



Crop Rotations – How to decide which crop is next



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Planning crop rotations is complex. Temptation to stray from the plan, often by the promise of high returns from the markets at the time of planting, can lead to degradation of the land, build up of pests, and a reduction in overall productivity.

Crop rotations are designed for improving crop and soil health over the long-term to ensure sustainability. Many factors along with economics must be considered in crop choice.

Knowing the soil nutrient levels through soil testing and understanding the nutrient requirements of the crop allow producers to balance nutrient levels in the field with the crop's nutrient requirements. For example, pulses fix nitrogen from the air, so pairing pulses with fields lower in nitrogen makes sense. Rooting patterns can also influence nutrient uptake. Canola and cereal crops have larger and deeper roots, allowing greater access to nutrients that may have leached deeper in the soil profile.

Soil biology is also important. Mycorrhizal fungi in the soil form relationships with most plants. The fungi penetrate the roots and extend hyphae (threads) into the soil where they can access more nutrients and water for the plant. Thus, they act like highly-effective transport systems.

Pulses and flax form strong associations with these mycorrhizal fungi, while cereals are less dependent. Canola and other brassicas do not form these associations at all. It is suggested that highly mycorrhizal crops may fit best after a crop that is at least somewhat mycorrhizal, such as planting peas on cereal stubble.

Crop rotations can be used to manage residue and soil-borne plant diseases. Leaving a rest period between crops can reduce plant pathogen populations to levels that have a reduced impact and are easier to control. Cereal leaf spotting diseases and fusarium can be suppressed by planting no more than two cereals consecutively, and rotating cereal species and varieties.

Blackleg and sclerotinia are important canola diseases that can be suppressed with the recommended four-year rotation. Sclerotinia can also affect crops such as lentils and peas, so it is good practice to avoid growing pulses on canola stubble and vice versa.

When selecting a crop, it's important to consider its weed control needs or limitations. Crops, such as lentils, that are uncompetitive and have limited weed control options should be seeded into the cleanest fields. Matching weed-prone fields with crops that are more competitive and have better herbicide options is important.

It's not just the presence of weeds, but potential volunteers from the previous crop that should be considered. Rotating cereals with broadleaf crops usually allows good control of volunteers. Another important consideration is cropping restrictions from residual herbicides.

With the increased incidence of pesticide resistance, it is also important to rotate or combine pesticides. This refers to using products that have different modes-of-action (Groups) as much as possible. This is the case with all pesticides, including fungicides, insecticides and herbicides. Taking steps to prevent the build-up of resistant pests is important to the long-term sustainability of your farm and should be part of every crop rotation plan.

FOR MORE INFORMATION

- Visit the Saskatchewan Ministry of Agriculture website at www.agriculture.gov.sk.ca and search 'crop rotation'; or
- Contact your Regional Crop Specialist; or
- Contact the Agriculture Knowledge Centre at 1-866-457-2377.

DON'T MISS THE 2011 SOILS AND CROPS WORKSHOP



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The 2011 Soils and Crops Workshop will take place on March 15-16, in Hall A, Prairieland Park, Saskatoon.

The Soils and Crops Workshop provides Certified Crop Advisors, Certified Crop Science Consultants, Professional Agrologists, researchers, students, producers and other members of the agriculture industry with a great opportunity for professional development, networking and sharing current soils and crops research data.

Day 1 features information on current research in soil and water, crop management, fertility, pest management and the environment. At the end of the day, attendees will have an

opportunity to view contributed posters featuring current research in the areas of soils, crops and economics by researchers, faculty and graduate students from across Western Canada.

The second day features an in-depth training opportunity on crop establishment. Attendees will gain a better understanding of the germination process, seedling growth and factors that influence crop establishment. Discussion will centre on topics such as the effects of seed quality, seeding date, seeding depth, seeding rate and seed-placed fertilizer. There will also be information on seeding equipment, such as the impact of openers, packing, and row spacing on crop development.

FOR MORE INFORMATION

- Call the Agriculture Knowledge Centre at 1-866-457-2377; or
- Visit the University of Saskatchewan website at www.usask.ca/soilscrops/index.

