The Bean Report

Your source for soybean & pulse crop agronomy & research

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This week....

- Crop staging
- Predicting time to maturity
- Estimating edible bean yields
- Maximizing field pea yields
- Bean diseases favored by cool, wet conditions

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In Every Issue....

Crop Conditions

Soybeans are in R-3 to R-5 stage. Crops are further advanced in the Central/Eastern region compared to Western Manitoba. The earliest fields are reaching R-6.

Location	Crop Heat Units May 15 to Aug 8	% Normal
Dugald	1664	92
Carman	1668	92
Morden	1753	91
Portage	1740	94
Melita	1661	93
Dauphin	1631	96

Dry beans range from R-6 to R-7 with some fields yellowing (R-8). Dry bean harvest will likely begin within 3-4 weeks. Late season white mold infection is beginning to show up. This should not be a surprise given the favorable conditions over the past few weeks. White mould is less detrimental to yield as we near maturity. A field blog post for precautions on late season fungicide spraying is available on our website.

From July 20 to August 8, night time temperatures have dipped below 10°C on average 9 days in areas across the soybean growing region. Chilling stress in soybean occurs at 10-12°C and below and night time temperatures of 10°C vs. 16°C and 24°C have been shown to reduce crop growth rate. The effect on yield is variable depending on the duration of cold stress and crop staging. For example in one study, pod number and seed number were not effected but seed size was reduced resulting in a 24% yield reduction. *Yield is more affected by chilling stress during seed filling than flowering/pod formation* (Board and Kahlon 2011). Therefore, if we return to normal conditions as anticipated, the effect on yield may be minimal.

Crop Staging as we near maturity

Soybeans at R-5: Most soybean fields are at R-5, *beginning seed*, where seeds are 1/8 inch long in a pod at one of the four upper nodes on the main stem. At this stage, soybean plants will reach maximum height, node number (8-10) and leaf area.

Approximate time to maturity = 40 days

Soybeans at R-6: At R-6, *full seed,* pods on four upper nodes will contain seeds that fill the pod cavity and leaves may begin to fall from lowest nodes prior to leaf yellowing.

Approximate # days between stages (Fehr and Caviness 1977)

R-5 to R-6: 15 days
R-6 to R-7: 18 days
R-7 to R-8: 9 days

Dry beans between R-6 and R-7

At R-6, indeterminate dry beans have pods 4.5 inches long and seeds 1/4 inch long. At R-7, oldest pods have fully developed green seeds and blossoms on tendrils.

Approximate time to maturity = 20-30 days

When leaves start yellowing over half of the plant, R-8 has been reached and plants will be mature in less than two weeks. This is a good time to take a yield estimation.

Maximizing Field Pea Yield by Optimizing Inputs

Due to the limited acreage of field pea production in Manitoba, we often look to our Saskatchewan counterparts for production and research information. In this episode of Pulse School, you'll learn which inputs are most important (and those that aren't!) to optimize pea production. A three year study is looking at 5 inputs:

1. Seeding rate (high or low)
2. Inoculant (liquid vs. granular)
3. Seed treatment
4. Starter N
5. Fungicide

Find out why environment is also important! Click here

Field Scale Plant Population and Inoculation Trials

Field scale soybean trials are being conducted by Tone Ag in Central and Eastern Manitoba from 2011-2015. The plant population trial is being conducted on 7 farms in 2013 and is looking at the effect of reducing a typical soybean seeding rate by 30,000 seeds/ac. In 2012, a higher seeding rate showed a 0.6 bu/ac yield gain, which did not offset the additional seed cost (~$11/ac).

The second trial on 10 farms is looking at the effect of liquid vs. liquid + granular inoculation: is there a yield benefit to investing in granular inoculant in addition to liquid (in fields with a previous history of soybeans)? This trial was initiated in 2013 and will continue until 2015.

Foliar diseases of Soybean and Edible Bean

Many foliar diseases are present in soybean and edible bean fields. The first three listed here generally do not cause yield loss although we are seeing quite high levels of bacterial blight this year.

Downy Mildew appears as small lime green spots on top of leaf and white fungal growth underneath.

Bacterial Blight spreads rapidly in cool, humid conditions and persistent rainfall. Varietal differences are being observed.

Bacterial Blight AND Halo Blight (causes yellowing of entire leaf)

White mould on stems, pods and leaves: water soaked lesions with fungal growth. Edible beans more susceptible.