

Winter wheat stands out against ‘wimpy’ spring wheat

By **Barb Glen**

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Rob Graf, winter wheat breeder with Agriculture Canada, discusses his research work June 7 during a plot hop organized by the Farming Smarter applied research group. | Barb Glen photo

Rob Graf likes winter wheat. And he admires it.

The Agriculture Canada wheat breeder has been working on new varieties from the Lethbridge Research Centre for 19 years.

“I could never go back to breeding spring wheat. Spring wheat is just a wimpy little plant. Winter wheat is where it’s at,” he told those at a June 7 plot hop organized by Farming Smarter, the southern Alberta applied research group.

As he stood in front of 16,000 individual rows of winter wheat plants, consisting of 1,300 preliminary lines in yield trials, Graf lamented that dry weather has so far prevented any wheat diseases from affecting the crop.

Disease invasion will aid in the selection of lines resistant to various crop ailments.

Development of new winter wheat varieties requires patience on a number of fronts.

Once these new lines are evaluated for yield and assessed for disease resistance — if disease does occur in his Lethbridge plots this year — he will select 120 of the 1,300 for further study.

Those will go to replicated trials at five sites in Western Canada. Results of those will winnow the lines down to 30 or 40, which will again undergo replicated trials at nine sites.

That will bring the choices down to about five, which go into registration trials for three years.

In the end, maybe only one will be deemed worthy for registration, and if registered, it will take another few years to multiply the seed.

All told, said Graf, a new winter wheat line can take 10 to 12 years to develop. It takes longer than spring wheat because winter wheat needs a cold period. That means breeding can't be sped up through using trials in Australia or Chile over winter.

"We can't send our lines to a winter nursery... because we've got that vernalization requirement. We need that cold period in order to get the plant to go reproductive. So it's one generation per year."

He also shies away from using greenhouses to accelerate the work.

"I feel getting the lines out into the environment where they're going to have to grow is a real advantage, particularly when you're looking at the adaptation for winter hardiness. You want that stress on the plant. You're not going to get that in a greenhouse."

Graf said the winter wheat breeding program concentrates on three objectives: agronomics, disease and quality. In terms of agronomics, the goals are high yield, good straw strength, good winter hardiness and reasonable height, as well as good test weight and larger kernels.

Efforts to improve disease resistance in the crop have ramped up over the years, he added.

"In winter wheat, until 20 years ago, there was no registered variety that had any disease resistance whatsoever. So we've come a long way.

"We've got lines with pretty much the full gamut of resistance to all three rusts, to fusarium head blight, to bunt and even wheat leaf curl mite resistance and Russian wheat aphid resistance."

However, efforts are underway to achieve varieties with multi-gene resistance so the plant is protected at all growth stages.

On the quality side, Graf said he takes issue with some opinions about winter wheat.

"One of the things that is often talked about is that winter wheat doesn't have as good quality as spring wheat. I get a little bit testy at that point because our Canada Western Red Winter is actually better quality than what they produce in the U.S. I think that in Western Canada we need to capitalize on that."

One of the problems in price when marketing the crop, he said, is that grain companies have to bin winter wheat separately, which costs them money and thus discourages a higher price.

"In my opinion I think there needs to be a little bit of a rethink on how we classify our medium quality wheats."