



Tips to get Maximum Economic Yields

By Dr. Tarlok Singh Sahota, ON-CCA

Crop growth and yield is determined primarily by three factors: weather, genetics and management. There is nothing much we can do about weather, but we can take care of the other two factors well to maximize economic yields. Poor genetics cannot equal good genetics even with best management practices. A crop variety with an inherent low yield cannot give high yield! Select crop varieties proved good for your area through location specific research. Best variety in one area may not be the best variety in another area. Try to resist temptation of using your own seed from a variety that could be low yielding than the newly recommended varieties. Remember the input cost will be the same for low and a high yielding variety, but the net returns will be more from a high yielding variety. It is seen that even in a high yielding variety the yield usually tends to decline after 3-4 years during which time new high yielding varieties would be released. Apart from the grain/seed yield, other important factors to be considered for variety selection could be straw yield, and diseases/insect-pests and lodging resistance; the latter two could lead to yield losses/and make combining difficult.

Follow proper crop rotation. Ideally a crop should come to the same field every fourth year. Add new crops to your cropping

systems. Crop rotations can increase yield without any additional inputs. For example, research at the Lakehead University Agricultural Research Station (LUARS) has shown that spring wheat gave higher grain and straw yield when grown after canola than after barley or peas. Find out the best crop rotations for your area through the location specific research. Rotate annual crops with the perennials, cereals with legumes, and deep-rooted crops with shallow rooted crops. Canola, a relatively deep-rooted crop, grew better at LUARS after grasses (shallow rooted) than even after clover. Shallow rooted crops tap the upper surface of the soil for nutrients and the lower layers get time to recuperate. Natural mineralization of nutrients over time in the lower layers under shallow rooted grasses build nutrients that are tapped by a deep-rooted crop.

Treat the seeds with fungicides and insecticides to avoid seedling mortality/or damage to the seedlings, which could reduce plant stand leading to lower yields. Time, soil conditions and depth of seeding should be optimum. Part of the nutrients, especially phosphorus and micronutrients could be applied in the seed row at seeding. See safe limits of nutrients to be applied at seeding in Table 8-6 at

<http://www.omafra.gov.on.ca/english/crops/pub611/pub611ch8.pdf>.

Applying part of the N as ESN in the seed row is a rewarding practice. Fertilizer application is meant to supplement available nutrients in the soil to meet the crop requirements. Therefore, a soil test for both major and micronutrients from an accredited lab is a must to make fertilizer recommendations. Gone are the days when optimum yields could be obtained by the use of NPK fertilizers alone. Increasing deficiencies of other nutrients such as sulphur, zinc, manganese and boron make it essential to apply these nutrients to maximize returns from the application of major nutrients. Farmers rarely go for nitrate N test, which could help in deciding optimum N rate for a crop. For example cereals could be grown without N application if soil test for nitrate N is 25 ppm or more. Consider all available sources of nutrients including soil, manure, residue N from rotation (legume/or over supplied N to a previous crop) to determine optimum rates of nutrients application. It pays to use multiple sources of N; use ammonium sulphate to meet sulphur requirements of crops and adjust N supplied by it for making N application ($\frac{2}{3}^{\text{rd}}$ from urea and $\frac{1}{3}^{\text{rd}}$ from ESN).

Control weeds that can rob yields as early as possible. Most crops could be sprayed with herbicides at one leaf stage. Keep your crops disease free. Cereals should be sprayed with fungicides at tillering to control foliar fungal diseases and at heading (20 % flowering) for control of Fusarium Head Blight. Canola should be sprayed at 25 % flowering to control Sclerotinia Stem Rot. Likewise other crops for control of specific diseases. Spray insecticides to control insect-pests only if the pests have reached a threshold. For example, 250 aphids per plant in soybean and average leaf area loss of 25% or more by flea beetles in canola. Keep scouting your crops at regular intervals and take required remedial measures at appropriate times. Finally, harvest/combine crops on sunny days at proper maturity with optimum speed of the harvesting equipment. Store your produce at the right grain/seed moisture and sell it at staggered times to get the better market price.

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This industry driven program helps ensure that Ontario crop producers are well served by those providing their crop production advice. This article was written by one of those CCA's.