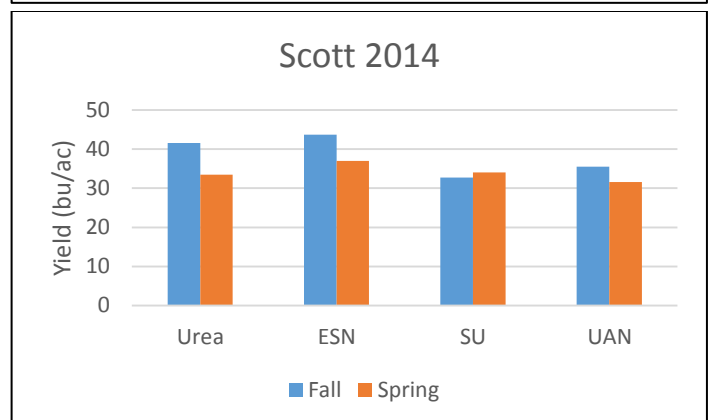
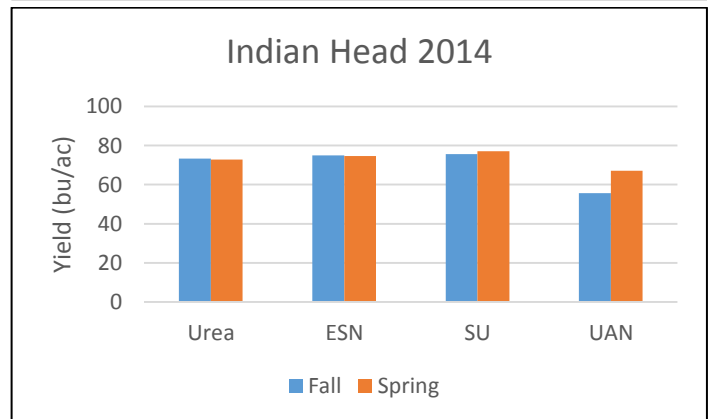
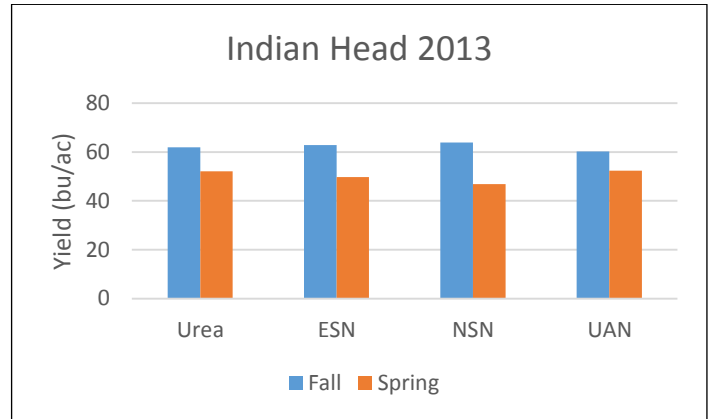


To minimize N fertilizer losses due to leaching and denitrification when growing winter wheat, the traditional recommendation in Saskatchewan has been to broadcast N fertilizer early in the spring. Due to the long growing season of winter wheat and high potential for environmental losses with fall or surface applications of N, slow release products such as Super Urea or ESN may have merit for use with this crop. Urea ammonium nitrate (UAN) has been a popular alternative to ammonium nitrate for spring broadcasting because it can be applied with a high clearance sprayer and, due to it being 25% $\text{NO}_3\text{-N}$, has reduced potential for NH_3 loss relative to urea. However, fall applications of UAN are not recommended because the $\text{NO}_3\text{-N}$ is more susceptible to leaching and denitrification.

Trials were initiated at Indian Head in 2012 and both Indian Head and Scott in 2013 to evaluate the merits of slow release N products at various application times. The applied N rates were 0, 75 or 115 kg N/ha and the forms were untreated urea (46-0-0), ESN (44-0-0), SUPERU (SU; 46-0-0), NutriSphere-N (NSN; 46-0-0), UAN (28-0-0) or AN (34-0-0). ESN is a polymer coated urea and SUPERU is urea treated with chemical urease and nitrification inhibitors. Fall-applied granular products were side banded (SB) during seeding, while broadcast (BC) applications were utilized in the spring. UAN was always surface-dribble banded.

When the fall/early spring were dry (Indian Head 2013 and Scott 2014), fall in-soil applications performed well and tended to be less risky than deferring the entire N application until early spring. The benefits to slow release N products were negligible under such conditions. In contrast, where conditions were wetter at planting and through the early spring, applying N in the spring was quite effective and resulted in yields that were similar to or higher than when all N was applied in the fall. Under these wetter conditions, spring broadcast AN was extremely effective and resulted in some of the highest yields in the demonstration; however, fall SB ESN and SUPERU and spring BC SUPERU performed similarly to

spring broadcast AN. Fall dribble-banded UAN did not perform consistently and that practice should be avoided, particularly under wetter conditions.



Figures: Effect of N form and timing on winter wheat yields.

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