



## Time to Dig In and Assess Need for Replanting Corn

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**USDA-NASS**  reported that 44% of Nebraska's corn was planted as of May 4, near the 45% average; 7% had emerged. A week earlier, 20% had been planted and 2% had emerged. As we write this planting both corn and soybeans continues at full speed – rain is forecast. No doubt we'll see a dramatic increase in planting progress this week both for corn and soybean.

Corn needs between 90 and 120 GDD to emerge. According to current **GDD accumulations across the state**, the 4% of Nebraska's corn planted on or before April 22 (**USDA NASS 21 April** ) has received enough heat to germinate and emerge. Since plant population is one of the key factors influencing final corn yield, it's time to start counting and scouting!

### Scouting Tips

**Stand Counts.** Assess emerging stands to determine early seedling populations. Use *Table 1* to determine row lengths needed for various row widths that represent 1/1000 of an acre. Count the plants in the row and multiply that by 1000 to calculate plants per acre. Do this several times in the field.

**Seed/Plant Attrition.** Compare the plant populations calculated from your fields to what you intended to plant; calculate your attrition losses. Typical losses from planting to final stands in our University research trials ran between 4% and 7%. That's probably mostly due to poor germination. But, final stands are within 1% to 4% of seeding rates for top managers. If your attrition losses range up to 10% or more, investigate the reasons. You'll need to dig for seeds or seedlings to determine what happened.

Consider the following:

- **Seed viability:** Perhaps the seed lot had poor germination ratings from the start. Check the seed tag and/or run your own germination test.
- **Insects:** Cutworms, wireworms and white grubs are the most common insects affecting seedlings and reducing stands. Rescue treatments are only available for cutworms. (See [Early Season Insect Scouting](#))
- **Pathogens:** Although seed corn is usually treated with a combination of seed treatment fungicides (and usually an insecticide and sometimes nematicide), pathogens in the soil cause seedling diseases that impact stands both before and after emergence. Seedling diseases can be caused by any of several common soilborne organisms, such as Pythium, Fusarium, Rhizoctonia or plant parasitic nematodes. Seedling diseases are often difficult to diagnose because their symptoms are very similar. But, diagnosis may actually be of limited value at times because pathogen management is often the same for several seedling diseases. Some of the possible symptoms of seedling diseases are:
  - Rotted seed prior to germination
  - Rotted or discolored seedlings after germination prior to emergence
  - Post-emergence seedling damping off



**Table 1. Row length necessary to equal 1/1000 of an acre at various row widths (inches)**

Row width (inches)	Row length in feet to equal 1/1000 of an acre
15	34'10"
20	26'2"
30	17'5"
36	14'6"
38	13'9"


- Root decay

Pathogens causing seedling diseases are heavily dependent on specific weather conditions. Some pathogens prefer wet versus dry conditions, while others prefer warmer versus cooler temperatures. When replanting is necessary, it's hoped that weather conditions that supported the initial seedling disease will have changed enough to avoid disease problems in the second planting.

- **Compaction and soil crusting:** Both [side wall compaction](#) and surface crusting can inhibit seedling emergence.
- **Cold soils:** Soil temperatures have increased considerably in the last few weeks. However, some early-planted corn may have been subjected to imbibitional chilling resulting from absorbing water from cold soils within 48 hours of planting. This could reduce populations. For more information, [see the recent Crop Watch article on imbibitional chilling injury for corn](#).

Expect delayed emergence in no-tilled fields with heavy corn residue from the previous year. Surface residue delays the rise in soil temperature compared to disked, strip- or ridge-tilled fields and fields that were planted with soybean in the previous year.

**Scout for weed management issues.** Scout weeds within two weeks of corn emergence to evaluate efficacy of burndown and pre-emergence herbicides. Some of Nebraska's early-emerging weeds, such as giant ragweed and marehail must be controlled using burndown and/ or pre-emergence herbicides to avoid early-season competition. The need and timing of post-emergence herbicide can be manipulated based on weed density and size. In fields with only post-emergence herbicides, weed competition on the crop is greater early in the season than it is with herbicide programs using burndown or pre-emergence herbicides.

