
Skip Row Corn
in NW Kansas
10th Annual Kansas Agricultural Research Association (KARA) Conference
January 25 and 26, 2007
Salina, Kansas
www.ksagresearch.com

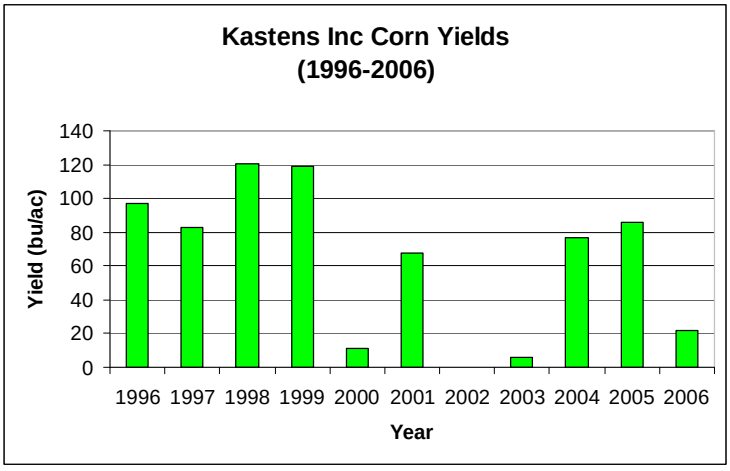

Kasten's Inc. Farms
Rawlins County, Kansas
RR 2 Box 80
Herndon, KS 67739
(785) 626-9284
www.kastensinc.com

Problem of Interest

- Inconsistent growing conditions have been a common theme in Western Kansas since 2000 and many farmers, including ourselves, often wonder whether we should modify our dryland corn management strategies. Specifically, we seek to know whether reducing plant populations or adopting an alternative planting approach such as skip-row planting will result in higher and more consistent yields than our traditional approach (solid stand, 17,500 population).

- This study seeks to begin to answer some of these questions using on-farm research methods.

Kastens Inc. Corn Yield History



Skip-Row Corn Evaluation -2005

North Trial

	description	start lb	end lb	lb/pass	bu/acre
8	solid	322168	328763	6595	106.87
7	solid	315366	322168	6802	110.23
6	solid	309092	315366	6274	101.67
5	3 blanks	302710	309092	6382	103.42
4	3 blanks	297237	302710	5473	88.69
3	3 blanks	291269	297237	5968	96.71
2	3 blanks	284859	291269	6410	103.88
1	solid	278354	284859	6505	105.42

avg of 3 solid passes north of skip row passes	6557	106.26
avg of 4 skip row passes	6058.25	98.18
advantage to skip row		**-8.08**
p-value of 2-tailed test of difference in means		0.1231313

I did not count pass to south of skip rows since it was part of population study

South Ttrial

	description	start lb	end lb	lb/pass	bu/acre
8	solid	186921	192804	5883	95.34
7	solid	181414	186921	5507	89.24
6	solid	168733	175038	6305	102.17
5	3 blanks	162350	168733	6383	103.44
4	3 blanks	156248	162350	6102	98.89
3	3 blanks	149983	156248	6265	101.53
2	3 blanks	143222.81	149983	6760.1866	109.55
1	solid	136843	143222.81	6379.8134	103.39

avg of 3 solid passes north of skip row passes	5898.3333	95.58
avg of 4 skip row passes	6377.5466	103.35
advantage to skip row		**7.77**
p-value of 2-tailed test of difference in means		0.1618547

Skip-Row Corn Evaluation -2006

- The skip-row configuration was again plant 2, skip 1, resulting in harvesting 5 rows of the possible 8. Planted population was 16,200. Plot size was 40’ x 2640’.
- A tester was used to evaluate the skip-row plot as well as the other population plots. Our tester was 16,500 population. Plot size was 40’ x 2640’.
- 1/3 of the test plot area had been harvested with a stripper header the previous year, thus that also was tested.

Skip-Row Corn Evaluation -2006

- Two test plots, but one was baled

Plot	Stripper	Yield (bu/ac)	Skip-Row Advantage (bu/ac)	
Trial	Yes	41.32	(-2.79)	
Tester	Yes	44.11		
Trial	No	27.63	(-4.77)	
Tester	No	32.40		

The skip row plots were 3.78 bu/ac worse than the 16,500 solid stand tester. Field average yield was 27.05 bu/ac.

Skip-Row Corn Evaluation -2006

- Although the yield reduction due to skip-row planting was most likely not statistically significant, it is still surprising to us as these were the growing conditions for which this management method should have significantly out-performed solid stand planting.
- Perhaps another configuration like plant 2 / skip 2 would have performed better.

Skip-Row Corn Evaluation -2006

- In line with our stripper header evaluation study, skip-row corn yields on stripper-cut stubble were also significantly increased when compared to straight cut stubble.
- We saw an average yield advantage of 13.69 bu/ac due to stripper stubble in our skip-row plots.

Skip-Row Corn Evaluation - 2006

- In 2005, the skip-row corn plot showed no statistically different yields than the adjacent tester plot. The field average was 93.13 bu/ac.
- In 2006, the skip-row corn plot showed a slight reduction in yields from the adjacent tester plot. The field average was 27.05 bu/ac.
- Although skip-row did not hurt us in a high-yielding year, we were disappointed that it did not help us in a low-yielding year. We are undecided at this point whether to continue this line of research.

Population Trial

- For the 2006 crop year, we put out population plots at two locations that looked at rates from 14,500 – 19,500. A common tester population was planted next to each plot. Plot size for each trial and associated tester was 40' x 2640'.
- In summarizing the data, a basic regression model was derived of the form: Yield=X + X1(population). This model had a Fval = 0.007615 and the Pval on the X1 coefficient was 0.007615. Rsquare = 0.387.

Population Trial

- The resultant model was:

  Yield = 63.704 + -0.00209*population
- This model implies that for every 1000 plant increase in population, we would expect to lose 2.09 bu/ac of yield which results in a total lost yield of 10.45 bu/ac (5*2.09) between the 14,500 and 19,500 populations.
- In summary, everything burned up equally this year and even populations as low as 14500 did not significantly improve yields. Hence, this study does not indicate that dropping planting populations will significantly improve (or make more consistent) yields in years with below-average growing conditions.

Conclusions

- As a whole, neither reducing populations nor moving to an alternative configuration such as skip-row seem to be appropriate directions to move if the goal is to increase (and make more consistent) corn yields on the Kastens Inc. Farms.
- Although we could explore other more drastic responses such as dropping populations below 10,000 or experimenting with a plant 2/skip 2 configuration, we don't feel these would be approaches that we would ever realistically employ due to the many inherent problems with both of these more drastic approaches.
- Most likely, we will buffer this temporary "tougher" growing condition environment using an alternative crop such as grain sorghum on a larger percentage of acres while leaving our corn management program intact, albeit on a small percentage of acres.