THE CENTRE FOR CROP AND DISEASE MANAGEMENT

BARLEY DISEASE COHORT PROJECT

2020 RESULTS SUMMARY

SPOT FORM NET BLOTCH

NET FORM NET BLOTCH

In 2020, growers from southern WA collectively sent in 115 samples of diseased leaves to CCDM. Our researchers then grew fungal cultures from the leaves and tested them for fungicide resistance.

Centre for Crop and Disease Management

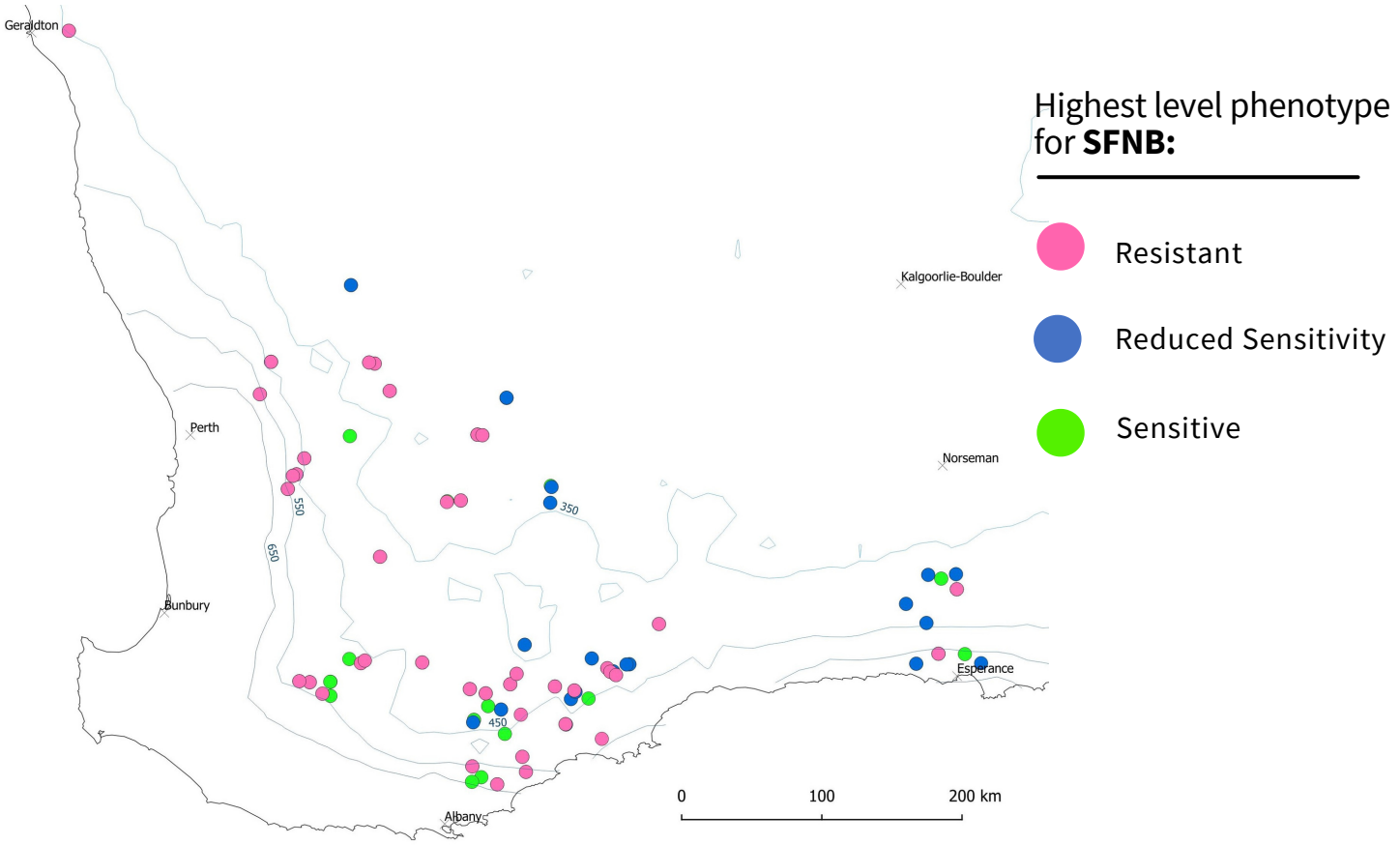
GRDC GRAINS RESEARCH & DEVELOPMENT CORPORATION

