

CropWatch

Corn Replanting Considerations — May 2015

May 22, 2015

Heavy May rains saturated soils, resulting in ponding across south central and eastern Nebraska. [Eighty-five percent of Nebraska's corn was planted](#) as of Sunday, May 17 (USDA NASS). On May 3, [just 57% was planted](#). Some of that 57% was flooded and may not have survived if waters did not drain off rapidly. (See [corn and soybean survival](#).) Other corn may have been washed out of the seed furrow.

Here are some considerations for assessing options once soils dry.

1) Determine surviving plant populations.

Farmers working with the Nebraska On-Farm Research Network conducted [40 plant population studies](#) from 2010 to 2014. In 16 irrigated studies the maximum economic return ranged from 28,000 to 40,000 seeds/acre. With \$4/bu corn prices, the 32,000 to 36,000 seeds/acre most frequently optimized

Table 1. Effect of plant population on relative yield potential in three Nebraska cropping systems. (Adapted from the [Nebraska On-Farm Research Network 2014 annual report](#).)

Plant

economic return.

Twenty-four non-irrigated sites were also used for corn population studies. Of these, six had yield increases with planting rates above 28,000 seeds/acre. Our non-irrigated studies in eastern Nebraska showed we could plant 24,000 to 30,000 seeds/acre; however, in years with favorable growing conditions, some sites saw maximum economic returns as high as 40,000 seed/acre.

The [Nebraska On-Farm Research Network 2014 annual report](#) (pages 101-120) documents trends from studies occurring from 2010 to 2013. In rainfed corn with yield potentials greater than 115 bu/acre, yields decreased 1.6 bu/acre for every 1,000-plant reduction as stands were reduced between 40,000 and 18,000 plants/acre. On the other hand, in areas yielding less than 115 bu/acre, yields improved 1.3 bu/acre for every 1,000-plant stand reduction as stands were reduced from 36,000 to 24,000 plants/acre.

In irrigated studies, yields decreased 0.5 bu/acre for every 1,000 plant reduction as stands were reduced between 42,000 and 28,000 plants/acre. These trends provide a measure of yield effects of stand reductions and will help evaluate the need for replant. We need to keep in

population per acre	Percent of maximum yield for the population ranges present in the different cropping systems.		
	Irrigated	Rainfed Greater Than 115 bu/a	Rainfed Less Than 115 bu/a
42,000	100		
40,000	100	100	
38,000	99	98	
36,000	99	97	84
34,000	98	95	87
32,000	98	93	89
30,000	97	92	92
28,000	97	90	95
26,000		88	97
24,000		87	100
22,000		85	
20,000		84	
18,000		82	

mind that the plant populations in these studies were set at planting. Results from studies where plant populations were thinned after emergence may provide different results.

Plant population recommendations are higher in rainfed eastern Nebraska systems and may not be appropriate for use further west. See this [2012 Crop Watch](#) for western Nebraska dryland corn population information.

2) Evaluate replant yield potentials.

Before replanting, you'll need an idea of corn yield potential. Corn yields typically decline with later planting dates. Research at four Iowa locations provides some idea of responses we might see in Nebraska. In those studies, four hybrids with a maturity range of about 20 days were planted at five dates ranging from April 30 to June 25 June in two years. (See [Elmore et al., 2013](#).) The Northwest Research and Demonstration Farm (near Sutherland) data as well as that from the Central Research and Demonstration Farm (Boone-Ames area) probably match our conditions more than the other two locations.

Delaying planting until mid to late May at those two Iowa locations reduced yields from near zero to near 50%, depending on the location. Plan on a yield reduction with replanting in late May. The remaining growing season will dictate the effect of late planting in 2015.

3) Assess the need to change hybrids if replanting.

If replanting occurs in May, changing hybrids may not be necessary. Assess the risk of a fall freeze by hybrid maturity with the [U2U Decision Support Tool](#) for various planting dates in your area. We also know that the same hybrid planted later in the season generally takes about 6.8 less GDDs per day-delay-in-planting during May to reach black layer ([Nielsen, 2015](#)). For a given hybrid, each day planting is delayed after May 1 results in a decrease of around 6.8 GDDs needed for that hybrid to reach black layer. At this time, the U2U Decision Tool does not take this adjustment into account automatically, but it can be done by manually changing the black layer GDDs. Remember, if you do replant, grain moisture content will be higher in fuller-season hybrids and fall frost may affect yields.

4) Consider weed management later this season.

If you decide to stay with the stand you have, a low corn plant population in portions of a field will definitely reduce light interception by the corn canopy. In turn, this may lead to late-season weed infestations. This can be more of a problem with species that have a late season emergence pattern like waterhemp and morning glory. Applying post-emergence residual herbicides targeting waterhemp may help reduce weed pressure.

And, lastly, given these replant guidelines for plant populations, yield potential, hybrid changes, and weed management, calculate the profitability of various options based on your costs. In addition, if you are looking at delayed planting, see Nebraska Extension Educator Monte Vandever's story in this week's CropWatch: [Late Planting Provisions for Crop Insurance](#). The final planting date for corn is Monday, May 25, and for soybeans, June 10.

Other Resources

[Time to dig in and assess need for replanting corn](#). Rogert Elmore, et al., 2014.

[Replant Checklist](#). Lori Abendroth and Roger Elmore. ISU Extension. 2010.

Roger Elmore, Extension Cropping Systems Agronomist

Nathan Mueller, Extension Educator

Laura Thompson, Extension Educator

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108 Ag. Communications Bldg.

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