AN INDUSTRY SURVEY OF CURRENT PRACTICES, PROBLEMS, AND RESEARCH PRIORITIES IN WESTERN OREGON GRASS AND CLOVER SEED CROPPING SYSTEMS

E.C. Verhoeven and N.P. Anderson

Introduction

A series of virtual webinars focused on grass and clover seed cropping systems was conducted in fall 2020 and winter 2021 by western Oregon OSU Extension personnel. Industry attendees at the webinars were surveyed using electronic polling tools to capture the current status of agronomic issues in western Oregon seed production systems. The data collected from the surveys provide valuable information that OSU Extension and research faculty can use to prioritize outreach and education programs and provide guidance as future research programs are developed and implemented.

Methods

A total of six virtual webinars were given, three in September 2020 and three in January 2021. Surveying was done through electronic polls following speaker presentations on a variety of production topics. In most cases, two survey polls were conducted during a 1.5-hour webinar. For each survey question, a "Not applicable" or "I do not grow or advise on this crop" response option was included, and those respondents were not included in the final results. The number of respondents for which the questions were applicable is indicated for each question (*n*) in the summary tables. Survey respondents included both growers and industry representatives who grow or make agronomic recommendations for grass and clover seed crops in the Willamette Valley (Linn, Lane, Benton, Marion, Polk, Yamhill, Washington, and Clackamas counties).

Survey questions and responses were grouped into five categories of issues and priorities: vole damage, liming and soil fertility, grass seed weed management, grass seed insect and slug management, and clover seed production. In some cases, survey responses collected from multiple webinars have been combined. For example, results from liming and soil fertility surveys conducted in fall 2020 and winter 2021, respectively, were combined. Likewise, results for anticipated use of indaziflam (Alion) herbicide (fall 2020 poll) and actual use in grass seed production (winter 2021 poll) were also combined. Individual participants in fall and winter webinars may have differed. Therefore, results should be interpreted as a broad reflection of industry trends and experience.

Results and Discussion

The multiple survey efforts generated useful information from growers and field representatives in western Oregon (Tables 1–5). Key findings from each group of issues/priorities include:

Vole damage (Table 1)

- At least some level of vole damage was reported on 85% of acres, with 40% of respondents reporting estimated grass seed yield losses of 200–500 lb/acre.
- 60% of vole-infested acreage was treated with two or more applications of zinc phosphide.
- Overall, only 26% of respondents report satisfactory control of voles with zinc phosphide.
- The top research priority identified was to identify new substrates to improve zinc phosphide baits.

Liming and soil fertility (Table 2)

- Most respondents indicated they apply lime every 2–3 years (44%) or every 4+ years (40%).
- More than 80% of respondents use the buffer pH test to adjust lime recommendations.
- Nitrogen (N) is typically applied twice in the spring to grass seed fields with growing degree day (GDD) accumulation most commonly used to guide application timing (45%), followed by calendar date (25%).
- The top research priority identified was to develop tools to optimize timing and N rate applications.

Grass seed weed management (Table 3)

- More than 80% of respondents were satisfied with the efficacy and crop safety of new pyroxasulfone-containing products (Zidua and Fierce).
- Italian ryegrass was reported as the most difficult-to-control grass weed species.
- There is strong support for a quick and affordable leaf tissue test for herbicide resistance that could help guide more appropriate herbicide sprays.
- 63% of respondents suspect they have herbicide-resistant weed populations on at least 100 acres of land they manage, 18% suspect they have herbicide resistance on more than 1,000 acres they manage.

(Results include commercial agronomists and individual growers.)

- In September 2020, 88% of respondents planned to use indaziflam (Alion). The following January, 59% of respondents reported having used indaziflam (Alion), with the majority being applied to established tall fescue.
- The majority of people using Alion were satisfied with its performance, while 23% reported some signs of crop injury in perennial ryegrass or tall fescue.

Grass seed insect and slug management (Table 4)

- The majority of respondents listed worms (armyworms, cutworms, sod webworms) as their top insect pest (63%). Symphylans were listed second (23%).
- Respondents would most like to see insecticide efficacy trials over cultural practices, biocontrols, or host plant resistance.
- Slugs were ranked among the top three pests by most respondents, with 68% reporting that they apply slug bait in the spring.

Clover seed production (Table 5)

- There was strong support for pursuing a label for saflufenacil (Sharpen) as both a desiccant and an herbicide.
- 39% of respondents reported having small broomrape in the fields they grow or scout, and 84% of respondents would like to see renewed research on small broomrape by OSU.
- Nearly 90% of respondents felt it was important that research also be conducted in some of the more minor clover species (berseem, balansa, arrowleaf, Persian).
- Work on alternatives to chlorpyrifos (Lorsban) should focus on clover seed weevils next.

Table 1. Vole damage and research priorities.

Approximately how many grass seed acres on your farm were damaged by voles this year? (n = 89)

Zero	15%
1–200	37%
201–500	20%
501–1,000	13%
> 1,000	15%

Of your vole-damaged acres, how much yield loss (lb/acre) do you estimate as a result of vole damage? (n = 106)

Zero	8%
1–200	31%
201–500	40%
501–1,000	15%
> 1,000	6%

In fields where activity occurred, on average how many above-ground zinc phosphide applications did you make per grass field between April 30 and September 15, 2020 (n = 113)

Zero	11%
One	30%
Two	49%
Three or more	11%

How satisfied were you with the level of vole control following your zinc phosphide application(s)? (n = 111)

Not at all	9%
Somewhat satisfied	66%
Satisfied	21%
Very satisfied	5%

Of the following researchable topics, which one would you consider your highest priority? (n = 147)

The weatherability of zinc phosphide baits	28%
New substrates to create improved zinc phosphide baits for grass seed crops	41%
Baiting strategies and application methods to improve efficacy of zinc phosphide	32%
Efficacy of other active ingredients (NOT ZP) for possible use in grass seed crops	32%

Table 2. Liming and soil fertility issues and research priorities.

