THE PULSE AGRONOMY NETWORK
PARTNERSHIP WITH INDUSTRY

PAN - ALL PULSE BULLETIN #3 – APRIL 28, 2009

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- Trilex AL is registered as a new pulse seed treatment
- Solo + Basagran Forte received emergency registration for dry beans
- Inoculant Tips
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New pulse seed treatment Trilex AL registered

Trilex AL Seed Treatment Fungicide provides seed and seedling protection from seed and soil borne diseases caused by *Rhizoctonia solani*, *Fusarium spp.*, *Pythium spp*., *Botrytis cinerea* and *Phomopsis longicolla* on labeled crops. Trilex AL is registered for use on beans (dry, succulent and snap), chickpeas, peas, lentils, and soybeans. With this registration, Trilex AL will be available to growers for on-farm treatment for the 2009 growing season. The two active ingredients and modes of action in Trilex AL are trifloxystrobin, a Group 11 fungicide, and metalaxyl, a Group 4 fungicide.

In Bayer CropScience trials conducted in Western Canada from 2002 to 2006, Trilex AL outperformed the major pulse seed treatment competitors and was way ahead of untreated checks for control of *Rhizoctonia* or *Fusarium* in pulses, and botrytis in lentils.

Always follow label directions.

Links: Trilex AL Label

SOLO + Basagran Forte Emergency Registration

The PMRA has granted an emergency registration for Solo + Basagran Forte for post emergent weed control in dry edible beans in Manitoba and Alberta. Market classes covered include Great Northern, Pinto, Pink, Small Red, Cranberry, Black and Navy. The addition of UAN 28% as a nitrogen source to the mixture is required for grass control.

The rates registered include 29g/ha of Solo WDG Herbicide + 1.25L/ha of Basagran Forte liquid herbicide + 2 L/ha of a nitrogen source (UAN 28%).

Always follow label directions.

Links: Solo Emergency Use Label

Inoculant Tips

Formulations

There are 3 different types of inoculant formulations and each has advantages and disadvantages.
Source of inoculant characteristics and tips: Garry Hnatowich, Senior Research Agronomist, Philom Bios

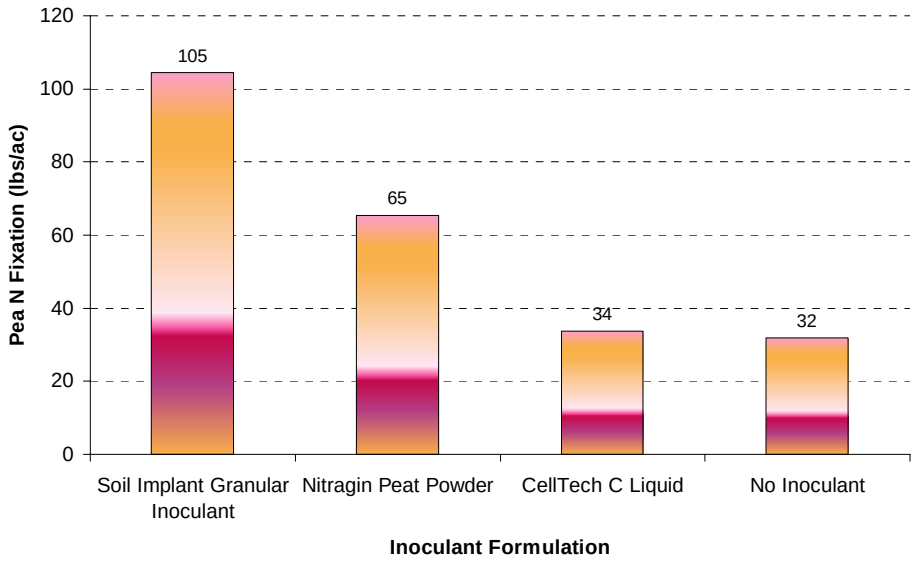
<table>
<tr><th>Formulation</th><th>Characteristics</th><th>Tips for Use</th></tr>
<tr><td>Liquid Inoculant</td><td>- Convenient
- Most sensitive formulation
-Susceptible to desiccation
- Extenders help reduce desiccation
- Concern when used with seed treatments</td><td>- Use a double rate on dry soils or virgin legume land
- Contact your inoculant company to check for seed treatment compatibility
- Shake the bag thoroughly
- Use minimum air velocity in air seeder</td></tr>
<tr><td>Peat Based Inoculant</td><td>- Applied to the seed
- Less susceptible to desiccation
- Less concern with seed treatment damage</td><td>- Apply as a slurry; but it is messy
- Contact your inoculant company to check for seed treatment compatibility
- Use minimum air velocity in air seeder</td></tr>
<tr><td>Granular Inoculant</td><td>- Applied in row; peat or clay carrier
- Higher priced
- Can use higher rates
- No concern with seed treatment damage
- Withstand moisture stress after planting</td><td>- Rate depends on row spacing
<table>
<tr><td>Row Spacing</td><td>30”</td><td>22”</td><td>15”</td><td>12”</td><td>9”</td><td>7”</td></tr>
<tr><td>Rate (lbs/ac)</td><td>1.3</td><td>2.1</td><td>3.0</td><td>3.8</td><td>5.0</td><td>6.5</td></tr>
</table>
- Empty tank each night
- Monitor flow rates on humid days
- Don’t auger peat based granular
- Apply in the furrow – do not band</td></tr>
</table>

