

# Recommendations for Using ESN<sup>®</sup> on Canola

ESN technology protects your nitrogen (N) investment from loss mechanisms, ensuring your canola crop gets N when it needs it most. ESN goes beyond traditional N by providing you:

- **MAXIMUM YIELD** – ESN has proven to increase yields by providing a continuous N supply when canola needs it most.
- **MAXIMUM FLEXIBILITY** – ESN can be blended with other dry fertilizers and reduce the number of required applications.
- **MAXIMUM SAFETY** – ESN won't burn your crop like urea or ammonium nitrate.
- **CONVENIENT APPLICATION WINDOW** – ESN can allow more flexibility in N application timing.

Every type of N fertilizer is applied and handled differently. These general use recommendations for ESN are based on optimal growing conditions. Your specific conditions and goals should be considered to achieve best results.

## Canola Use Recommendations

Proper N nutrition of canola is critical to high yields and overall plant health. Nitrogen is essential for vegetative growth, yield and protein synthesis. Nitrogen is a critical component of the photosynthetic factory that converts solar energy to proteins, starches, and oil. Excess N early can cause excessive vegetative growth and lodging. Excess vegetative growth can also deplete soil moisture leading to greater moisture stress during grain fill. Controlling the rate of N supply with ESN can help increase N-use efficiency by protecting most N from loss until the period of rapid crop uptake.

Interactions of weather conditions, timing of N demand, and potential for N loss should be considered in determining the most appropriate ESN application or blend of ESN, for different geographies and uses.

### HOW CAN WE HELP?

To make ESN a part of your nitrogen management program, contact an authorized retailer or ESN representative.

### FOR APPLICATION RECOMMENDATION:



## Canadian Prairies & Upper Northern U.S. Tier States

Nitrogen management presents numerous challenges. Crops require relatively high N rates, but most of the N fertilizer is applied in advance of peak crop demand. Precipitation during fall and winter, and especially during early spring, produces potential for N loss by leaching and denitrification. ESN provides greater protection against N loss as compared to conventional N sources.

### Spring Application

- Pre-plant band, side/mid-row band.
- Pre-plant broadcast and incorporated.
- Seed row placed – ESN provides a physical barrier between the seed and the urea within the coating. As such, greater seed row safety can be achieved when using ESN as opposed to urea or ammonium sulphate nitrogen sources. Within the Canadian Prairie provinces – safe rate guidelines exist for N placed with the seed, on the provincial agricultural websites. ESN can be used at 3X indicated rates when it is 100% of the N source, ESN can be used at 2X the existing safe rate when it is 70% of the N source and at 1.5X the safe rate indicated, when it is 50% of the total N source.
- Pre-plant broadcast unincorporated, using the seeding operation for incorporation.
- Crop residue is necessary to hold ESN in place (broadcast applications).
- Heavy crop residue may restrict ESN - soil contact, and potentially affect N release from ESN due to poor ESN to soil moisture contact.
- Post-emergent application may result in delayed N availability from ESN, as it relates to crop N uptake demand for annual spring seeded crops.

- For early spring ESN applications, ESN provides greater protection against N loss, as opposed to conventional N sources applied at the same time.
- Under average conditions in these areas, 35%-50% of ESN-N will be released in 25 to 30 days after application. The balance of ESN-N will be released over the following 30 to 40 days.
- Impregnating crop protection chemicals on ESN has not been evaluated.

### Fall Application

- Band applied.
- Broadcast and incorporated.
- Broadcast un-incorporated.
- Crop residue is necessary to hold ESN in place (broadcast applications).
- Heavy crop residue may restrict ESN – soil contact, and potentially affect N release from ESN due to poor ESN to soil moisture contact.
- Under average conditions for these areas, ESN-N will release N in the urea form; N will either be encapsulated in the urea form and/or in the ammonium – N form going into fall freeze-up.
- At spring-time ESN-N will be releasing N in the urea and ammonium N forms; the earlier released N (ammonium) will be undergoing conversion to nitrate-N forms.
- ESN research in Melfort, SK (Malhi, AAFC) has shown that fall band applied ESN out-yielded fall band applied urea for canola production.
- Under average fall application conditions for these areas, ESN is expected to release between 35% and 50% if its N in the urea form, over 60 days, as the soil temperature drops from 10°C to frozen soil condition.
- Conversion of urea to ammonium (and potentially nitrate) is dependent upon application timing.



Learn more about the industry's leading environmentally smart nitrogen at [www.SmartNitrogen.com](http://www.SmartNitrogen.com)