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Do polymer coatings help with early corn plantings?

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Abstract
With many producers wanting to plant earlier and earlier, the use of polymer coatings has been questioned. Polymer coatings are designed to stay intact until a soil temperature of 55° F is reached, at which time water can penetrate the coating. Some have questioned whether coated seed is a "key" factor for early plantings to be successful. Does the addition of this coating help to extend the planting window even earlier? A comparison of polymer-coated and non-coated seed was included for each planting date study highlighted in the article, Has the best time to plant corn changed?.

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Do polymer coatings help with early corn plantings?

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With many producers wanting to plant earlier and earlier, the use of polymer coatings has been questioned. Polymer coatings are designed to stay intact until a soil temperature of 55° F is reached, at which time water can penetrate the coating. Some have questioned whether coated seed is a "key" factor for early plantings to be successful. Does the addition of this coating help to extend the planting window even earlier? A comparison of polymer-coated and non-coated seed was included for each planting date study highlighted in the article, Has the best time to plant corn changed?.

Both plant population and final yield were measured in the research. At the Iowa State University Northeast Research and Demonstration Farm at Nashua, coated seed had greater plant populations across all planting dates. On average, the coated seed had a population of 31,700 plants/acre compared to 30,000 plants/acre with the non-coated. Although plant population increased from the coated seed, this did not result in higher yields (Table 1). There was no yield effect from the polymer coating, either positive or negative, for any of the planting dates.

Plant populations at the Iowa State University Southeast Research and Demonstration Farm at Crawfordsville were unaffected by the polymer coating, except for the very last planting date, May 1, which had a higher population with coated seed than non-coated (data not shown). Overall, a significant yield reduction occurred across planting dates with coated seed (199 bu/acre) compared to non-coated seed (204 bu/acre). Therefore, no yield advantage occurred with the polymer-coated seed for any of the planting dates (Table 2).

By comparing the two research trials, we see that a positive plant population response occurred with polymer-coated seed at the Nashua location, although no yield advantage or disadvantage was shown from the coating there. The polymer-coated seed at the Crawfordsville location responded differently in that a population response was not shown in early planted corn, and a yield disadvantage occurred from the coating.

Table 1. Northeast Research and Demonstration Farm (Nashua). Polymer x planting date research conducted by Ken Pecinovsky, 2003-2005.

Planting Date Window	Coated vs. Non-coated	Yield Bu/Acre)*
March 20-April 5	Coated	185 ns

	Non-coated	187 ns
April 5-April 20	Coated	200 ns
	Non-coated	196 ns
April 20-May 5	Coated	193 ns
	Non-coated	198 ns
May 5-May 20	Coated	180 ns
	Non-coated	185 ns

*There is no significant (ns) yield difference between coated and non-coated seed within any of the planting dates.

Table 2. Southeast Research and Demonstration Farm (Crawfordsville). Polymer x planting date research conducted by Kevin Van Dee and Jim Jensen, 2002-2004.

Planting Date (+ / - 3 days)	Coated vs. Non-coated	Yield (Bu/Acre)*
March 15	Coated	207 ns
	Non-coated	209 ns
April 1	Coated	210 ns
	Non-coated	210 ns
April 15	Coated	203 ns
	Non-coated	206 ns
May 1	Coated	178 ns
	Non-coated	189 ns

*There is no significant (ns) yield difference between coated and non-coated seed within any of the planting dates, yet an overall yield reduction occurs with coated seed (across planting dates).

Research investigating the performance of polymer-coated seed in early plantings also has been conducted at the University of Minnesota by Gesch and Archer, Agron. Journal (97-1543). Although some variability existed in product performance across the three years (2000-2002) of research, useful recommendations were developed. Instances in which polymer-coated seed was planted into soil colder than 50° F, and did not emerge before 20 days, typically had greater emergence than non-coated seed. Although when polymer-coated seed was planted at near-average planting dates, it would often have a slower emergence rate than the non-coated seed. Overall, plant stands were generally comparable between polymer-coated seed planted up to 4 to 5 weeks before the average planting date and that of the non-coated seed planted on an average date.

The environment polymer-coated seed is used within is extremely important because the product's performance is temperature driven. Based on research conducted at Iowa State University and University of Minnesota, it appears that polymer-coated seed may increase plant emergence and/or population in soils that are cold for prolonged periods. Yet, a negative impact from the coating may result if used on seed planted near the recommended planting date for your area. Polymer-coated seed will likely not help to extend the planting window for most Iowa producers unless an extremely early planting date is desired or if soils are cold for an unusually long period. Expect to see differential product performance based on the location of the research and take that into consideration

when determining whether or not to use the product on your farm or your client's fields. Research will continue in 2006.

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