



## Oregon State University Extension Service Marion County

### Olive Cultivar Evaluation Established at NWREC

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After three years of planning and cultivar acquisitions, a new evaluation of over 100 olive cultivars was planted at the OSU North Willamette Research and Extension Center (NWREC) in Aurora, OR in mid-July. The impetus for this planting originally arose out of the efforts of a small but dedicated group of olive growers in western Oregon, who have been experimenting with olive trees for over 20 years.



The new planting occupies one acre of gently sloping ground and is laid out in 12 rows on weed mat with micro-sprinkler irrigation for supplemental water during the dry summer. The planting is replicated, with the majority of the cultivars represented by four individual plants, though some are represented by fewer than that but included nonetheless for observational purposes, and possibly for data collection. Because of the wide array of cultivars included and since it is randomized and replicated, it is expected

the planting will provide extensive data on olive cultivation for many years to come.

Olive (*Olea europaea*) is a broadleaved evergreen tree native to the Mediterranean basin, where it has been cultivated for its edible fruit for over 5,000 years. Cultivation of olive spread from the eastern Mediterranean throughout the entire basin and subsequently to other parts of the world with a similar climate of mild, wet winters and warm to hot, dry summers.

In North America, this originally made the Mediterranean-climate regions of California the center of olive cultivation, starting with Spanish missions in the 18<sup>th</sup> century. Olive

growing in California expanded and evolved since then to focus on the production of table olives from orchards in the Central Valley. More recently, there has been interest in cultivating olives in non-traditional growing regions, including Texas, where olive orchards have been established on considerable acreage. And as mentioned earlier, there is keen interest in growing olives in western Oregon, where the small number of dedicated growers have been producing fruit and high-quality oil.

Despite the differences in climate between Oregon and Texas, the fundamental problem with growing olives in both regions is the same: winter injury to the above-ground portions of the tree. Originating as they do in the Mediterranean basin, a relatively mild climate, olives are not adapted to winter temperatures below approximately 15°F. Around this temperature, the woody tissues begin to suffer damage, which becomes increasingly severe at lower temperatures. As olives bear fruit from flowers borne on previous-season growth, injury to these tissues will reduce or potentially eliminate a crop for the following growing season. More severe freezes can kill the entire tree to the ground, although the roots usually survive and the individual plant regrows as a multi-stemmed shrub.

Freezes of sufficient severity to damage olives can occur in western Oregon and observational evidence shows that olive cultivars vary in their tolerance of cold. There is also similar evidence from California, which suffered a major freeze in December 1990, which did significant damage to olive orchards in the Sacramento Valley. Olive researchers subsequently categorized different cultivars for their susceptibility to this cold event. But such evidence of injury to the trees themselves in the literature is quite rare. Winter cold injury is not a significant concern in any major growing region worldwide. Where freeze injury data exists in the scientific literature, it usually concerns damage to flowers during bloom. This is ironic, since olives in western Oregon bloom in June, long after any risk of frost has passed. So, in order to determine which olive cultivars might exhibit greater winter cold hardiness, we will have to find out for ourselves.

This is the central reason behind the new olive cultivar planting at NWREC. Most of the included cultivars were obtained as cuttings from the olive collection at the National Clonal Germplasm Repository in Davis, CA from 2017-2019. All of the cultivars received were re-propagated in 2019 and rooted cuttings potted in spring 2020. All of the acquisitions were then planted out from one-gallon containers as plants of the same age in July. Since planting, the trees were staked



and have received regular summer irrigation and a light fertilizer application. Grass was seeded between the rows in September.

The planting is expected to provide data in the years to come not only on relative hardiness of a wide range of cultivars, but also other characteristics such as flowering, fruit set, harvest time and fruit quality attributes. Along with cold hardiness, these and other characteristics would be important for olive cultivation in the Willamette Valley. We are excited to see the planting mature and start to produce results!

### **Olive Resources:**

*Initial Considerations for Establishing Small Scale Organic Olive Orchards in the Pacific Northwest West of the Cascades* published by eOrganic by Tessa Barker, Neil Bell, Javier Fernandez-Salvador, Heather Stoven (2021) <https://eorganic.org/node/34189>