

Deep topic delves below the soil's surface

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There might be something to the nutrient stratification story in minimum and zero till operations. Farming Smarter started into a three-year project led by SARDA this past spring to see if deep banding some nutrients might make a difference to crop health.

"We seeded late and into drought conditions. Some of the deep banded plots looked as though they had a noticeably better vigor and color to the other crop plots in the study," said research manager Mike Gretzinger.

He thinks it's possible that, due to drought conditions, available soil moisture was deep, so when the crops stretched roots deep for moisture, they also accessed the deep banded nutrients.

"We had wheat, peas and canola. I think it was a little more apparent in the broadleaf crops, peas and canola." He cautions that this is only the first year of the trial and that other factors may have been at play.

For instance, because of the dry spring conditions, deep banding caused a deeper tillage and may have created better seed to soil contact for germination and emergence.

"That's why we do these studies over three years," he says, to lessen the chances of anomalies giving false results. He adds that this region can be low in phosphorus. That means it's possible the addition of phosphorus created the positive affect he saw.

"One of the unique things about this project is that it's taking place in three regions of the province. Each region has its unique deficiencies; which



Photo courtesy Farming Smarter

Toby Mandel of Farming Smarter takes a soil core from a deep banded plot in fall 2018.

is why the study chose to deep band phosphorus, potassium and copper. Vegreville is the most deficient in potassium and in the Peace it's the same story in copper."

He explains that these are nutrients that don't move easily in the soil and tend to stay where you put them. There is some concern that constantly replenishing the top three inches of soil can create a situation where plant roots grow past the nutrient reservoir. Also, there is some thought that in a hot, dry

year, a deep copper plot, a deep phosphorus, a deep potassium, a deep combination of all three and shallow-banded plots that follow the same pattern - copper, phosphorus, potassium and combination. Everything got the same nitrogen rate.

"We're teasing apart to see if deep banding on any of the individual nutrients will make a difference," Mike says.

This will allow comparison of the deep and shallow banded practices too. Yields are not calculated yet, but Mike says they didn't look good. He suspects the drought held back the production.

Fall soil testing took place at three and six inches to see any effect on nutrient stratification after one season of crop. The deep banding placed a three-year supply of phosphorus, copper and potassium at six inches, but the soil testing will monitor how much remains in place over the course of the project.

"If we get a bumper crop, it may use two-years worth of nutrients," Mike says.

Next year, the plots will have the same crops, but rotated. i.e. peas on wheat, wheat on canola, canola on peas.

Mike will present some year one results at the Farming Smarter conference Dec. 12-13 in Lethbridge. People can also watch the project specific webpage where Farming Smarter will post updates and reports as they come available.

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