

TBARS & Thunder Bay Farming Community Milestones

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Thunder Bay Agriculture Research Station (TBARS), Thunder Bay, a part of the University of Guelph till 2002, was closed by the university in October 2002. The vibrant and enterprising farming community of Thunder Bay wasn't willing to accept this change, because they believed that local climate and growing conditions could not be duplicated by the research facilities in other parts of Ontario. The short growing season at Thunder Bay presents unique challenges to crops commonly grown in Southern Ontario. Besides, moderating effect of Lake Superior on the climate, cooler nights and much less acid rain that brings in sulphur, an essential nutrient, from the atmosphere makes Thunder Bay quite different from Southern Ontario, where majority of the agricultural research is conducted.

Historically, research has paid dividends for the local farming community and the local rural economy. A couple of examples of benefits of research at TBARS to the farming community, before its closure, are the replacement of lime by wood ash for soil amelioration, and the addition of soybeans to the farming systems with a resultant construction of a soybean roasting plant at the Thunder Bay Co-op. Thunder Bay farming community organized themselves under the leadership of Ben Kamphof, a recognized provincial farm leader (Past President Ontario Soil and Crop Improvement Association) and formed a not-for profit corporation called Thunder Bay Agricultural Research Association (TBARA). The association was able to get 75 % of funding, for a five year term (2003-2007), from the Ontario Ministry of Northern Development and Mines (OMNDM, now MNDF) through the Northern Ontario Heritage Fund Corporation (NOHFC), as well as in kind contributions from the University of Guelph and OMAFRA. TBARS, the first research station of its kind in the province of Ontario, became operational again in April 2003, successfully completed its first funding term in 2007-2008 and, based on the good work done by it, was able to get another funding term (September 2008 to August 2011) from the OMNDM through NOHFC. The research staff at TBARS and the forward looking farmers of Thunder Bay have been working in close unison to overcome constraints to sustain crop(s) yields and quality at a high level and looking for opportunities for further diversification of the farming systems leading to consistent economic development of the rural communities. Farmers have been quick to grasp and apply the research information generated by the research station on their farms. This note briefly lists the major milestones of the TBARS and the area growers.

2003-'04:

- TBARA completes search for and puts an experienced research team in place at TBARS.

2004:

- TBARS identified deficiency of sulphur (S) and boron (B) in alfalfa and zinc (Zn) in corn and cereals (Northwest Link, August 2004, pages 5-8 and Ontario Farmer, October 26, 2004, pages B6-7) and established experiments on S, B and Zn nutrition in crops; by now most farmers apply S to almost all crops, especially to alfalfa, B to alfalfa and some apply Zn to corn and alfalfa. Fertilizer blending plant at the Thunder Bay Co-op had been busier than before. Application of these nutrients not only improved crop yields but the produce and soil quality too.

- TBARS initiated long term experiments on crop rotations, alternate tillage systems, and the integrated use of wood ash, lime, manure and nutrients; also research on winter crops (canola, barley and wheat)
- TBARS undertook evaluation of urea as alternate nitrogen (N) fertilizer to ammonium nitrate in canola and silage corn.

2005:

- TBARS joined hands with MAFRI (Manitoba Agriculture, Food and Rural Initiatives) for variety evaluation trials on cereal forages (barley, oats, triticale, and millets), soybean, winter wheat and winter rye. Part of the success in on-farm winter wheat cultivation in Thunder Bay is ascribed directly to this initiative.

2006:

- Farmers cultivating hard red winter wheat replaced Superb, an older spring wheat variety with a new one, i.e. Sable, which is resistant to lodging, high yielding and amenable to easy combining. Half a dozen growers started trial cultivation of AC Klinck barley to replace old barley varieties (Chapais and Brucefield); one of the growers had 70 acres under AC Klinck during 2006.
- TBARS took a lead in Ontario in initiating research on ESN (Environmentally Smart Nitrogen) in winter wheat and timothy. Till then no one else in Ontario was working on ESN in these two crops.

2007:

- Research on winter and spring grain crops and their cultivation by farmers opened the door for a pilot scale flour mill in the area (initiative of Food Security Research Network and some growers).
- A couple of growers diversified their cropping systems with canola, which had impressive yields in trials at TBARS.
- Many farmers replaced old barley varieties with AC Klinck and a couple of others added Cyane, another high yielding barley variety, to their barley portfolio.
- Thunder Bay Soil and Crop Improvement Association (TBSCIA) initiated on-farm research on ESN in barley, potato and corn.
- Research at TBARS established that ammonium sulphate that could supply readily available S, was the best source of N in alfalfa, urea was as good a source of N as ammonium nitrate in corn and urea could be applied safely in canola up to 100 kg N/ha. Consequently, our farmers didn't feel the punch when ammonium nitrate almost disappeared from the market.
- TBARS found that (i) alternate tillage systems, such as disking in fall/or spring or both in fall and spring followed by cultivation in spring could save 30-40 % of time and fuel as compared to the conventional tillage without any loss in crop yields, and (ii) wood ash could not only substitute lime but solid dairy manure as well. Wood ash had a distinct edge over lime and manure in improving micronutrients availability in soils, crop yields and produce quality.
- TBARS evaluated durum wheat varieties from the western Canada along with an Ontario durum wheat variety.

2008:

- Area growers undertook durum wheat cultivation for the first time, and expanded winter wheat cultivation to ~500 acres.

- A young entrepreneur established stone grinding flour mill in the area and markets the flour from the locally grown grains to the local consumers to their liking!
- Area under Cyane barley increased further, some more farmers try their hands at Conlon, a two row barley from Manitoba, that was tested at TBARS. Conlon is observed to be high yielding in cold/wet years.
- TBARS disproved the myth that application of wood ash could result in buildup of heavy metals in the soil.
- TBARS continued research on new crops/varieties for area growers and successfully tested (i) berseem clover that was found better than alfalfa in yield and protein content, and (ii) Millhouse (hulless) barely, the first food barley in Canada, flour from which can be used for making bread.

2009:

- Area growers made a quantum jump in the area under durum wheat (to ~500 acres)
- One grower initiated cultivation of Millhouse barley.
- One farmer undertook hard white spring wheat, and another one is evaluating berseem on farm. An organic grower has a trial cultivation of Galega-a perennial forage legume from the Scandinavian countries (tested at TBARS during 2006-2009).
- Some other growers started cultivation of field peas (Polstead-a variety from the West)
- A dairy farmer, taking a hint from the presentation made by the TBARS Director of Research and Business, at the TBSCIA 2009 spring conference, first time tried combined cultivation of winter wheat and spring barley (seeded in spring) as an alternate forage option. He is impressed by the feed quality and is planning to repeat this beneficial practice next spring.
- And TBARS continues its development oriented research with a lot of new initiatives. Early investigation is underway into biomass production/bio-energy crops, sustainability of production systems, crop nutrition involving secondary and micro nutrients, medicinal plants, alternative forages, etc.

The willingness of member growers to adopt small plot findings for on-farm trials and commercial production has generated significant returns on the investment in location specific agricultural research. Their eagerness to share the research information with the broader local, regional and provincial agricultural communities leads to a multiplier effect. This means that all can benefit from the new knowledge gained at Thunder Bay. Kudos to our area growers for operating the Thunder Bay Agricultural Research Station so well and bringing in favourable changes at the farm level so quickly and so consistently/persistently!

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