The following data has been compiled from the responses to a general alfalfa seed crop survey conducted by the Alfalfa Seed Commission of Alberta (ASCA) following the 2015 cropping season. Producers were asked to comment on the general state of their fields and on the level of concern that they hold for specific crop inhibiting factors. The results of the survey have been broken down into four separate category documents, all of which are included herein. (See “Table of Contents”)

The results of this survey clearly indicate the current cropping pressures that are of highest concern to Alberta alfalfa seed producers; as such it is our objective to seek out solutions to these problems. We invite any ideas or proposals resulting from this information for the betterment of the Alberta alfalfa seed industry. For more information, or to request specific data, please contact Brad Alexander (ASCA) - brada@alfalfaseedab.com

Contents

Insect Concerns .................................................................................................................. 2
Weed Concerns .................................................................................................................. 4
Disease Concerns .............................................................................................................. 6
Alfalfa Leafcutting Bee Concerns and Control Measures .................................................. 7
Final Producer Thoughts ................................................................................................... 10
2015 Insect Concerns in Alberta Alfalfa Seed Production

The following data has been compiled from the responses to a general alfalfa seed crop survey conducted by the Alfalfa Seed Commission of Alberta (ASCA) following the 2015 cropping season. The results of this survey clearly indicate what insect pests are of highest concern to Alberta alfalfa seed producers. For more information, or to request specific data, please contact Brad Alexander (ASCA) - brada@alfalfaseedab.com

Written Insect Concerns (Compiled)

**  Chemicals most used = Matador, Malathion, Decis

*  Inadequate insecticides and insecticide combinations with unknown damage thresholds

*  Only Decis and Matador for control after the bees are placed in the field and I am concerned about resistance to these chemicals in the future. Also what effect does mixing either of these 2 chemicals with a fungicide have on insecticide carry over?

*  Eventual resistance to the chemicals I’m currently using? Plans for that?

*  Obviously Insecticides are killing the bees, what effects do fungicides have on the bees?

****  How much damage to seed at different seed stages? Are the chemicals actually worth it, or just under perfect conditions? Need more information on thresholds and spray timing to minimize harm to beneficial insects?

*  Some insect pests are very prevalent in other areas of the county and may become a real problem in my area with more acres being planted around me.

***  Spider mites are of highest concern as they are greatly affecting fields in our area; Spider mite chemical is so costly

*  Lygus: What are late season threshold numbers?

*  Target pest insect populations in our area seem to be climbing and becoming more difficult to control

*****  Alfalfa Weevil: Insecticide resistance? (Used different modes of action with poor results); Numbers early in the season were 50+ per sweep; Limited control options (Matador = Common product)

Blue = Chemical related

*  = Response replications
Insect PieMap

Insect concerns of Alberta alfalfa seed growers

By Approximate location

Gem Area
- Aphids 10%
- Lygus Bugs 16%
- Spider Mites 18%
- Cutworms 8%
- Alfalfa Weevil 24%

Rosemary Area
- Aphids 15%
- Alfalfa Plant Bug 18%
- Spider Mites 13%
- Alfalfa Weevil 34%
- Lygus Bugs 19%

Brooks Area
- Aphids 10%
- Lygus Bugs 19%
- Spider Mites 19%
- Alfalfa Plant Bug 25%

Tilley Area
- Aphids 19%
- Alfalfa Weevil 23%
- Spider Mites 23%
- Lygus Bugs 20%

Enchant Area
- Leaf Minter 5%
- Alfalfa Loopers 7%
- Spider Mites 14%
- Alfalfa Weevil 23%

Rolling Hills Area
- Thrips 5%
- Spider Mites 8%
- Alfalfa Weevil 11%

Lethbridge Area
- Grasshoppers 12%
- Spider Mites 12%
- Alfalfa Plant Bug 15%
- Alfalfa Weevil 23%

