Break crops combat ryegrass headache

July 15 2015, by Jo Fulwood

In the trial's first year nine different crops were planted including wheat barley, oats for hay, lupins, volunteer pasture, chemical fallow, sown serradella and two different varieties of canola (pictured). Credit: Bob French

One of Western Australia's largest ever crop sequencing trials has provided scientists with evidence that break crops can have a significant impact on weed populations in the longer term.

Ninety different crop sequences trialled over a four-year period at

Wongan Hills in the Wheatbelt, showed the most significant benefit from a break crop, or growing a secondary crop to interrupt repeated sowing, is less weeds in the area.

Farmers have long understood the nitrogen benefits of including a legume in their rotation, but until now, there has been little conclusive evidence of the long term impact of break crops on weeds and the subsequent impact on crop yields.

Merredin-based Department of Agriculture and Food researcher Dr Bob French managed the trials between 2009 and 2012.

He says the trial's most critical finding is the relationship between wheat yield and ryegrass (Lolium rigidum) populations, with the data suggesting break crops can influence population numbers several years out.

"The trials have shown that the effect of break crops on weed populations is likely to last several years, and likely to be more long lived than the effect on soil water or nitrogen which will only last one or at best two years," he says.

DAFWA's Dr Bob French stands in the trial plots in Wongan Hills. Credit: Shari Dougall

"In the final year of the trial, ryegrass populations in some of the plots explained about 50 per cent of the variation in wheat yield."

In the trial's first year nine different crops were planted including wheat barley, oats for hay, lupins, volunteer pasture, chemical fallow, sown serradella and two different varieties of canola.

In the second year, 10 different crops were planted across all the first year treatments.

In the third and fourth years, wheat was planted across the whole trial.

Dr French says using a legume, volunteer pasture, fallow or cutting oats

for hay in the first and second years of the trial allowed for the best weed control in subsequent years.

Aerial shot of trial (the four blocks of little squares). Credit: Bob French

"The most dramatic yield result was achieved from the wheat crop that followed a chemical fallow," he says.

"Ryegrass control in the wheat, barley and canola was not very good, certainly not as good as the other treatments.

"So those sequences ended up with a fairly high population of ryegrass in the second year, and that persisted through the rest of the experiment and impacted on yields."

Dr French says the trial is clear evidence of weeds' detrimental impact on crop yields.

More information: "Crop-sequence effects on productivity in a wheat-based cropping system at Wongan Hills, Western Australia." *Crop and Pasture Science* 66(6) 580-593 dx.doi.org/10.1071/CP14262

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