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ONE-PASS N APPLICATION SAVES FARMERS FUEL, TIME

Ability to safely apply N in-row pays off for cereal grain farmers

Time and fuel represent two valuable assets for wheat farmers and management options and saving both resources is a must. Being able to apply nitrogen (N) in a seed-row application without harming your seedlings saves farmers both time and fuel.

“Improving seed safety on in-row applications usually results in time and/or fuel savings for farmers,” says Alan Blaylock, Ph.D., Agronomy Manager for Agrium Advanced Technologies (AAT). “Being able to put the fertilizer in the plant row allows farmers to use the same opener for the seed and remove the other knives, creating less drag and improving fuel efficiency.”

In the past, the mid-row bander and side banding equipment were essential to help growers apply fertilizer in a single pass. This equipment was required because excessive conventional N harmed the seed. High salt and free ammonia prevented germination and burned small seedlings, causing stand loss. Growers were limited to an amount of N that could be applied using a single shoot system.

“We have to put N in the seed row, because a double-shot system doesn’t work under our dry conditions,” says Bruce Doenz, Warner, Alberta farmer. “In the past, we applied as much seed-row N as soil moisture would allow, then top-dressed.”

Today, new technologies like ESN® SMART NITROGEN® allow cereal farmers the ability to apply up to three times the safe rate of urea at time of seeding, reduce the number of trips across their fields and increase efficiencies with single shoot systems.

“Now, we’re putting all of our ESN in the seed row because safety isn’t an issue,” says Doenz. “We haven’t seen any indication of damage and we’re also saving the application cost of topdressing. Higher yield potential, safety and ease of use far outweigh the additional cost of ESN.”

In addition, being able to safely apply higher rates allows many dry land wheat farmers to apply much or their entire N in one pass, eliminating future passes through the field, and further saving on fuel costs. Perhaps more importantly, it saves farmers valuable time.

“Because farmers can apply higher rates of ESN than just urea, farmers with a single-shoot application system can apply much or all their nitrogen fertilizer in one pass,” says Ross McKenzie, Ph.D., agronomy research scientist with Alberta Agriculture. “Even double-shoot applications can put down some urea and the remaining N as ESN.”

ESN feeds the crop when it needs it, thanks to its polymer coating technology. This coating allows water within the soil to move into the granule and dissolve the urea inside. The urea solution then

moves out through the coating into the soil where it is available to the crop. The rate the urea solution moves out through the coating is determined by soil temperature and moisture. This provides the benefit of feeding the crop all season long.

Another benefit of using ESN in seed row placement is improved emergence and stands, generally resulting in higher yields and potentially higher grain protein. Using ESN allows farmers to get the benefits of in-row seed placement, without sacrificing seed safety.

“Placing higher rates of urea in the seed row allows for greater use of the N, but with normal urea, as farmers increase the rate of seed-placed urea, the increased seedling mortality will result in increased crop yield loss,” says McKenzie. “With today’s high N prices, even a bushel or two in lost yield means a lot in returns.”

In many years, seed safety does not present a challenge, provided farmers stay within recommended application rates (see chart below). But weather challenges have made this year anything but an average year.

Safe N Rates When Applying ESN for cereal grains

Urea

	1” spread (disc or knife)			2” spread (spoon or hoe)			3” spread (sweep)			4” spread (sweep)		
	Row spacing			Row spacing			Row spacing			Row spacing		
	6”	9”	12”	6”	9”	12”	6”	9”	12”	6”	9”	12”
Soil texture	17%	11%	8%	33%	22%	17%	50%	33%	25%	67%	44%	33%
Light (sandy loam)	20 lbs./a	15 lbs./a	10 lbs./a	30 lbs./a	25 lbs./a	20 lbs./a	40 lbs./a	30 lbs./a	20 lbs./a	50 lbs./a	40 lbs./a	30 lbs./a
Medium (loam to clay loam)	30 lbs./a	25 lbs./a	20 lbs./a	40 lbs./a	35 lbs./a	30 lbs./a	50 lbs./a	40 lbs./a	35 lbs./a	60 lbs./a	50 lbs./a	40 lbs./a
Heavy (clay to heavy clay)	40 lbs./a	35 lbs./a	30 lbs./a	50 lbs./a	40 lbs./a	35 lbs./a	60 lbs./a	50 lbs./a	40 lbs./a	70 lbs./a	60 lbs./a	50 lbs./a

ESN

	1” spread (disc or	2” spread (spoon or	3” spread (sweep)	4” spread (sweep)
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	knife			hoe)								
	Row spacing			Row spacing			Row spacing			Row spacing		
	6"	9"	12"	6"	9"	12"	6"	9"	12"	6"	9"	12"
Soil texture	17%	11%	8%	33%	22%	17%	50%	33%	25%	67%	44%	33%
Light (sandy loam)	40-60 lbs./a	30-45 lbs./a	30-45 lbs./a	60-90 lbs./a	50-75 lbs./a	40-60 lbs./a	80-120 lbs./a	60-90 lbs./a	50-75 lbs./a	100-150 lbs./a	80-120 lbs./a	60-90 lbs./a
Medium (loam to clay loam)	60-90 lbs./a	50-75 lbs./a	40-60 lbs./a	80-120 lbs./a	70-105 lbs./a	60-90 lbs./a	100-150 lbs./a	80-120 lbs./a	70-105 lbs./a	120-180 lbs./a	100-150 lbs./a	80-120 lbs./a
Heavy (clay to heavy clay)	80-120 lbs./a	70-105 lbs./a	60-90 lbs./a	100-150 lbs./a	80-120 lbs./a	70-105 lbs./a	120-180 lbs./a	100-150 lbs./a	80-120 lbs./a	140-210 lbs./a	120-180 lbs./a	100-150 lbs./a

“Soil type and weather conditions also impact the safe rate of N applications,” says Blaylock. “Dry conditions may lower the safe rate and sandy soils present a greater risk of ammonia toxicity. Make sure to check the local seed-safe rates for your geography and crop or contact an AAT representative for more information.”

The weather challenges of the past year might persuade farmers to be cautious about in-row N application next spring. However, even in dry soils, control-released fertilizer like ESN can provide the convenience of in-row application with seed safety farmers can trust. To learn more about how ESN provides both safety and performance, visit www.smartnitrogen.com

About Agrium Advanced Technologies

Agrium Advanced Technologies is the leading manufacturer and marketer of slow- and controlled-release fertilizers and micronutrients in the Agriculture, professional Turf and Ornamental, consumer lawn and garden, and specialty agriculture markets. Agrium Advanced Technologies' brands include ESN[®], POLYON[®], XCU[®], NITROFORM[®], NUTRALENE[®], DURATION CR[®] and Spread it & Forget it slow- and controlled-release fertilizers, ULTRA YIELD[®] Micronutrients, AMP[™] and PRECISE[®] controlled-release plant protection.

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FOR FURTHER INFORMATION:

Jason Kuhlemeier, Agrium Advanced Technologies: 970-292-9063