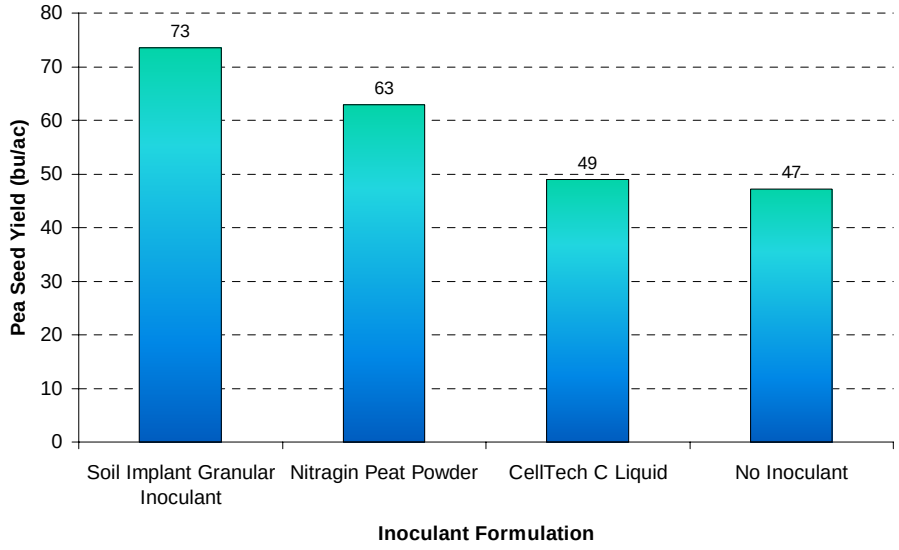
The General Conclusion is:
Liquid ≤ Peat ≤ Granular
Granular Inoculant is equal to or better than Peat Inoculant
Peat Inoculant is equal to or better than Liquid Inoculant
Under Ideal conditions, performance can be expected to be similar, but under harsher conditions (dry soil, cold soil, extended treated storage, low pH soils, toxic seed treatments, etc) differences will exist.

Inoculant Formulation Affects Nitrogen Fixation and Yield

Source: Clayton, G. W., Rice, W. A., Lupwayi, N. Z., Johnston, A. M., Lafond, G. P., Grant, C. A. and Walley, F. 2004. Inoculant formulation and fertilizer nitrogen effects on field pea: Crop yield and seed quality. Can J. Plant Sci. 84: 89-96.

Studies comparing inoculant formulations were conducted by Agriculture and Agri-Food Canada, at Fort Vermillion and Beaverlodge in 1995 and 1996. As expected, the study found significant improvements in nitrogen fixation and yield when inoculants were added compared to using no inoculant. The study also found significant improvements in nitrogen fixation and yield in the granular inoculant treatments compared to the peat and liquid inoculant treatments.





Starter Nitrogen: Is it a good idea?

It can…
- reduce Rhizobium infection of the root
- reduce nodule size
- reduce nitrogen fixation per nodule

Does starter nitrogen improve yields?
Findings from the Agriculture and Agri-Food Canada study conducted at Fort Vermillion and Beaverlodge in 1995 and 1996 found:
- Not when a granular inoculant is being used
- At some locations, N fertilizer resulted in small yield increases but only when it was used with peat or liquid inoculant on when no inoculant was used.

In summary, starter N is probably a waste of resources, especially when you inoculate properly!

