

Workshop Title: Green Manures for Nitrogen in Vegetable Production

Speaker(s) & their title(s): Denis Le France, CETAB+ - *Centre d'expertise et de transfert en agriculture biologique et de proximité*

Executive Summary

Denis LaFrance shares his knowledge of green manures which he has amassed from his extensive experience in farming and on farm research. He emphasizes the importance of finding a green manure system that works on your farm. A main focus of his talk is techniques to incorporate more nitrogen into your fields through the use of green manures.

Detailed Notes

- Farms with good green manure crops usually have good quality crops and clean fields.
- However Denis does know a farmer who doesn't grow green manures and still has clean fields and good crops.
- He believes that green manures are a central part of a good organic farming system.
- Green manure pays for itself just in a reduction of weed pressure.
- The best way to bring nitrogen into your system is to add nitrogen rich green manures into the soil.
- **The middle Quebec is a 2450 heat unit area which is where his project took place.**
- The project: to look at using green manures to add nitrogen to the soil.
- How can we improve the soil structure?

3 Ways to use Green Manure

- Main crop: Still worthwhile to green manure to improve yield of vegetables.
- Catch crop: grown after main crop, need time for green manure to break down before starting crop, may disturb germination of crop.
- Inter-row: risky, often negatively affects a crop.
- You can also grow green manure for multiple years as a catch crop.

For More Nitrogen

- He likes forage peas as legume variety for adding more nitrogen.
- The nitrogen is not in the little balls in the root but rather in the whole plant.
- The earlier you sow, the more you'll gain from planting green manure.
- Planting green manure is the last thing on a farmer's mind but it should be the first thing.
- Controlling weeds costs a lot of money, but most green manures will reduce these costs.
- If you want a quick result till in the green manure when it's young, if you want accumulation in the soil, let it ripen longer.

My Favourite

- Oats and hairy vetch combination: oats will grow and the other green manure will establish underneath, oats will winter kill, and generally hairy vetch will survive the winter depending on the local climate.
- Sow at 20kilos/hectare rather than original seeding rate of 30kilos/hectare.
- He uses a chisel plow just before seeding.
- You can mow when it suits you it is flexible.
- It is better to grow your hay and leave it in the field for vegetable health.
- Nitrogen is very mobile so if you bring it to one location it will end up all over.
- Advantages of this combination: there is a lot of N production, lots of roots for organic matter, cuts back on perennial weeds and reduces annual weed pressure.
- However couch grass is an exception, as it is not easily killed.

Catch Crops

- Denis prefers to spread manure the year before planting the green manure.
- He has tried 40kg/ha but didn't find it had enough cover so now uses 60-80 kg/ha.

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- You need to find what works best for your system; you need to do some technical development for your own cropping system.
- Most legumes don't compete well with weeds so are better with a nurse crop.
- However forage peas can compete alone.

CETAB+ Trials

Foliar Nitrogen (%)

- Only oats can tie up nitrogen as they're breaking down.
- The cereals have more nitrogen per hectare this year compared to last year.
- You pay \$9/kilo when you buy nitrogen in Quebec so you are saving a lot of money when you grow it yourself.
- Crimson clover doesn't like to be mixed with other crops; it doesn't work with a cereal nurse crop.

Summer Trials 2015

- Favourite crop is winter rye because you don't need to mow it as it grows slowly.
- As the plant gets older the concentration of nitrogen goes down but biomass increases.
- Cheap way to bring nitrogen into your system.
- Refer to slides for winter rye and hairy vetch, pearl millet and hairy vetch photos.
- Below 15% organic matter you have something that will mineralize quickly and above 15% it will turn to humus more slowly and have longer lasting effects.

May 2015 - Soil structure

- Peas don't hold the soil structure alone but work well with crimson clover and rye grass.
- Refer to slides for seeding rates.
- Sorghum and hairy vetch - didn't get good growth on the hairy vetch.
- Winter rye and hairy vetch was the best combination when mowed.

Questions

I have vetch on my farm that is completely taking over, so I am hesitant to use it as a cover crop.

- The vetch used, as a green manure is an annual that won't survive the winter, hairy vetch is a winter annual, both are different from wild vetch, which is a weed.

Do you use inoculants for your cover crops?

- He would only use inoculants if there were no history of growing that crop on that farm.

What conclusions can you draw from your research?

- He's been farming since the 1950s and isn't ready to make any conclusions about farming yet.

Have you had any problems with wireworm?

- It is possible to have wireworm problems with hay fields in the rotation.