

## **Pesticide Free Production**

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I farm in Manitoba about 40 miles north of Highway 1 and 25 miles east of the Saskatchewan/Manitoba Border. The crops I grow or have grown include winter wheat, CPS wheat, red spring wheat, durum, oats, barley, green and yellow peas, flax, linola, and canola. All crops have been grown under no-till since 1992.

When I first started into no-till, I planned a crop rotation because common knowledge said that I had to. All the successful no-tillers found they had to pay more attention to alternating crop types, than their tilling neighbours, for disease, insect, and weed control. Also, the accumulation of crop residue could be troublesome if low residue crops were not included in the rotation.

The evolution of my crop rotation has been guided by these principles but also by economics, equipment shortcomings, nutrient availability and herbicide rotations. This process has led me to the point today where my rotation is barley, oats or wheat/field peas/canola/winter wheat/flax. Cereal crops were reduced in frequency for economic reasons and canola followed peas because of equipment limitations. The drill that I had at that time did a much better job seeding canola into pea stubble than cereal stubble. Also, canola took more economic advantage of the residual nitrogen than any cereal crop I could grow. Finally, a more diverse crop rotation made it easier to plan an adequate herbicide rotation.

One benefit of this no-till crop rotation that I did not expect to see was the dramatic reduction in wild oat population. To take further advantage of the reduced weed pressure, I started to select more competitive crop varieties and crop types (e.g. winter wheat). As a result of this change I now only apply a wild oat herbicide 3 years out of 5. The only cereal crop that I have had to spray for wild oats in the last five years was a single quarter of winter wheat on newly rented land. However, this wasn't the extent of the change. In the broadleaf crops, grassy herbicides were mainly required to control volunteer cereals. In many cases I was then able to reduce rates. It was at this point that I first heard about pesticide free production.

Pesticide Free Production Canada (PFPC) was started by farmers and researchers that hoped to encourage research and education activities to support reduced pesticide use in crop production. A crop production system called Pesticide Free Production (PFP) was developed which restricted the use of in-crop herbicides. To address the issue of marketing these crops the Pesticide Free Production Farmers Co-op Ltd was initiated by a group of producers.

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PFP crops are defined as “...*non-GMO crops that have not been treated with pesticides from the time of crop emergence until the time of marketing. In addition, such crops cannot be grown where residual pesticides are considered to be commercially active.*”

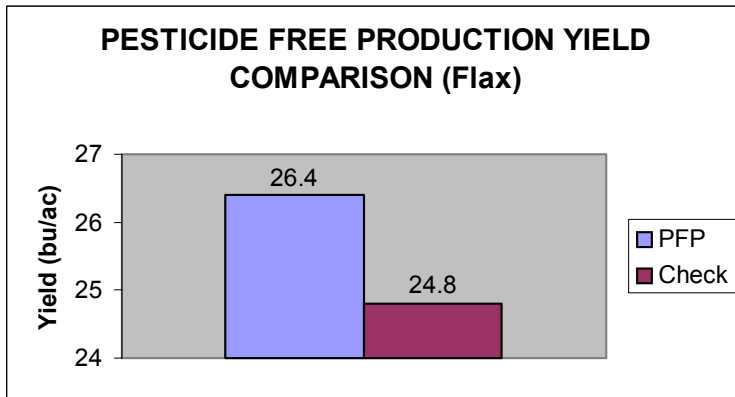
Unlike organic production, there are no restrictions on the grower in terms of commitment to PFP. If, during the cropping year, there is a major pest outbreak that requires treatment with a pesticide, then the grower is still able to market that product as he or she normally would. The producer could then attempt PFP on that same field the next year. Pesticides are permitted in non-PFP years, and some non-residual pre-seed chemicals are also permitted in the year of PFP (pre-emergent glyphosate). Fertilizer use is also permitted.

It is interesting how strong my mindset was to spray herbicides. Even though I was reducing the use of wild oat herbicides it had never occurred to me to try to grow a crop using no herbicides. After all, I had never before skipped a broadleaf herbicide application. In 2000, I decided to try producing a field of oats without pesticides. The oats were seeded and the burn-off done just prior to the oats emerging. It rained that night and a flush of stinkweed, of Biblical proportions, quickly emerged. I was so discouraged that I sprayed and didn't even leave a check strip. However, after a chance to regroup during the winter and reassure myself why I wanted to do this, I tried PFP oats the next season (40 acres out of a quarter section). Unlike the first year and without changing any practices, it was a success. The PFP oats yielded the same as the non-PFP oats but the bushel weight was slightly lower (1 lb/bu). I attribute the lower bushel weight to increased disease pressure from the absence of a fungicide application. The next year was just as successful with similar yields but slightly reduced bushel weight in the PFP oats. However, the success was limited to crop production as I was unable to market them as a PFP crop. Even selling the PFP oats into the conventional market, the net return was very similar. Oats are an easy crop to grow under PFP but marketing opportunities are very few. So I decided to move to the next level and try flax.

