# Finding the balance between yield and protein in malt barley

Using CropCaster PRS technology

My client base grows about 8,000 acres of malt annually and rarely is the grain rejected for high protein. For fertility we usually apply a safe amount of nitrogen, which we have come to know by trial and error over the years. The hard part is finding the right nitrogen rate to produce maximum yield with a protein that falls below 13% but higher than 12%. When your malt protein is lower than 12.5% you know you're leaving yield on the table. If you shoot too high you end up with high protein and no malt selection.
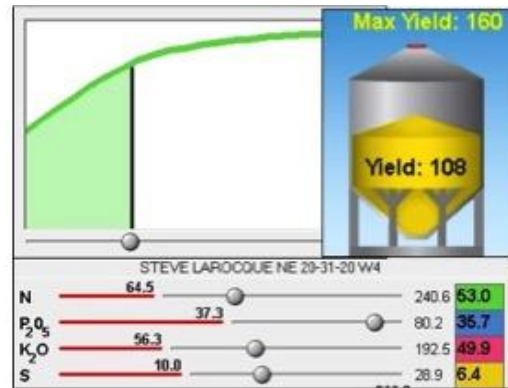
A screen capture from the PRS CropCaster model when I was planning malt barley on faba bean stubble.
Source: Steve Larocque

I've been using PRS CropCaster for three years now and it's a great tool for finding the sweet spot with nitrogen rates in malt barley. It includes soil analysis and crop modelling software that measures soil nutrient release along with fertilizer response curves. PRS CropCaster takes the guess work out of nitrogen rates because it allows you to adjust your N rate up until the point where added nitrogen no longer contributes to yield, which is where you start to build protein. What's also handy is that you can model nitrogen rates on any field whether it was pea stubble, canola stubble or barley. There is a unique nitrogen curve for each field to fine tune based on background fertility.

To give you an example, the graph you see here is a screen capture of portions of PRS CropCaster software from a field of mine where I chose to grew malt barley on faba bean stubble. You can see the nitrogen response curve where the green line starts to flatten out, which in this case meant no more than 53 lbs of nitrogen per acre to achieve my yield target of 107 bu/ac. I'm happy to say the field averaged 12.6% protein which means we hit the sweet spot with an average 12.6% protein and just about 100 bu/ac yield.

What I like about the PRS software is that you can model different rainfall scenarios like low, medium and high rainfall and see where the nitrogen response curve flattens out. That said, it is not a perfect model and you do have to sort out response curves on some of the more N efficient varieties like Merrit 57 or Bentley or Merredith, which can differ.

In the end, it isn't that difficult to grow malt barley if you keep your nitrogen rates low enough but you're always at risk of under fertilizing. What the PRS CropCaster provides is a tool to measure how far you can push your nitrogen rates before you start building protein. A great example is when you hit 100 bu/ac barley with 12.6% protein on a lower yielding variety like AC Metcalfe with just 53 lbs of nitrogen. No yield left on the table from under fertilizing and protein falling under the 13% maximum for malt acceptance. That's a winner every time. SL