



United States Department of Agriculture

# Corvallis, Oregon Plant Materials Center

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## 2022 Progress Report of Activities

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### Novel Forages for Pasture and Livestock Health and Resilience

In the fall of 2021, we installed the first seedings for a new study to evaluate a long list of novel and common forages for their productivity, phenology, and adaptation to our site in Oregon's Willamette Valley. Pastures in our region are usually dominated by a small number of cool season perennials (and occasionally some annuals), and the range of options for forages outside this list is large.

Study entries include 104 cultivars of 62 different species. Each study entry was planted on three separate dates: October 2021, late March 2022, and late May 2022 to replicate common planting windows in the Willamette Valley. The study includes both irrigated and dryland treatments. Plots were harvested on an individual basis as they reached typical

grazing size (or were starting to flower). Forage harvesting began in March and was a major part of our weekly activities throughout the summer.

We also hosted 90 people over two field days, in May and in August, to display the plots.

Especially notable were the differences in growth based on sowing date and the differences in number of cuttings across species and cultivars. We'll be assessing phenology and biomass production for multiple years and will also monitor re-seeding

ability of annual species. Biomass and phenology data collected in 2022 will be analyzed during the winter of 2022/2023.



Figure 1. May forages field day at the Corvallis Plant Materials Center, May 4<sup>th</sup>, 2022.

### Partnerships

Over the past 15 years, the Corvallis PMC (ORPMC) has produced seeds, plants, and plugs of federally listed threatened or endangered plants in partnership with USFWS. ORPMC has produced more than 677 pounds of native seed of five species of wildflowers—Kincaid's lupine (*Lupinus oreganus*), golden paintbrush (*Castilleja levisecta*), Nelson's checkermallow (*Sidalcea nelsoniana*), Willamette daisy (*Erigeron decumbens*) and

Bradshaw's lomatium (*Lomatium bradshawii*) for use in restoration projects. We have also grown 42,000 container plants that have been planted on restoration sites across the valley. This partnership has resulted in the delisting of Bradshaw's lomatium in 2021. In 2022, the USFWS proposed that Nelson's checkermallow and golden paintbrush also be delisted. Yay!!! But our work is never done. We continue to produce materials of Kincaid's lupine and have started to focus on rare plants that are candidates for federal or state listing. By working together, we may be able to prevent these plants from becoming listed and have thriving populations that are not in danger of extinction. Currently, the PMC is producing seed of peacock larkspur (*Delphinium pavonaceum*), thin-leaved pea vine (*Laythrus holochlorus*), white-topped aster (*Sericocarpus rigidus*), clustered goldenweed (*Pyrracoma racemosa*), and tall western penstemon (*Penstemon hesperius*).

## FY22 Cover Crop Studies With ARS

In 2022 we continued to collaborate with the Agricultural Research Service (ARS), the Noble Foundation, and several university cover crop breeders from around the US. The goal of the project is to evaluate performance and identify promising new breeding lines of four leguminous cover crop species (winter pea, hairy vetch, crimson clover, and fava) in trials at twelve locations across the country. The Corvallis PMC evaluated 13 lines of crimson clover and 21 lines of hairy vetch, managed a soft-seeded hairy vetch crossing block, and increased seed of three hairy vetch selections. In May of this year, the cover crop breeding team visited the Corvallis PMC and participated in the OSU Hyslop Farm's annual field day, showcasing the new varieties of hairy vetch that have been developed through this project.



Figure 2. Ian Silvermail presents a new breeding line developed by the Cover Crop Breeding Team to commercial growers at the OSU Hyslop Research Farm Field Day, May 25, 2022.

## New study to evaluate forages adapted to conifer-based silvopasture systems in the Pacific Northwest

Silvopasture is the intentional integration of trees and livestock pastures on the same piece of ground. Many benefits can arise from this combination, including improved animal welfare from shade access during heat and shelter during high winds and cold, an extended season of fresh forage availability, improved tree growth, and carbon sequestration. An additional benefit to a tree producer is the ability to have an income source from livestock prior to mature tree harvest.

