



THE PULSE AGRONOMY NETWORK  
PARTNERSHIP WITH INDUSTRY



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### Preparing to Grow Lentils

#### Neil Whatley

Lentil prices have been high and more farm producers in Alberta are considering lentil production this year. A member of the legume plant family, lentil fixates nitrogen for its own well-being as well as leaving some residual N in the soil for future crops. Adding lentil to a crop rotation breaks disease cycles of traditional crops, introduces an alternative rooting system to the soil, decreases the N fertilization requirement and provides a different market opportunity. However, first time lentil producers should use caution as this crop has unique characteristics.

The average yield of a lentil crop is 1,200 pounds per acre with first time growers generally achieving 2/3 of this yield. Growing lentil in rotation with cereal crops is most successful because lentil rooting depth is shallower than wheat, allowing these crops to extract water from different soil depths. Thus, wheat grown after lentil is typically higher yielding and, due to residual soil N, generally attains high protein quality.

Characteristics and sources of certified lentil varieties are documented in Alberta's Seed Guide ([www.seed.ab.ca](http://www.seed.ab.ca)). Availability of certified seed is diminishing due to large current demand, however, there continues to be some remaining in the province. The two seed sizes are Chilean/large-seeded (greater than 50 grams per 1000 seeds) and Persian/small-seeded (40 grams or less per 1000 seeds). The two main market classes are green and red lentil and this terminology can be a bit confusing because the green class is distinguished by a green seed coat colour and the red class is distinguished by a red cotyledon (seed leaf) colour, which is inside the seed. Green lentil seeds have yellow cotyledons. Lentil is a very poor weed competitor, so, depending on availability, Clearfield lentil varieties should be considered as Odyssey herbicide has a wide weed spectrum and is not hard on the crop. Clearfield varieties have the (CL) designation behind the variety name in the seed guide.

Producers should be cautious of field selection. When grown on soil with excess nitrogen or water at the time of seed set, lentil plants grow indeterminately; continuing to flower and grow vegetatively without setting seed. This plant characteristic can cause lower yields, higher disease incidence and higher frost risk. Under normal growing conditions properly inoculated lentil plants fix 80% or more of the plant's necessary N, so planting lentil on soil low in N is fine. In fact too much N in the soil will prevent important N-fixing root nodulation. To avoid excess moisture at maturity, the most successful areas to grow lentil are in the drier Brown and Dark Brown soil zones. Growing lentil in the Black and Gray soil zones is not recommended except in

the thin Black soil zone during years without excessive moisture. Red and small green lentil varieties are more determinate (less likely to grow vegetatively at maturity) and should be considered for the moist Dark Brown and thin Black soil zones, as well as on clay soils in the drier soil zones. Higher or sandy fields are preferable in wetter areas and should be considered when growing lentil in the thin Black soil zone.

The lentil plant's unique characteristics require special considerations at seeding time as well. So, in a future article I will identify key agronomic guidelines to follow to achieve proper seeding depth, seeding rate, fertilization and land rolling.

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### Seeding Rate Calculator – An Important Tool

The Alberta Agriculture website provides a seeding rate calculator for growers to help achieve the target plant population for different crops.

#### Special crop target plant populations and seed size ranges

	Desired plant population		1,000 kernel weight (grams)	seeds per pound
	per square meter	per square foot (range)		
Pea	75	7 (7 - 9)	125 - 300	1,500 - 3,600
Bean	25	2.4 (2.2 - 2.6)	200 - 350	1,300 - 2,300
Fababean	45	4.3 (4.0 - 4.3)	350 - 425	1,000 - 1,300
Lentil	105 - 147	12 (10 - 14)	30 - 80	5,600 -15,000

#### Optimal (Target) Crop Densities

Optimal plant densities for crops depend on the crop type, the intended end use for the crop, the region and the growing conditions. Target plant densities are generally lower in areas of limited rainfall than in areas with plentiful growing season moisture. Higher plant densities can increase crop competitiveness with weeds or can advance maturity by a few days in short season zones. High plant populations, however, can slightly reduce seed size and affect the quality of some crops.

#### Seed Germination and Mortality

To properly calculate the seeding rates needed to achieve target densities, germination tests and 1,000 K weights should be done on all seed lots. An estimate is also needed of seedling mortality to account for seed that germinates but fails to develop into viable plants.

There are many reasons for seedling mortality including disease, insects, excessive fertilizer in the seedrow, improper seeding depth, frost and drought. Unfortunately, seedling mortality can vary greatly from year to year, and field to field. Since mortality depends on the combination of conditions and practices of individual farms, producers should keep records of emergence (and thus mortality) on their fields.