Curtin University

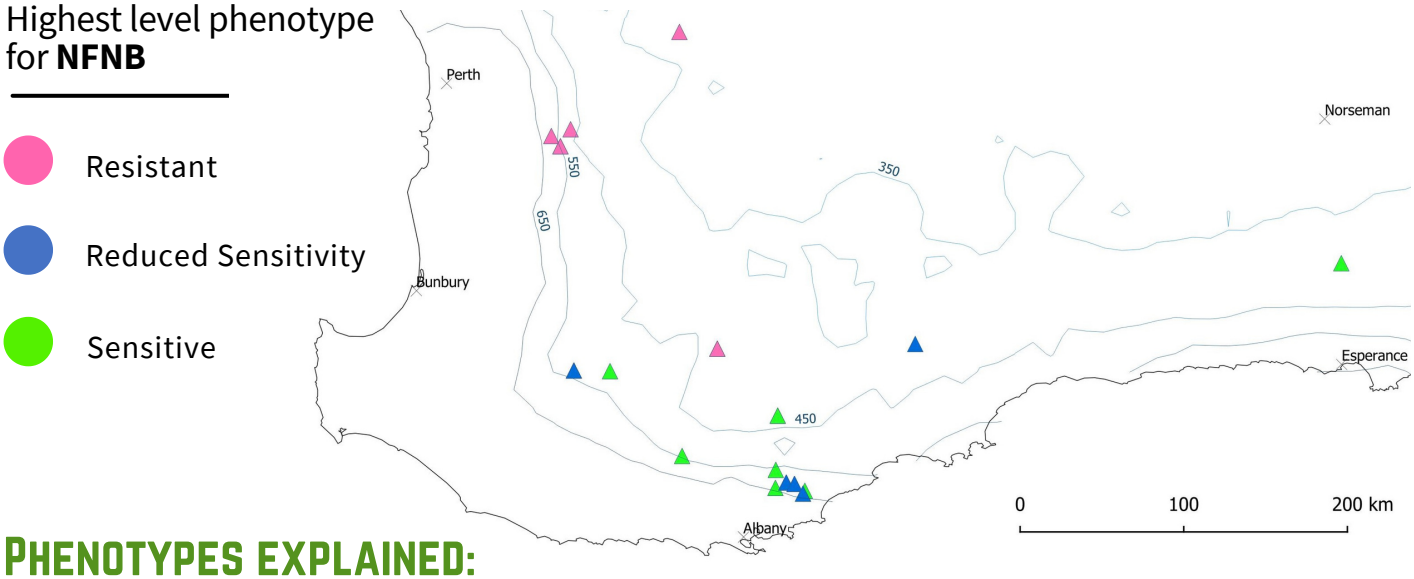
KEY POINTS FROM THE 2020 SAMPLES

- Net form net blotch (NFNB) and spot form net blotch (SFNB) resistance to key Group 3 fungicides is widespread across grain growing areas in Southern WA.
- Fungicide resistance within both net blotch forms is much more complex than many other pathogens.
- Phenotype testing is a powerful tool (see explainer overleaf) and it has shown that fungicide resistance is highly varied within the landscape. Fungicide resistance is a rapidly changing phenomenon and, while test results are only a representation of a sample at a point of time, we're slowly piecing together the situation in Southern WA.
- We have demonstrated that fungicide resistance in both net blotches continues to grow as a problem for Southern WA growers.

DISTRIBUTION OF PHENOTYPES IN SPOT FORM NET BLOTCH IN 2020



DISTRIBUTION OF PHENOTYPES IN NET FORM NET BLOTCH IN 2020



PHENOTYPES EXPLAINED:

Unlike many of our other diseases of interest, both forms of net blotch are very complex. Simple high through-put genetic tests provide limited data, so in 2020 we opted for phenotype testing. Phenotype describes the observable properties or traits of an organism. By observing how NFNB or SFNB fungal pathogens grow across a concentration gradient of fungicides in our labs, we can diagnose each fungal growth as one of three phenotypes:

SENSITIVE:	**REDUCED SENSITIVITY:**	**FUNGICIDE RESISTANT:**
Group 3 fungicides should still work okay.	Group 3 fungicides may still work okay, but not as well as they would on a sensitive population.	Group 3 fungicides will not likely control disease, and therefore should be avoided.