How often do you apply lime to most of your fields? (n = 135)

Every year	10%
Every 2–3 years	44%
Every 4+ years	40%
I don't apply lime	5%

Do you use buffer pH to decide how much lime to apply? (n = 135)

Yes	83%
No	17%

How effective do you think SMP buffer testing is for estimating the lime requirement, based on your experience? (n = 135)

Very effective	25%
Somewhat effective	70%
Not effective	4%

How many spring nitrogen applications do you typically make in your grass seed stands? (n = 177)

One	28%
Two	62%
Three	10%
Greater than three	0%

What is your main guide for timing of N applications in your grass seed stands? (n = 179)

Growing degree day accumulation	45%
Calendar date	25%
Precipitation	8%
Appearance of field	5%
Ability to access field	17%

What soil fertility research are you most interested in? (n = 194)

Efficacy and comparisons of new fertilizer products (e.g., coatings, enhanced-efficiency products, etc.)	25%
Exploration of biostimulant fertility products	13%
Tools to optimize timing and rate of nitrogen applications (e.g., precision ag/image technology, growth models, Nmin soil test)	29%
Research on nitrogen leaching and volatilization of practices and/or products	14%
Research on micronutrient needs and crop response	19%

Table 3. Grass seed weed management issues and research priorities.

Were you satisfied with the performance and crop safety of the pyroxasulfone products (Fierce and Zidua) in your grass seed crops in 2019–2020? (n = 115)

Yes	86%
No	14%

Which is the most difficult grass weed species to control in grasses grown for seed on your farm or the acres you manage? (n = 140)

Annual bluegrass	29%
Annual ryegrass	44%
Roughstalk bluegrass	20%
Rattail fescue	6%

How many full straw load acres do you manage in an average year? (n = 151)

< 20	38%
20–50	9%
50–100	10%
100–500	25%
500–1,000	9%
> 1,000	11%

If OSU offered a quick and affordable leaf tissue test (< 3-day turn around) for herbicide resistance, would you consider using this to aid herbicide spray decisions? (n = 185)

Yes	97%
No	3%

How many acres that you farm or manage do you suspect have herbicide-resistant weed populations (e.g., ryegrass, annual bluegrass, roughstalk bluegrass, others)? (n = 168)

< 20	13%
20–50	10%
50–100	14%
100–500	28%
500–1,000	17%
> 1,000	18%

With the new indaziflam (Alion) label, do you plan to utilize this product in your grass seed weed management program? (n = 128)

Yes	88%
No	12%

Did you use (or recommend) Alion this year and, if so, on what grass seed species? (check all that apply) (n = 185)

Carbon-seeded tall fescue	7%
Established tall fescue	39%
Carbon-seeded perennial ryegrass	4%
Established perennial ryegrass	9%
I did not use (or recommend) Alion this year	41%

How satisfied are you with the grass weed control following your Alion applications? (n = 86)

Very satisfied	17%
Satisfied	56%
Neutral (equivalent to other herbicides used in the past)	21%
Unsatisfied	6%

If you used Alion this year, have you noticed signs of crop injury? (check all that apply) (n = 109)

Yes, in tall fescue	12%
Yes, in perennial ryegrass	5%
Yes, in both tall fescue and perennial ryegrass	6%
No	52%
I did not use (or recommend) Alion this year	25%

Table 4. Grass seed insect and slug issues and research priorities.

What is the most challenging insect pest issue for your grass seed production systems? (n = 184)

Aphids	5%
Billbugs	6%
Worms (army and cutworms, sod webworm)	63%
Symphylans	23%
Other	3%

What research projects do you want to see more of for addressing insect pest issues in grass seed crops? (n = 193)

Insecticide efficacy trials	46%
Cultural control methods (e.g., role of fertility or residue management)	24%
Exploring biological control options	22%
Investigating host plant resistance	8%

Do you spring bait for slugs? (n = 118)

Yes	68%
No	32%

How would you rank slugs as pests? (n = 145)

Worst	3%
Top 3	74%
Top 10	19%
Not in top 10	3%

Table 5. Clover seed issues and research priorities.

Do you think OSU and the clover seed industry should pursue a label for Sharpen (saflufenacil) as a herbicide and/or desiccant? (n = 148)

Yes, herbicide only	11%
Yes, desiccant only	1%
Yes, both herbicide and desiccant	86%
No	1%

In the past 10 years, have you had small broomrape (orabanche) in the clover seed field(s) that you grow or scout? (n = 110)

Yes	39%
No	61%

Do you think OSU should renew research efforts to improve understanding and management of small broomrape (orabanche)? (n = 122)

Yes	84%
No	16%

There are some minor clover species that have been increasing in acreage in Oregon (berseem, balansa, arrowleaf, Persian). Is it important for OSU/clover seed industry to conduct agronomic/weed management work on these species? (n = 140)

Yes	87%
No	13%

Lorsban is going away. OSU work in 2020 focused on Lorsban alternatives for aphid control. What is the next most important clover seed insect pest that should be focused on for 2021 research work? (n = 143)

Lygus bugs	4%
Clover seed/leaf weevils	41%
Omnivorous leaftier	3%
Clover casebearer	21%
Clover crown borer	27%
Other	3%

Are you concerned about the red clover casebearer as an emerging insect pest in Oregon red clover? (n = 135)

Yes	53%
Sort of	44%
No	3%