#### Calculating Seeding Rate to Achieve Target Plant Density

After a desired target density is chosen, use the actual 1,000 K weight and germination of the seedlot to calculate seeding rates using Equation 1 or 2 below or the seeding rate calculators on [Alberta Agriculture's](#) website.

Steps:

- Choose a desired plant population range.
- Count out 1,000 seeds and weigh them (grams).
- Estimate a seedling survival rate, which is the germination percentage minus a small amount for seedling mortality (usually 5 to 20 per cent). A common range for estimated cereal seedling survival is 80 to 90 per cent, calculated by subtracting 5 to 10 per cent mortality from 90 to 95 per cent germination.
- Calculate seeding rate in lb/ac or kg/ha for upper and lower limits of target plant density range. The seed drill will then need to be calibrated to fall within this range.

**Equation 1 seeding rate (lb/ac)** = desired plant population/ft<sup>2</sup> x 1,000 K wt. (g) ÷ seedling survival rate (in decimal form such as 0.90) ÷ 10.4

**Equation 2 seeding rate (kg/ha)** = desired plant population/m<sup>2</sup> x 1,000 K wt. (g) ÷ seedling survival rate (in decimal form) ÷ 100

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### **Bacterial Blight Research Partnership Announced**

Syngenta Crop Protection Canada, Inc. has announced its intent to work with Innovotech, a Canadian biotechnology product development company, clearing the way for continued research trials in North America on the new plant bacterial blight research product, oxysilver nitrate. Earlier this year Innovotech and Syngenta entered into a mutually beneficial agreement by which Syngenta will conduct research trials of oxysilver nitrate in a seed treatment application for control of bacterial blight.

“We are very pleased to play a part in the development of this new technology,” said Coby Long, North American Seed Care marketing head at Syngenta. “We believe it is important to continually seek out new innovative pest management solutions for producers, both in North America and worldwide.”

Bacteria, like fungi, exist in the soil as part of a dynamic agricultural system. Dry beans as well as other crops, can be greatly affected by bacterial diseases. Bacterial blight is a serious problem for many crops with very few acceptable control products available to Canadian producers.

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### **HEAT™ Herbicide Registration**

HEAT™ herbicide has received regulatory approval and will be available to growers across Western Canada for the 2010 season.

Bringing a unique class of chemistry to the market, HEAT dramatically improves the performance of growers' pre-seed or chem-fallow glyphosate application, providing faster and sharper weed control than glyphosate alone.

Researched and registered as a tank-mix partner for all formulations of glyphosate, HEAT has been shown to dramatically improve the performance of pre-seed or chem-fallow glyphosate applications. HEAT delivers fast, consistent control of a wide range of broadleaf weeds up to the 8-leaf stage, including dandelions, narrow-leaved hawk's beard, volunteer canola (including Roundup Ready), wild buckwheat, kochia (including Group 2 resistant) and spring and winter annual cleavers (including Group 2 resistant). HEAT's control of glyphosate-tolerant and Group

2-resistant weeds makes it an important part of a resistance management for glyphosate sustainability in reduced tillage operations.

If you would like more information about HEAT, including the weeds it controls, application rates and timing, and grower testimonials, please visit <http://www.agsolutions.ca/heat/>

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### **Pursuit® Herbicide Added to the GROU Program for 2010**

The Health Canada Pest Management Regulatory Agency (PMRA) is pleased to notify Canadian growers that Pursuit has been approved for the Grower Requested Own Use (GROU) program. The GROU Nomination Committee, which consists of representatives of key grower associations, nominates candidate products for consideration under the Program. The program allows users (producers) to import pesticides for use in their own farming operations – not for resale.

The GROU application form is available from

- Pest Management Regulatory Agency of Health Canada (PMRA) web site at [http://www.hc-sc.gc.ca/cps-spc/pest/agri-commerce/import/\\_grou-piapda/import-cert-eng.php](http://www.hc-sc.gc.ca/cps-spc/pest/agri-commerce/import/_grou-piapda/import-cert-eng.php)
- email [pmra\\_infoserv@hcsc.gc.ca](mailto:pmra_infoserv@hcsc.gc.ca)
- or toll-free at 1-800-267-6315

Users must provide proof of participation in the container disposal (recycling) program [www.groucontainerfees.ca](http://www.groucontainerfees.ca)

PMRA is now accepting import applications for the 2010 growing season.

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### **Previous PAN Bulletins**

View Previous PAN Bulletins at:

<http://www.pulse.ab.ca/ForProducers/Publications/PulseAgronomyNetwork/tabid/125/Default.aspx>

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