Aphids 19%
- Lygus Bugs 15%
- Aphids 18%
- Alfalfa Plant Bug 20%
2015 Weed Concerns in Alberta Alfalfa Seed Production

The following data has been compiled from the responses to a general alfalfa seed crop survey conducted by the Alfalfa Seed Commission of Alberta (ASCA) following the 2015 cropping season. The results of this survey clearly indicate what weeds are of highest concern to Alberta alfalfa seed producers. For more information, or to request specific data, please contact Brad Alexander (ASCA) - brada@alfalfaseedab.com

**Written Weed Concerns (Compiled)**

***** There are very few effective control measures for certain weeds and many can cause crop injury (i.e. Bazagran - No control of Canada Thistle. Killed crop)

***** Dockage due to hard to separate weed seeds is a real problem.

*** Canada Thistle, Quackgrass, and Kochia just keep getting worse and worse as the years in alfalfa seed progress. This is harmful for crop insurance reasons.

* Resistant wild oats are a potential concern of mine

* The only effective control seems to be Rogueing, Rogueing, and more Rogueing

*= Response replications
Weed PieMap
Weed concerns of Alberta alfalfa seed growers
By Approximate location
Written Disease Concerns (Compiled)

** Watch for early signs and consider the weather before spraying. This seems to be effective so far.

*** I have a fungicide program in which I try to rotate groups. This seems to be effective for fungal pathogens.

** Haven't had any disease issues so far that I know of

* Generally don't apply fungicide. I believe soil health will keep disease in check. That is where we are heading with our operation, improving soil health.

* Some of the diseases seem to be increasing, I am concerned and watchful.

* Diseases in a thick canopy can be hard to control.

* Is resistance to the products we are using a concern?

I know I have diseases in my Alfalfa Seed crop and some years are worse than others. I don't bother to identify them because most of the fungicides are preventative so by the time I know what I have it is too late to do much good. I routinely spray Proline in late June (tank mix with an insecticide) & Lance in early July. The next year I spray Headline in late June & Quadris in early July & keep that rotation going.

* = Response replications
Disease PieMap

Disease concerns of Alberta alfalfa seed growers
By Approximate location

Rosemary Area
- Blossom Blight 34%
- Black Stem 25%
- Leaf Spot 28%
- Bacterial Wilt 13%

Brooks Area
- Blossom Blight 29%
- Black Stem 25%
- Leaf Spot 25%
- Bacterial Wilt 21%
- Downy Mildew 14%
- Rust 11%
- Pepper Spot 15%
- Black Stem 30%

Tilley Area
- Leaf Spot 30%
- Rust 11%
- Downy Mildew 14%

Enchant Area
- Blossom Blight 26%
- Black Stem 21%
- Crown and Root Rot 16%
- Bacterial Wilt 18%
- Damping Off/Seedling Blight 19%

Lethbridge Area
- Black Stem 21%
- Verticillium Wilt 13%
- Yellow Leaf Blotch 15%
- Bacterial Wilt 15%
- Leaf Spot 17%
- Blossom Blight 19%

Rolling Hills Area
- Crown/Root Rot 24%
- Black Stem 14%
- Leaf Spot 14%
- Winter Crown Rot 22%
- Root Rot 12%
Insects of Concern to Alberta Alfalfa Leafcutting Bee Producers

- Dried Fruit Moth
- Melittobia
- Monodontomerus
- Brown Blister Beetle
- Checker Flowered Beetle
- Stored Product Insects
- Pteromalus
- Sunflower Beetle

Diseases of Concern to Alberta Alfalfa Leafcutting Bee Producers

- Molds of all types
- Dwarf Wing Virus
- Larvis
- Chalkbrood

Chalkbrood Concerns and Measures

- Paraformaldehyde seems to work; Be nice to use something safer.
- Chalkbrood kills viable cells, I use paraformaldehyde to control chalkbrood, but it’s a carcinogen, and am looking for all viable options
- Concerned about migration from neighbor’s fields.
- I have not been able to get my chalk below 3.5% spore + non-spore in wood blocks. Use Styrofoam Blocks
- Bleaching styrofoam blocks every spring

