Research 2011 Presentation-Conclusions and Recommendations

Dr. Tarlok Singh Sahota CCA

Most of the conclusions/recommendations made in this note are based on three years of research at the Thunder Bay Agricultural Research Station and could therefore be adopted on farms.

Crop Varieties:

- Spring wheat: Batiscan/and Stettler out yielded Sable. Hallmark out yielded all western durum wheat varieties.
- Add Encore to the spring barley portfolio.
- CDC Coalition and Bentley, both 2 row barley varieties, exceeded 6 row varieties in forage yield. CDC Coalition is the best dual purpose variety (silage and grain)!
- Highest oat yield was obtained with Vitality, RC Amaze and Prescott.
- NSC Warren soybean was consistent in its yield!
- September 5 seeded winter wheat gave the highest yield. Peregrine, Broadview and Sunrise grain yields were ≥ CDC Falcon.
- In field peas, CDC Patrick and Sorrento had the highest grain yield (~5,000 kg/ha).
- Chickpeas: Corinne (Desi) and Frontier (Kabuli) had higher yields (3,070-3,277 kg/ha) than others.
- Lentil: Rosetown produced the highest grain yield (3,721 kg/ha).
- Two top yielding edible beans varieties were Earlired: 3327 and Pintoba: 2814 kg/ha.
- Forage yields from Winter wheat/rye/triticale were 1.5-2.0 times more than that from spring barley.
- Winter barley (McKellar) produced 15 % higher grain yield as compared to spring barley (Cyane).

Fertilizers/Nutrient Management:

- ESN up to 120 kg N/ha could be safely applied with spring wheat seed at seeding. It equaled urea in grain yield.
- ESN and urea equaled in silage corn yield and had similar residual effects on yield of forage oats.
- ESN/urea applied in the fall (Sep 25) to forage grasses gave equal yield to spring application of urea. Protein content with fall applied ESN was 2% point higher than that with fall/or spring applied urea.
- ESN and urea equaled in grain yield of winter wheat; urea @ 30 kg N/ha in fall and 90 kg/ha in spring resulted in only a marginal increase in grain yield as compared to its single application in spring/or single application of ESN in fall at the same rate of N.
- Residual total mineral N in 60-90 cm soil with ESN @ 120 kg N/ha, in winter wheat, was as low as in check. No leaching to deeper soil!
- Make sulphur an integral part of crop nutrition! Yield response to S in alfalfa, winter wheat, canola and forage grasses was significant/and increasing with time.
- Apply 25 % of total N to winter wheat as ammonium sulphate, which provides readily available S.
- Apply 15-18 kg S/ha to canola as ammonium sulphate.

- For better timothy yields, apply 20 % of N as ammonium sulphate and 80 % N as urea!
- Urea alone had no residual effect on alfalfa, but when supplemented with elemental sulphur, its residual effect appeared to exceed that of ammonium sulphate.
- For long term maximum yield and persistence of alfalfa apply nitrogen, phosphorus, potassium, sulphur and boron (NPKSB). In the sixth year, alfalfa yield with OMAFRA recommended PK application was only 56 % of the yield with NPKSB.
- N @ 0-40 kg/ha was enough for spring wheat grown after alfalfa, soybean, and silage corn, whereas 80 kg N/ha was required for wheat and barley grown after wheat.
- Lime/or wood ash didn't affect soybean grain yield. Soil organic matter content and availability of P, K, Mg, Zn and Mn was higher with wood ash than that with lime!
- Solid dairy manure @ 50 t/ha increased soybean grain yield by 500 kg/ha. Wood ash increased soil pH, and available Ca, Zn, Mn and B more than the manure, whereas, reverse was true for available P and K.

Other Management Practices:

- Optimum population for seeding winter wheat and spring barley together in spring was 85 % & 75 %. The combination didn't require more fertilizers, but gave higher forage yield than 100 % barley.
- Seed treatment with Vitaflow 280 improved soybean grain yield by ~600 kg/ha!
- Conventional tillage was better than zero tillage, but disking in fall and spring/or double disking in spring equaled conventional tillage in barley grain yield.
- Improve crop yields and produce quality by inter cropping (berseem + oats, barley + peas, and winter wheat + spring barley).

Biomass/bio-energy Production:

- Temperate grasses equaled switch grass in biomass/bio-energy production.
- Winter cereals straw had higher biomass & bio-energy production than switch grass.
- Winter triticale (variety Luoma) straw produced the highest biomass/bio-energy amongst winter and spring cereals, temperate grasses and switch grass.

For details, refer to the TBARS Annual Reports 2009, 2010 and 2011!
Published in Northwest Link, March 2012, Pages 9-10.