Incorporate herbicides with different sites of action into your herbicide program. Several residual herbicides are registered in corn that can be applied after corn emergence in a tank mix with post-emergence herbicides. These provide effective control of later emerging weeds such as common waterhemp and velvetleaf. In addition, tank mixtures will provide an additional site of action to control glyphosate-resistant weeds. For more information about herbicide options, see the 2014 Guide for Weed Management in Nebraska ([EC130](#) ) .

**Learn from your observations.** As you understand the causes of poor stands, think about what can be done at that time and perhaps more importantly, what can be done next year to prevent these problems. Replanting may be an option.

## Replant Decisions

Replanting may be necessary if populations are low but not necessarily if plants have emerged but are not uniform.

Although we know that *variable plant heights or development* will likely reduce yield potential, it's not a reason to replant. In most cases, losses due to lack of plant uniformity will be more than outweighed by losses due to delayed planting. Plant height differences may reflect lack of uniformity in emergence timing or other issues the plants faced. In any case, we can't justify replanting simply based on uneven emergence, variable plant heights, or lack of similar developmental stages. However, replanting may be necessary with *reduced plant populations*.

To determine the need for replanting, first estimate stands as we mentioned above. Then, use *Table 2* to estimate yield potential. The most important factor in deciding whether to replant is to calculate expected yield with the current stand versus what you could potentially have if you replanted. Table 2 provides some guidelines for this decision. Please note that *Table 2* was developed from Iowa rainfed production systems which are similar to Nebraska's irrigated production areas. Plant population recommendations are thus higher than in rainfed Nebraska systems and may not be appropriate for use in those conditions. See this [2012 Crop Watch](#) for western Nebraska dryland corn population information.

Lastly, estimate replanting costs. Consider costs of tillage, seed, fuel, additional pesticides, and labor. Consider also that delayed planting certainly means higher grain moisture at harvest and the possibility of fall frosts before physiological maturity. You may want to consider planting a shorter season hybrid seed. Caution: Before replanting, contact your crop insurance agent, Farm Service Agency, and others with an interest in your crop.

One tendency we might have is to ignore fields once the seed lies "safe and secure" in the ground, but is it really safe and secure? Although we've not seen formal surveys on this, the high-yield producers we've known have something else in common: they're in the field almost daily digging, observing, taking notes, and asking questions. Scout your fields. Learn from these top producers!

## For Further Information

[Iowa State University Replant Checklist](#) (Use relative yield potentials from *Table 2* in this Crop Watch report rather than

Table 2 in the ISU checklist report.)

**Roger Elmore, Extension Cropping Systems Agronomist**  
**Tamra Jackson-Ziems, Extension Plant Pathologist**  
**Patricio Grassini, Extension Cropping System Agronomist**  
**Amit Jhala, Extension Weed Scientist**  
**Bob Wright, Extension Entomologist**

**Table 2. Relative yield potential of corn by planting date and population**

Population (Plants/Acre)	Planting Date				
	April 20–May 5	May 5–15	May 15–25	May 25-June 5	June 5–15
	Percent Maximum Yield				
45,000	97	93	85	68	52
40,000	99	95	86	69	53
35,000	100	96	87	70	54
30,000	99	95	86	69	53
25,000	95	91	83	67	51
20,000	89	85	77	63	48
15,000	81	78	71	57	44
10,000	71	68	62	50	38

*An example:* if there are 25,000 plants per acre and the field was initially planted on 25 April and you cannot replant until May 20, it would be better to leave your present stand, which has 95% yield potential, than to replant on the 20th when the yield potential for a stand of 30,000 would be 86%. Make sure you consider replant costs in your decision.

*Note:* Values based on preliminary Iowa research and modeling; 100% yield potential is estimated to occur with 35,000 plant population and early planting.

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