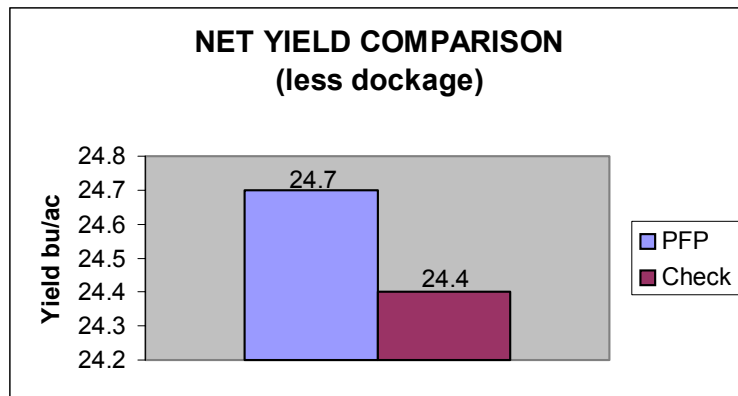
With a less competitive crop like flax, crop rotations are more important in the PFP strategy. I had noticed that flax following winter wheat was usually very clean early in the season. If you remember the portion of my rotation before flax; peas – canola – winter wheat – flax. These crops all provide excellent opportunities for wild oat and broadleaf control. After this series of crops there was a reduction in weed population, a huge benefit for the non-competitive flax. Also, the heavy winter wheat residue suppresses early weed growth, giving the flax a competition free environment for an extended period of time.

On May 26, 2003, I seeded 80 ac of Normandy flax (40 lb/ac) into winter wheat residue. The burn-off was applied a couple of days prior to emergence. The flax was quite clean up until it was 2 inches tall when a huge flush of weeds started. I felt at this time that there were too many weeds to not spray the field. But, this time I left an untreated PFP

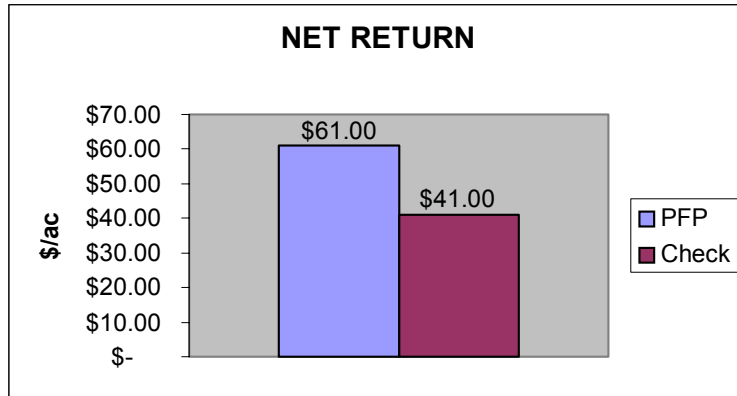
strip (one width of my sprayer ½ mile long). The rest of the field was sprayed with Poast and Buctril M. Not only was the PFP strip noticeable because of a few weeds standing above the crop but the flax plants were taller and flowered sooner (1 to 2 days) than the rest of the field (I assume this was due to herbicide injury). The whole field averaged 24 bu/ac. and the following chart shows the gross plot yields (PFP - 26.4 bu/ac and check - 24.8 bu/ac).



These yields were measured as gross bushels. Later I tested representative samples taken from the two plots for dockage (PFP – 6.4% and check – 1.5%). The following chart shows the difference in net yield (PFP – 24.7 bu/ac and check 24.4 bu/ac).



Next I calculated the net return per acre from each of the plots. I assumed that the selling price was the same (\$8.15/bu).



The PFP Farmers Co-op was able to find a limited market for PFP flax this year at about double market price. However, there was only one buyer and they could not take all of the production grown this year. The problem appears to be that we need enough PFP crop to sell in order to establish markets but there won't be enough grown until the markets are established. Also, there is a problem with Canadian Food Inspection Agency (CFIA) and labeling. The PFP Farmers Co-op had found a market for malt barley but CFIA would not approve the label for the beer bottles stating that the term "Pesticide Free" is unattainable. This may mean a change in name for the organization or more work with CFIA. The PFP Farmers Coop are reluctant to push it too hard because there are currently farmers selling product with the "Pesticide Free Production" label (CFIA approved) on their product. There is quite a bit of uncertainty with the marketing aspect of PFP.

In conclusion, my crop rotation has allowed me to attempt PFP crops for which there are potential markets. By experimenting with PFP I have become more comfortable with reduced herbicide use overall on my farm and am more comfortable making decisions for not using pesticides. By decreasing my reliance on herbicides, I feel that I can reduce the risk of the onset of herbicide resistance and can improve my bottom line.