A significant portion of the land base on the west side of the Cascade Mountains in Oregon and Washington is used for forestry, with Douglas-fir the dominant tree of commercial use. As such, the integration of livestock grazing into Douglas-fir forestry systems presents a significant opportunity. To date, few evaluations of forage species adapted to the lower-light and acid soil conditions in such forests have been done. In our region, NRCS provides cost-share opportunities for landowners looking to thin overstocked forests for disease and fire resilience. Some producers choose to sow perennial cover after thinning, and improved guidance on species selection would be valuable in these circumstances.



To this end, the Corvallis PMC and Oregon State University Department of Animal and Rangeland Sciences have initiated a forage adaptation trial in collaboration with Crestmont Farm and Ranch, located west of Corvallis in the eastern foothills of the Coast Range Mountains.

Crestmont raises beef cattle and timber products and integrates their cattle into forested portions of their land, with the primary noted benefit of forage season extension during the hot summer drought. We chose 20 forage species and sowed them in single species plots in replicated blocks on east, west, and south, facing slopes in Douglas-fir dominated stands that had been thinned in the past two years. Prior to seeding, Crestmont used their forestry mulcher to masticate woody debris remaining on the soil surface from the thinning operation. Some additional plots were sown in each block with a high diversity mix adjacent to the single species plots in both masticated and unmasticated areas.



Figure 3. Sowing the forage adaptation trial at Crestmont Farm, October 20, 2022.

Plots will be assessed for biomass and phenology of production for three years. First year results and subsequent guidance will be available in late fall 2023.

## Publications/Presentations

Our publications and presentations this year included the following:

- Strategies for Establishing Season-long Native Habitat and NRCS Cost Share Programs -- Oregon BeeKeepers Association.
- Agroforestry and related research at the Corvallis PMC – Pacific Northwest Agroforestry Workshop
- Botany and Restoration of Oregon’s Dunes – Oregon Shores Conservation Coalition

## Training

2022 was a busy year for training at the PMC! Between the backlog of training due to Covid and the high number of new employees, everyone seemed excited to spend time at the center for training. In the fall of 2021 and in the spring of 2022, we hosted a Cover Crop 340 training with Arun Jani, State Agronomist. In the spring we looked at the cover crop that we had planted the previous fall and practiced sampling for biomass, calculated nitrogen content, and went over various termination methods and their efficacy. Tyler demonstrated the roller-crimper and mower. It was an unusually wet spring, so we chose not to demonstrate the tiller during the rainy day (our soil thanks us!). In 2020, we created a virtual training for planners to receive job approval authority for a new wildlife habitat 420 practice and 440 Hedgerow Practice specific to pollinators. In 2022, we were able to invite everyone to the PMC for the field portion of the training. The planners were able to practice using the habitat assessment forms and design hedgerows and seed mixes. State office Plant Material Specialist Kathy Pendergrass performed three field training days for surveying and identifying threatened and endangered species. Training sessions were held in the north Willamette valley, south Willamette Valley, and Southern Oregon. One session was able to use the new demonstration garden at the PMC. It contains listed species as well as common look-alikes so conservation field staff can view the rare species and common species side by side.

## Staff News

The workload associated with the cover crop breeding trials and forage harvesting created a busy field season at the PMC. We were able to hire three seasonal employees for our 6-month field season, plus we hired an additional two OSU students to help us out during the busiest two months of summer. Their help was invaluable, and we all enjoyed having so many new faces (and hands!) at the PMC this year.



### **Corvallis PMC Staff:**

**PMC Manager- Amy Bartow**

**Farm Manager- Tyler Ross**

**Study Leader- Ian Silvernail**

**Technician- Jorge Ramos-Navarro**

**Technician- Kat Fromelt**

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