

Twin Row vs. 30" Row Corn Evaluation – Part 1: planter performance

Replicated plots investigating the performance of a Kinze finger pickup corn planter at different planting rates and 30" single and twin rows were conducted in summer 2013 at Beery Farms, Mount Crawford, VA.

This growing season has been as good as can be hoped for and planting conditions were excellent. Plots were planted at 29,000; 32,000; and 34,000 in both single and twin row configurations. Yield will be determined for each treatment at harvest.

Final population, average spacing between plants, and standard deviation for the plant spacing were determined and are shown below. Interestingly, the final population for the single row plots was equal to or slightly above the set planting rates, while the twin row plots were slightly below as would be expected with an assumed loss due to less than 100% germination.

Standard deviation (SD) of the plant spacing has been used by others to demonstrate potential yield loss. Standard deviation shows the range of deviation from the average, in this case, plant spacing. For example, a SD of 0 would indicate a perfect picket fence stand, whereas at a planting rate of 29,000 on 30" rows, plants would be *exactly* 7" apart. As SD increases, yield decreases, due to planter skips, doubles, and overall non-uniformity. An absolute perfect stand is not realistic, so a SD of 2 is assumed to be the lowest threshold. For every increase of one inch in SD, 2 bushels lost yield is assumed. The assumed yield decrease from planter performance is also shown in the table below.

We could not find previous efforts of evaluating standard deviation for twin row corn. Staggered spacing of individual plants is important for capturing the twin row corn benefit as evaluated by Brian Jones, probably could add a different title for reference Extension Agent. At 32,000 plants per acre, plants exactly opposite one another are just 7 ½" apart (at 7 ½" twin rows), while perfectly staggered plants would be over 10" apart. This phenomenon was not quantified, rather we averaged each twin row together and found the SD of each treatment.

Planting Rate (1,000)	Row Configuration	Final Population (1,000)	Average (in)	Standard Deviation (in)	Yield Loss (bushels/acre)
29	twin	28	15.0	4.9	7.2
32	twin	31	13.9	4.8	6.9
34	twin	33	12.9	4.7	6.7
29	single	29	7.4	2.8	2.1
32	single	32	6.8	2.5	1.2
34	single	35	6.1	2.7	1.9

Debate continues over the advantages in yield and quality of twin and narrow row corn over conventional 30" row spacing. This data show that planter precision at higher between plant spacing is low, and thus overall twin row planter advantage will have to overcome an approximate 5 bushel yield decrease from planter performance.

