



HOPS TRIAL SUMMARY

OBJECTIVE

This hops trial was performed to determine the effect of **TrueSolum** on yield and oil content of a new planting from pots of Cascade variety hops.

TRIAL SPECIFICS

Location: Moxee, Washington

Trial Initiation: May 2023

Harvest: September 5, 2023

Trial Size: 6.9 acres with planting at 3.5 X 14 spacing, 2 pots planted per hill, 1,600 plants/acre

Protocol:

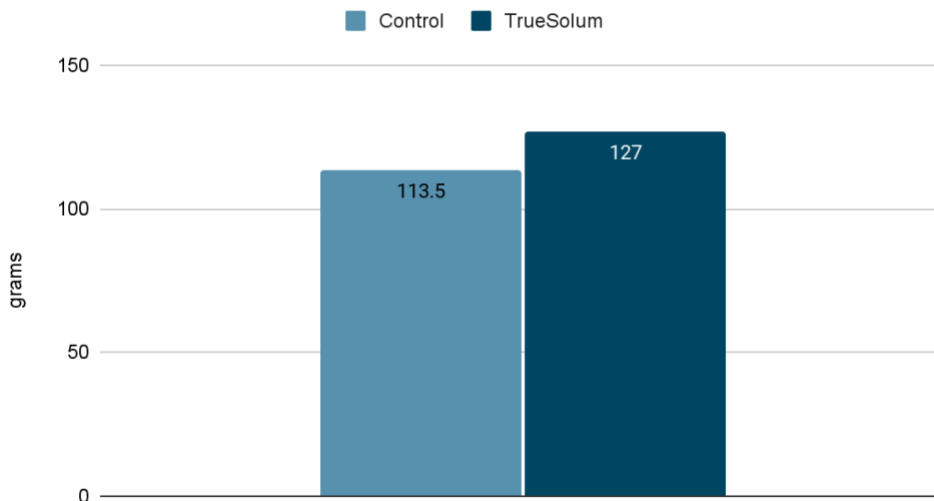
- **May 2 and May 3** - **TrueSolum** was applied at 2 oz per 1 gallon of water, 9 gallons of this solution treated 11,700 pots. The pots were treated with a backpack sprayer and then watered to wet. The treated pots were then planted
- **June 1** - 1 gallon per acre of **TrueSolum** was applied via the drip after the 1st training
- **July 3** - 1 gallon per acre of **TrueSolum** was applied at the beginning of bloom via the drip combined Penecal
- **July 17** - 1 gallon per acre of **TrueSolum** was applied via the drip
- **August 1** - 1 gallon per acre of **TrueSolum** was applied via the drip
- **August 14** - 1.5 gallons per acre Of **TrueSolum** was applied via the drip

Similar Control pots and acreage was treated per Grower Standard at the same intervals.

TrueSolum was the only difference in treatment between Control and Treated plants.

RESULTS

Weight Per 100 Green Cones



Green cone weights were higher and the cones noticeably bigger in the **TrueSolum** treated plot.



Manufactured by GreenTech Ventures, Inc.

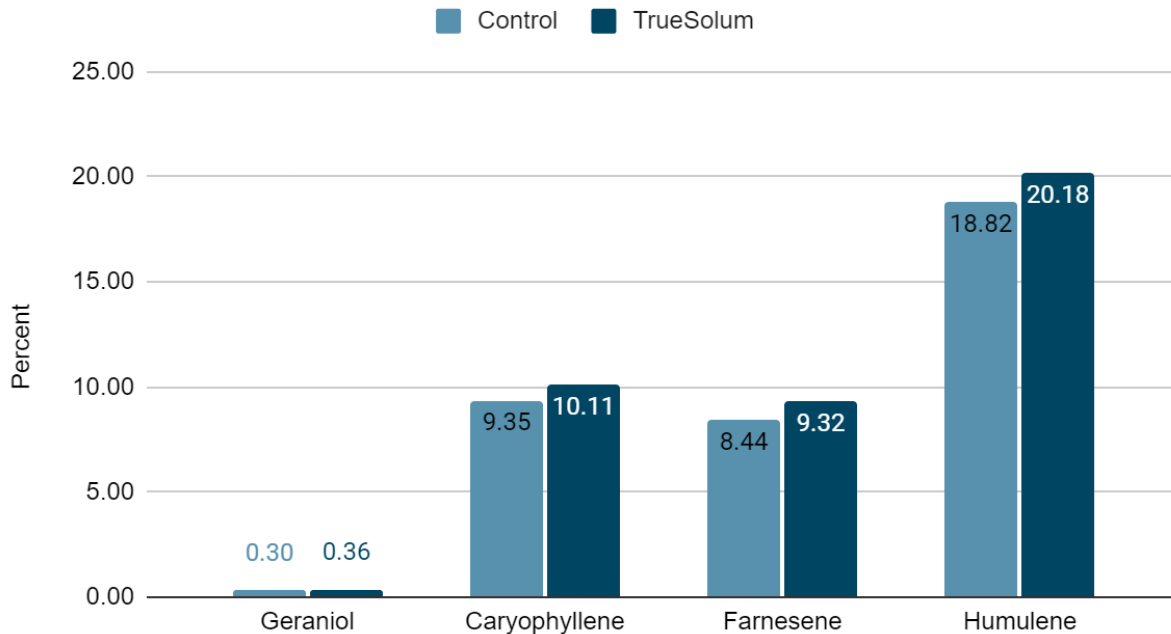
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Hops Oil Content



Applications of TrueSolum resulted in increases in the oils Geraniol, Caryophyllene, Farnesene and Humulene.

DISCUSSION

The essential oils found in hops cones are what give beer a bitter taste along with unique flavor and aroma characteristics. These oils are derived from the hop cones and generate the familiar aroma and taste related to the hoppy characteristics of beer. Using TrueSolum allows hops growers to optimize some of these essential characteristics of hops.

- Caryophyllene has a distinctive woody and herbal aroma, and often contributes an herbal character to beer. It is a spicy, earthy, sweet oil.
- Farnesene usually contributes a woody or herbal character to beer.
- Humulene is the second most common oil in hops and contributes woody, spicy, and herbal characteristics.
- Geraniol gives beer flavors characterized by a rose-like, floral, and citrus fruitlike aroma and flavor.

CONCLUSIONS

Applications of **TrueSolum** improved both total yield of hops cones as well as levels of key essential oils. This is one year of data on an immature crop. More research is needed, including trials on mature plants, to further investigate the value of TrueSolum in hops production.