



Oregon State University Extension Service Marion County

OSU Extension Field Crops Report for Fall 2021

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In a year of historic events: ice storm, drought, a heat dome, oh and COVID... I know I'm not alone in wishing for some normalcy. However, future predictions all entail some degree of warming with more frequent extreme events. How did the drought this growing season stack up with historical droughts? Looking at monthly precipitation records for Salem from 1895 to 2021 (127 years), this

year ranked the third lowest for March through May with a total of 3.8" of rain. Our average rainfall during these three months is around 9". Thankfully we had around 2" of rain in June across the valley, but still if we consider this June precipitation in our spring totals, 2021 still ranked very low, with the fifth lowest March – June precipitation in 127 years. Hopefully we get some early and timely fall rains to green up stands and work in herbicides.

Research updates

It's been three years since I started my position as an Extension agronomist, focused on serving Marion and Clackamas counties. While I am slowly picking up on things, I know that I have much yet to learn. Don't hesitate to give me a call, it's through your questions and field visits that I learn the most. In this update I wanted to give a quick overview of the main projects I have been involved in thus far.

Soil health study in grass seed systems

In my first two years on the job, I conducted a study looking at the effect of bale vs flail straw management, soil clay content and stand age on soil health. Twenty-eight tall fescue fields were sampled (14 "full straw and 14 "baled" paired by soil type). The data shows that soil clay content was a powerful driver of many soil health outcomes and should be considered when analyzing soil health data and comparisons between fields should be avoided unless soil clay content and texture are similar. We saw mostly positive changes in response to retaining straw, but effects were modest and not always

significant. Soil potassium and respiration rates increased, as did soil carbon, nitrogen and organic matter when fields were in full straw management for a longer time. These results show that over time organic matter does build up in stands and more so under full straw management.

Fertilizer use efficiency and leaching potential in tall fescue

During the 2020 growing season I examined nitrogen fertilizer use efficiency and leaching potential in tall fescue systems. The main objective of this project was to compare fertilizer fate, loss, and uptake at three application timings. We replicated the trial at three sites, two in Marion Co. and one in Linn Co., on three different soil types. Averaged across sites, we found that 57% of fertilizer nitrogen ended up in the above-ground biomass, which represents a higher nitrogen use efficiency than many grain systems. These results are good for growers, as they show these systems were generally pretty efficient users of nitrogen regardless of application timing between late January and early March. Additional soil and plant sampling also showed that more than half of the nitrogen taken up by the tall fescue came from native nitrogen supplied by the soil.



Is there a fit for chlormequat chloride (CCC) as additional growth regulator to boost chewing fine fescue yields?

On-farm trials in chewing fine fescue were set up at two locations in the Silverton hills this past growing season. At the time of writing, we don't have the full picture of clean yields and yield components. Preliminary data show a modest bump in yield at one site and no effect at the

second sites, with no additional benefit at higher rates. At both sites biomass tended to decline in CCC treatments, but results weren't significant. Tiller height was significantly reduced. Whether the gains will warrant adding CCC to the tank mix will depend on data from further studies in more normal years and of course on the price point of the product.

Sod webworm management for fine fescue

Sod webworms are a persistent and damaging problem, particularly in our fine fescue systems. I have been part of a multi-pronged project that is looking at evaluating new chemistries and earlier timings for sod webworm control, assessing if there is any host plant resistance from native endophytes and surveying fields for possible bio-controls from parasitic fungi and nematodes. In 2020, insecticide trial results showed that chlorantraniliprole and indoxacarb worked equally as well Lorsban at reducing populations. This insecticide trial is being repeated this fall. Stay tuned as we get more data in this 2021-2022 growing season.

Nutrient uptake and accumulation in hops

This year we are in the second year of a three-year project to evaluate the timing and quantity of nutrients taken up by hops. This information can be used to help guide fertilization practices so growers can optimize yield and quality while reducing extra fertilizer applications and reducing environmental losses. To get this data, we are taking biomass samples from three commercial fields at seven times during the growing season. We are also taking petiole and soil samples to assess plant nutrient status and nutrient availability throughout the growing season. Our first year of data showed that maximum nutrient demand for most nutrients was in early July and reached over 2 lbs/ac/day for nitrogen. Cones accumulated proportionally more P, K, S, and Zn than vegetative biomass, and less Mg and Ca. Despite the heat this year, biomass accumulation is down a bit, but mostly on track with last year. Data across all sites and years will be combined to give a robust picture of nutrient demand across a variety of sites and weather years.

Research in the works

I have also been busy writing grants for new projects. Two grants were submitted this summer; in the first I am seeking grant funds to study increasing the conservation value and productivity of perennial grass seed stands which will focus on comparing the productivity, pest pressures, carbon storage, water quality and economics of different stand establishment strategies and timings. A second grant was part of is a project to investigate the potential of endophytes (native fungi that naturally infect many grass species) to deter insect feeding.

Outreach activities

Fall meetings will again be virtual this fall. If you missed previous meetings, make sure to check out the Willamette Valley Fields Crops webpage (<https://valleyfieldcrops.oregonstate.edu>) to find links to all the recordings. As always, I want to stress that our phones, offices, and trucks are open and on the roll. Don't hesitate to reach out with any questions. I can be reached by email at betsy.verhoeven@oregonstate.edu or by phone 503-779-8217.