

Wheat Replanting Considerations

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Deciding when to replant wheat or add to a thin stand can be a very difficult decision due to the ability of the wheat plant to compensate for low populations and still provide acceptable yields. The decision to replant should be made as early as possible. If stands are thin, check to make sure viable seed is not present in the soil. If seed remains hard, it has not yet germinated and will likely emerge once adequate moisture and soil temperature has been reached.

The wheat plant can compensate for thin stands by increasing tillering, producing more seed per head, and increasing the weight or size of each kernel. Early in the season the best compensation factor is increased tiller production. However, with late emerging wheat, high tiller production is less likely. A healthy wheat plant will typically have 3-5 tillers that contribute significantly to yield. Under high yielding conditions and adequate spring moisture, secondary tillers can also contribute to yield, but the most productive tillers usually develop in the fall and winter. Seed number and kernel weight will be **greatly** affected by spring conditions. Seed number can range from 15 to 30 seeds per head and kernel weight usually ranges from 13,000 to 16,000 kernels per pound. The following formula can be used to estimate the number of plants needed for a given yield goal:

$$\text{Plants per sq. ft} = \frac{\text{yield goal (bu/ac)} \times 60 \text{ lb} \times \text{number seed per pound}}{43,560 \times \text{number of seed/tiller} \times \text{number of tillers}}$$

A simplified version of the formula below assumes 15,000 seed per pound, 24 seed per tiller, and 3 tillers per plant:

$$\text{Plants per sq. ft} = \text{yield goal (bu/ac)} \times 0.2869$$

Example: yield goal = 40 bu/ac x 0.2869 = 11.5 plants per sq. ft needed.

Generally, the recommendation is to have between 10-25 plants/ft². The 25 plants/ft² is desirable under irrigation and high yield potential and/or grazing. The 10 plants/ft² should provide adequate yields under dryland conditions. See Table 1 below for a conversion from plants/ft² to plants/ft of row. If plant stands are below 10 plants/ft² then the yield potential will begin to decline, unless weather conditions are such that late tillering can occur. Additionally, at low plant populations, good fertility and weed and pest management become even more critical. In general, if your stand is at least 50% of what you had planned, then yield will likely not be an issue. If your stand is less than 40%, consider thickening the stand by replanting at a 45 degree angle from the original rows. If at all possible a disk drill rather than a hoe drill should be used. Keep in mind that approximately 75% of planted wheat seed will actually emerge. If 45 lbs of seed were planted, and emergence was 75%, then the stand count should be 506,250 plants/acre or 11.6 plants/ft². This assumes 15,000 seed/pound, which can vary greatly depending on variety.

Table 1. Conversion of plants/ft² to plants/ft of drill row.

Plant population (plants/ft ²)	Drill Row Spacing (inches)			
	6	8	10	12
Plants/ft of Row				
10	5	6.7	8.3	10
15	7.5	10.0	12.5	15
20	10	13.3	16.7	20
25	12.5	16.7	20.8	25

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