GROWER MANAGEMENT STRATEGIES

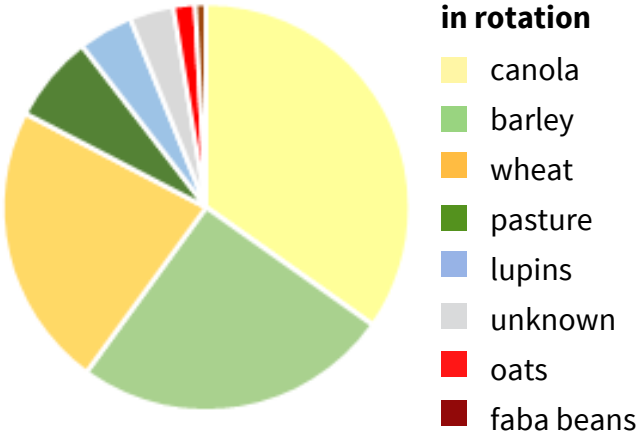
From the management strategies provided by the participating growers in 2020, it is clear most are helping to reduce the rise of fungicide resistant populations by:

- Rotating crops to reduce disease carry over.
- Using fungicide mixtures and rotating chemistries.

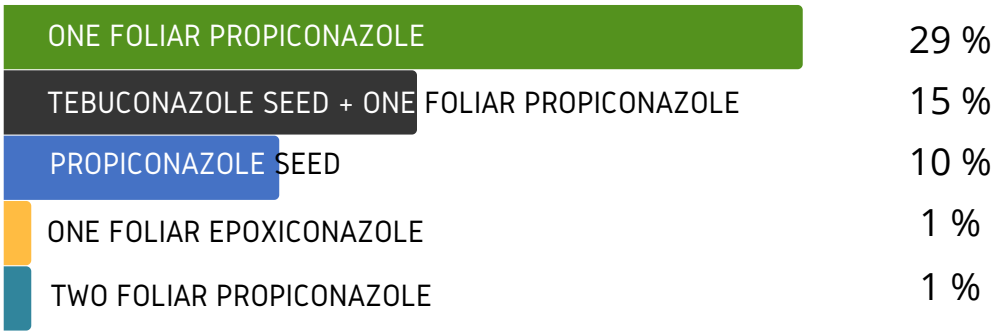
HOWEVER:

- 24% of samples were from barley on barley rotations

  Rotating crops will reduce the risk of fungicide resistance



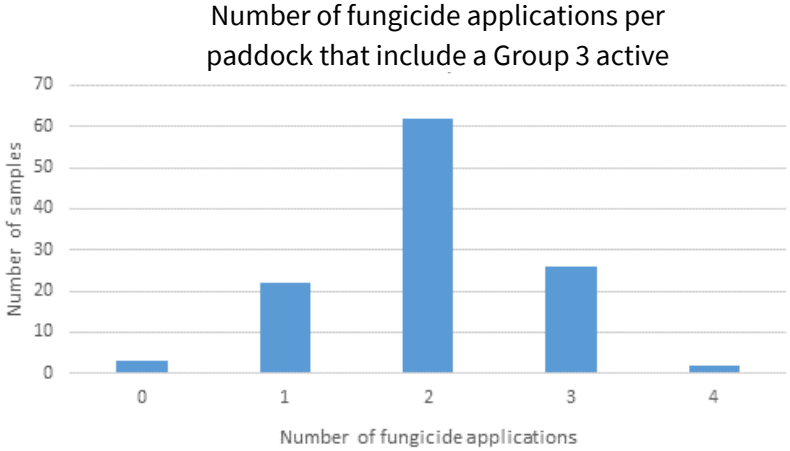
- 56% of paddock samples had a Group 3 (DMI) active applied as a stand-alone product. The most used stand-alone active was propiconazole.



Avoid using tebuconazole, propiconazole or epoxiconazole as a stand-alone product

- On average, cohort growers are applying Group 3 (DMI) fungicides about twice per season.

  Avoid using more than 3 applications of fungicides that have a group 3 active



DID YOU GET A FUNGICIDE RESISTANCE RESULT? HERE'S WHAT YOU NEED TO DO

- Rotate crops and manage stubble – avoid barley on barley.
- Plant less susceptible varieties – avoid S and VS varieties in disease prone areas.
- Fungicide management:
  - Minimise group 3 use: avoid using tebuconazole, propiconazole or epoxiconazole as stand-alone* products in barley for any disease, to avoid indirect fungicide resistance selection
  - Rotate group 3 actives within and across seasons
  - Avoid using more than 3 applications of fungicides that have a group 3 active, per season. If possible, reduce this to 2 applications in areas where group 3 resistance has been reported.
  - Minimise group 7 fungicide use. Do not use group 7 in areas where SFNB group 7 resistance has been reported (currently reported in the Cunderdin region).
  - Restrict group 7 and 11 fungicides to one application of each, per growing season
- Consider sowing later – early sowing can favour disease development and increase losses.

**Stand-alone application refers to use of the product by itself and not in a mixture.*

Detailed management strategies for fungicide resistant SFNB and NFNB can be found in the AFREN fungicide resistance management guide for grain crops:
https://afren.com.au/resources/#management-guide

ACKNOWLEDGEMENTS

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