

# 2020 ALTERNATING ROW POPULATION - ROW X ROW

**PURPOSE:** The field edge effect in corn is well documented to increase seed production on the outside rows of fields as a result of more sunlight and resource utilization. This trial attempts to mimic that effect across all rows by manipulating row population every other row to try to allow more sunlight deeper into the lower canopy and increasing the rate of photosynthesis as a result.

Location	Planting Dates	Stewart Seeds™ Products	Tillage	Previous Crop
5 Locations (IN, KY, IL)	Various	Multiple	Various	Various

## METHODS:

- Compare a static planting rate of 34K plants/a across all rows vs an alternating row population method of 2 populations spread across planted rows in a manner where every other row is a different population as illustrated in the example below:

		Planter Width											
		Row Configuration ( <i>adjust to planter size</i> )											
Rows		1	2	3	4	5	6	7	8	9	10	11	12
Row Population		40K	28K	40K	28K	40K	28K	34K	34K	34K	34K	34K	34K
		Alt Row Passes						Static Rate Passes					

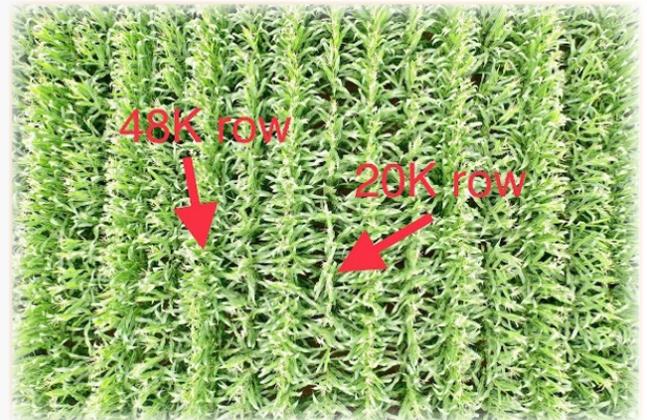
- Total population for each treatment was kept consistent at 34K so total # of plants was the same
- Two population combinations for the alt row passes were tested in 2020: 40/28K and 48/20K
- Planters capable of individual row population control were used to accomplish the setup
- All other management for the crop was consistent across treatments
- Yields were attained either by calibrated yield monitor or calibrated weigh wagon and yields adjusted to 15% moisture.

## ANALYSIS:

- In 2018, a single location trial provided a 16.5 bu advantage of 2 replications of the 40/28K arrangement when compared to a static pass. This prompted more investigation.
- Both locations that were planted in 2019 were damaged by water and discarded
- In 2020, four locations were planted and harvested by cooperators in IN and KY
- 3 of 4 locations had 3 or more replications of each treatment while 1 location had a single replication
- All locations averaged well above 200 bu/a in high yielding environments with the avg yield across all treatments all years was 237.9 bu/a

## RESULTS:

- In 2020, the 4 location averages did not replicate the result found in 2018.
- The 40/28K combination yielded 2.6 bu/a less than the 34K static rate
- The 48/20K combination yielded 8.8 bu/a less than the 34K static rate
- Combining in the 2018 data for the 40/28K combination, that combination was .2bu/a better so no difference between the two.
- Observationally, the higher row rate of 48K resulted in too many much smaller ears and the 20K row rate could not flex ear size enough to compensate



## RECOMMENDATIONS AND DISCUSSION:

- While not proving this arrangement was superior to traditional row population arrangements, it has sparked more questions what may be tweaked to possibly gain additional bushels
- These questions include:
  - How does plant leaf architecture influence this arrangement? Upright, floppy?
  - Population response for the prescribed products, i.e. change products/row based on known population response (high population adapted product to high population row, low population adapted to low population row.
  - Is it better to supplement/reallocate higher population rows with more nutrients?
- While current planter technology may limit nutritional assignment capability, we can manipulate leaf architecture, different products per row.
- We will investigate this further in 2021 with these questions in mind.