Pteromalus Concerns

- Potential resistance to dichlorvos treatment and loss of the use of dichlorvos is a concern. (This concern appeared multiple times)
- What effect does vapona have on the bees? (This concern showed up multiple times)
- I would really like to have a convenient way to measure the strength of dichlorvos in the incubators.
- One area that research should be highly focused on is the removal of parasites mechanically through a sorting type system like the BoMill TriQ technology, I see a lot of potential with going this way in the future and it would eliminate the use of insecticides in our incubators.
- Pteromalus appears Inconsistently. How can I predict an outbreak?
- What effect does controlling the temperature in storage have on the bees?
- How much Impact on bee survival does chemical control and equipment sanitation actually provide? Is it really worth the cost?
- They are always in my bees. I’m concerned because I feel that I’m always on that edge of losing the battle. I’m also concerned about the products I’m using to control the parasite; how much damage am I causing to the bees.
Pteromalus Control Measures

- Replace the backing material every two years
- Replace nests after three to four years
- Bleach the nests. Bleach is best for gooped-up bee cells and bee equipment
- Good backing material and vapona.
- Spray at night
- Use Black lights - They work as a gage for pesticide control
- Use Dichlorvos and Konk 409
- Have to be careful because it can become a major problem in a hurry if you’re not paying attention
- Use clean bees
- Band nesting material properly and securely.
- Use good foam and tight fitting boxes, Avoid wood
- Scouting during incubation is essential.

Other concerns related to alfalfa leafcutter bees?

- The reduced number of buyers of bees. It seems to be consolidating.
- POLITICS government control
- Would using variable rate irrigation to shut off the water above each tent help bee reproduction
- Effect of bee return and yield on 2 different bee release dates on same field.
- Effect of Vapona/Konk rates while incubating (Old research should be available)
- Effect of Spraying Fungicide on bees
- What (if any) are the benefits to bleaching nests, and is it necessary with no disease present? Is paraformaldehyde good enough?
- Always...off field storage conditions, mice, birds, heat and water exposure
- The Frequency of spraying.
- Brown Blister Beetle is a predator to leafcutters and alkali bees, hard to separate and control - vapona and bleaching best option?
- More market development
The following Information has been compiled from the final comments of Alberta alfalfa seed producers. These issues are ones that the producers have identified directly as a result of their observations, experience, and opinions.

Other thoughts, ideas, or recommendations for alfalfa seed research.

- I would like to see more research on Curled Dock and Canadian Thistle.

- Magnesium is often considered the forgotten nutrient yet is it part of every single enzyme produced by every single living organism on this planet. There are some areas where the Base Saturation of magnesium is over 30% and we know that the portal for Mg is closed at 20% meaning that the plant cannot access the soil Mg, resulting in some deficiencies. There are some products available to help with this but what is most effective and what is the timing for application?

- It would be nice to see more work on ideal plant density compared to yield.

- We usually seem to have good pollination but a lot of the curls seem empty, not sure if it's environmental, lack of nutrients, moisture issues, maybe poor pollen or nectar production. I think this should be looked into more.

- Continue on farm trials when possible.

- Optimum bee stocking rate / Optimum shelter spacing.

- Use of pre-biotics and probiotics. I am also going to do some work on my farm with humic acid and fulvic acid in conjunction with nutrition.

- I get asked by neighbours of Alfalfa Seed growers what to do about the bees cutting the garden flowers to pieces. Some want to know what they can spray them with to kill them. It would be good from a public relations perspective to have a list of flowers that the bees leave alone & also knowledge of methods or plants that deter bees from the area.

- I am more interested in biological controls of pests rather than pesticide, or insecticide.

- We need a better spray for weevil.

- Fall spraying, some plants react differently in the fall. i.e. easier to kill. Some years we might have time to spray in the fall, would there be any advantages?