Can our farmers and agronomists recognise pests and diseases in grain crops

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Holey Moley Grainman (Batman)! What’s that?
“Are we going against the grain in training? Developing an adult education framework for teaching in rural communities”

Training needs analysis to determine if growers and agronomists are correctly identifying common diseases in grain crops.

Why?
  • Biosecurity
  • Passive surveillance
  • How do you know if it's normal or unusual?
Methods

• Questionnaire developed
  • Pilot tested
    • Lake Bolac Victoria
  • Online – Qualtrics Survey – Feb to June 2104
  • Paper at WA Crop Updates
  • Birchip Cropping Group

• Response rate:
  • 156 by mail, 54 from the Birchip Cropping Group.
  • 132 online (65 grain growers and 67 agronomists)
What is this leaf disease seen in barley crops?

a. Yellow spot ☐
b. Net blotch ☐
c. Powdery mildew ☑
d. Don’t know ☐

No significant difference between grower and agronomists $p \leq 0.05$
What is this leaf disease seen in wheat crops?

a. Wheat leaf rust □
b. Yellow spot leaf disease □
✔ c. Stripe rust □
d. Don’t know □

Significant difference between grower and agronomist
\[ X^2 (1, n=247), = 13.875, p \leq 0.001 \]
What is this disease in canola?

a. Black spot diseases
b. Blackleg
✔
c. Speckled dot disease
d. Don't know

Significant difference between growers and agronomists $X^2 (1, n=247), = 28.78, p \leq 0.001$
Which of the following signs would you associate with Karnal bunt?

- a. Insects in grain
- b. Fishy odour
- c. Leaf lesions (spots or stripes)
- d. Ergot in the grain
- e. Pink grain
- f. Partially bunted grain
- g. Shrivelled grain
- h. Insect feeding damage
- i. Don’t know

Significant difference between growers and agronomists $p \leq 0.001$
Which of the following signs would you associate with Barley stripe rust?

a. Rust pustules on stems
b. Bunted grain
c. Pink grain
d. Rust pustules in stripes on leaves
e. Pale green aphids
f. Yellow-orange rust pustules
g. Insect feeding damage to leaves
h. Rust in stripes on barley plant
i. Don’t know

Significant difference between growers and agronomists $p\leq0.001$
Which of the following signs would you associate with Khapra beetle?

- Hairy larvae
- Black-brown beetles
- Bunted grain
- Presence of larvae skins
- Flying beetles
- Beetles larger than 1 cm
- Insect feeding damage
- Fishy odour
- Don’t know

Significant difference between growers and agronomists $p \leq 0.001$
Which of the following signs would you associate with Russian Wheat Aphid?

- a. Bleached, curled heads and awns
- b. Insect feeding damage to grain
- c. Reddish-brown beetles
- d. Aphid with long antennae
- e. Rolled up flag leaf
- f. Pale green aphid
- g. Streaks on leaves
- h. Fishy odour
- i. Don't know

Significant difference between growers and agronomists $p \leq 0.001$
Discussion

• Significant differences between growers and agronomists

• The ability of growers to identify blackleg in canola crops by the leaf symptoms is of a concern.
  • Is this because they are use to only looking for stem canker?
  • Was the image used clear enough for the participants?

• Top four HPP’s
  • Agronomists able to identify possible HPP’s better than growers
  • Growers have very little knowledge on Khapra beetle and Russian wheat aphid
Discussion

• Other statistics show that the differences can be related to education, age and gender and State
  • However, these results change according to the disease / pathogen
• What level of knowledge do we expect our growers and agronomists to have in relation to diseases and pests in their crops?
  • Do we expect them to be able to identify common diseases with 50 / 75 / 90 % accuracy?
  • Is this level high enough for the growers and agronomists to ring the alarm bell with a suspected HPP being present
Conclusions and further questions

• The frontline is not as well trained as we assumed
• There are some growers and agronomists who are aware of the symptoms associated with HPP’s
  • There is no clear cut answer to what level of knowledge is required in the community
• We need to change the way we are providing the information on HPP’s
  • Factsheets
  • Videos – Youtube
  • Workshops
  • Use of apps such as MyPest Guide
Thank you

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