

## **Monoecious vs. Dioecious – Why are there males in my Canda or Joey?**

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Industrial Hemp varieties are classified as either Monoecious or Dioecious.

The definitions of these classifications are as follows:

mo-noe-cious (mə'nēSHəs)

*adjective*

(of a plant or invertebrate animal) having both the male and female reproductive organs in the same individual; hermaphrodite

di-oe-cious (dī'ēSHəs)

*adjective*

(of a plant or invertebrate animal) having the male and female reproductive organs in separate individuals

In monoecious hemp varieties you will find the male and female plant parts on the same plant. However, hemp is naturally dioecious, meaning that monoecious varieties are actually a result of careful plant breeding tactics in order to increase grain yields and produce better quality fibre. Without plant breeding intervention and maintenance, the variety wants to revert to its natural dioecious state. Breeding and maintaining monoecious varieties is more intensive than the same in dioecious varieties.

Dioecious varieties have distinct male and female plants in the population. Male plants can account for up to 50% of the plant population.

All monoecious varieties have a variety of plant types within the stand. The majority of the plants will be monoecious, that is, the male and female parts being on one plant. The male part of the plant can be found at the bottom of each seed-producing branch. The female anatomy can be found at the top of the branch. It is a myth that 100% of the plant population in a monoecious variety will be of this type of plant, as you will also find pure male and pure female plants in a monoecious stand. The amount of pure males that can be found in each variety is acknowledged in the variety description, written by the plant breeder when the variety is registered. Routinely, there is up to 10% pure males in a monoecious variety stand. Without conducting a census of the plant population it is difficult to tell exactly how many pure males or females are found in the stand, and usually the number of males looks worse than it really is. This is because the male plant's distinct characteristics make them stand out against the rest of the plant population.

The number of males in a hemp crop can vary from year to year and from field to field in both monoecious and dioecious varieties. Stress, especially in the early stages of crop growth, can increase the number of males in a crop stand. For example, if a field is planted and receives a heavy rain incident and the weather then stays cool and cloudy for the foreseeable future, the male plant population can increase. This is usually very evident in the low spots of the field where water may have remained for a few days after the rainfall. The male plants increase around the low area where the stress has occurred.

On your farm, our monoecious varieties, Canda and Joey, will have a majority population of true monoecious plants. However, it is important to remember that 100% of the plants being truly monoecious is not realistic, and that in actuality the field will include a range of plant types from pure

male to true monoecious to pure female, depending on the soil type, year, weather and environment it is being grown in. This explains why your Canda or Joey plant stand looks a little off to you! Rest assured, your seed was bred in a breeding program that employs intensive rouging and monitoring of the plots to ensure your Canda and Joey performs to the full potential of the variety in your specific field environment.

For your reference, please review the Sengbusch Classification System, which defines the five degrees of monoecious characteristics and is used by hemp breeders in their programs Canada-wide. The scale can be found at: <http://www.hemptrade.ca/eguide/background/the-sengbusch-classification-system>.

As always, if you have any questions about your field, please do not hesitate to contact our office at (204) 629-HEMP or [office@pihg.net](mailto:office@pihg.net).