Seed Priming

All pulse producers are aware of the damage that combines can do to pulses, when the seed is too dry. A recent study conducted by Reduced Tillage Linkages, found that excessive wind speeds in air seeders are also capable of reducing germination through mechanical damage (link). So why not also use the same technique of handling tough or moist seed to reduce damage caused in seeding operations like in harvest operations?

Studies from India, Pakistan, Nepal, and Bangladesh have shown seed priming can also improve the speed of emergence, plant density, maturity, grain yield (Goud *et al*. 2009), and drought tolerance of chickpeas, (Harris *et al*. 1999), as well as disease resistance of mung beans (Rashid et al. 2004).

The Prairie Agricultural Machinery Institute (PAMI) has evaluated and published a method that pulse producers can use to prime or moisturize their seed prior to planting (link). As a rule of thumb, 7 gallons of water are required to increase the moisture content of 100 bushels by 1 percent. Growers should be aware that adding moisture to the seed will increase the thousand seed weight and change the bulk density. Be sure to adjust your seeding rate and recalibrate your drill.

How to rewet pulses using direct water application

1. Determine the amount of pulses to be passed through the auger in a single batch. For example, use a truck box full, where the bushels can be readily estimated using box measurements.
2. Determine the amount of time required to empty the truck box through the auger. Remember to run the auger at a reduced speed (about 400 rpm).
3. Determine the incoming moisture content of the pulse seed. Also, decide which final moisture content is required.
4. Using the table provided, determine the amount of water that must be applied to the pulses while emptying the load. Divide this number by the box emptying time to get the required water flow rate.
5. Adjust the water hose accordingly and begin.
6. After 24 hours, always sample the bin to ensure that the desired moisture content has been reached and that the pulses are not overwetted, which could cause spoilage.

   Example: An incoming 450 bushel load of peas has a moisture content of 12%. They must be rewet to 15%. The auger to be used will empty the box in 11 minutes.

   From the table, determine that from initial 12% MC to final 15% MC requires 21 gallons per 100 bushels.

   For our example:
   21 gallons÷100 bushels x 450 bushels = 94.5 gallons are needed. If our box empties in 11 minutes, a water flow rate of 94.5 gallons÷11 minutes = 8.6 gallons per minute is needed.

   To set the hose at this flow rate, use a 5 gallon pail and a stop watch. It will take 35 seconds to fill the pail: 5 gal x 60 sec÷8.6 gal = 35 seconds

Table 1. Water Addition Chart...Used to determine the water required to raise the moisture content (MC) of pulse seeds through an auger (in one pass) to a desired moisture level.

Initial MC % \ Final MC %	10	11	12	13	14	15	16	17	18
	Gallons of Water Added per 100 Bushels of Pulses								
10	--	7	14	21	28	--	--	--	--
11			7	14	21	28	36	--	--
12				7	14	21	29	36	--
13					7	14	21	29	--
14						7	14	22	29
15							7	14	22
16								7	15
17									7

NOTE: Any water, added to a potential foodstuff, must be considered fit and safe for human consumption.

Source: (PAMI 704)

References

Goud VV, AN Patil, VL Gawande (2009). Effect of Seed Priming and foliar fertilization of nitrogen on growth and yield of chickpea (*Cicer areitinum* L.). *Abstracts of the International Conference on Grain Legumes, Kanpur, India, February 14-16, 2009*

Harris D, Joshi A, Khan PA, Gothkar P, Sodhi PS (1999). On-farm seed priming in semi-arid agriculture: development and evaluation in maize, rice and chickpea in India using participatory methods. *Experimental Agriculture* 35, 15-29.

Rashid A, Harris D, Hollington PA and Ali S (2004) On-farm seed priming reduces yield losses of mungbean (Vigna radiata) associated with Mungbean Yellow Mosaic Virus in the North West Frontier Province of Pakistan. *Crop Protection*, 23 (11), pp. 1119-1124.

Links

PAMI Report: Moisturizing Pulses to Reduce Damage

On-farm seed priming reduces risk and increases yield in tropical crops

Impact of Air Seeder Wind Speed On Pea Germination And Inoculant Viability (seed bashing)

Other Relevant Past PAN Bulletins

April 18/08 - Seed Weight Counter, Seed Treatment Update
April 8/08 - Express SG Glyphosate for Pulses, Faba bean Inoculants
April 23/07 - CleanStart Herbicide for Pulse Growers

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