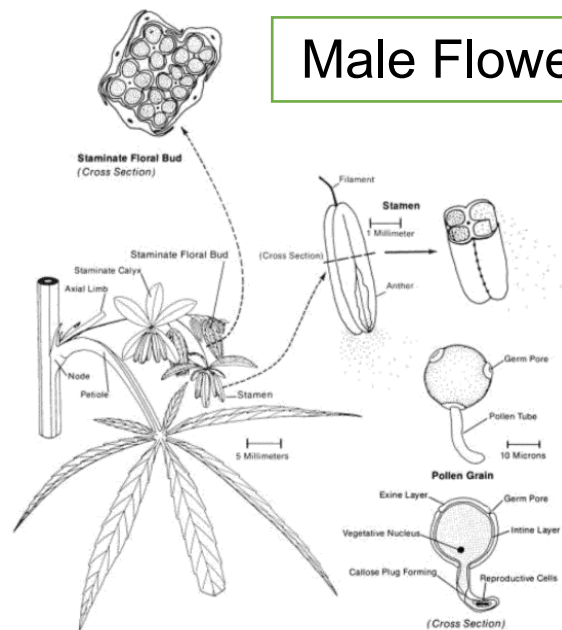
Female - XX Chromosome



A comparison of male and female hemp flowers continued



Male Flower



Female Flower

Detailed illustrations of a male and female flower



Anthers – where pollen grains are produced



Corn Anthers



Hemp Anthers





Developing seed



Inflorescence: a cluster of flowers

Pistils: the two hair like pollen receivers



Corn with silks

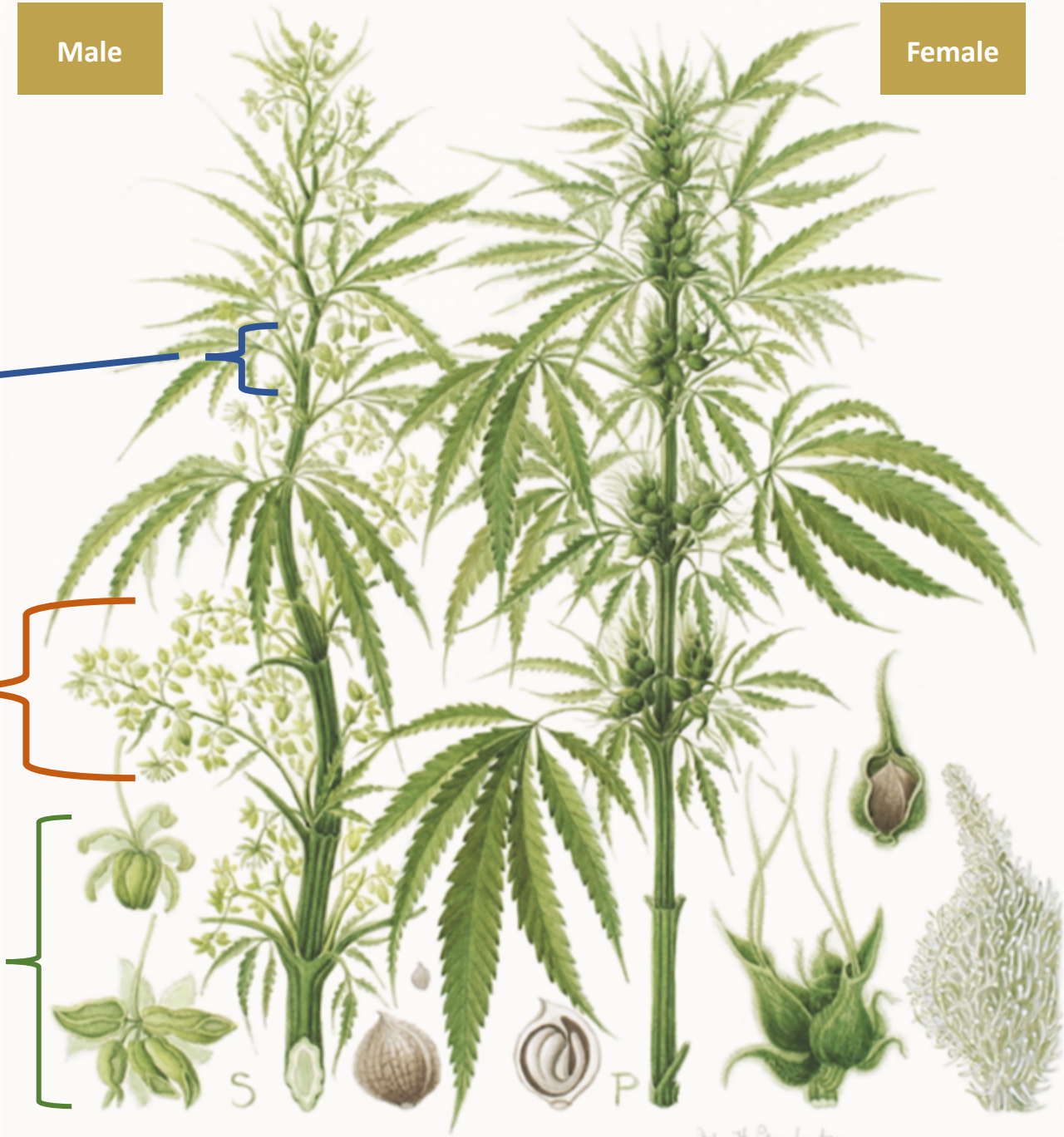
Silks and Pistils – the pollen receivers

Key terms for male identification

- Node
- Staminate flowers
- Anthers

Male

Female



Key terms for female identification

- Inflorescence
- Pistillate flowers
- Node
- Pistils

Male

Female





Flower Initiation

- Generally males flower prior to females
- Variation in flowering timeline across varieties
- Monitor your field to avoid unintended pollination



Stages of male flowering and identification

- 1 – No distinguishable flower structures present on nodes
- 2 – Beginning stages of flowering
- 3 – Flowers visible on the apical meristem
- 4 – Maturing staminate flowers on lower nodes
- 5 – Fully mature, open staminate flowers dispersing pollen

Finding males in a greenhouse from a “feminized” seed lot



**Purchased as 100% feminized –
closer to 70% feminized**



Subtleties of finding a male



Identifying plants in the field

- Staminate flowers are developing and hidden
- From afar they are hard to decipher
- Looking more closely reveals a male





Staminate Flowers Dispersal Strategies

Staggered flower maturity on one plant
leads to weeks of pollen producing
flowers



Male plant structure



Removing males is just as important as
scouting hemp for insects or disease



There are many benefits to being able to quickly and accurately recognize males when growing hemp... trusting where you source your genetics and having a *resource* in them is GoodHemp.

Grow with us!





THANK YOU

www.GrowGoodHemp.com
www.HempInnovationSeries.com