

FARMER-RESEARCHER

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RESEARCH REPORT 2021

Organic field corn variety screening trial

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IN A NUTSHELL

Michael wanted to narrow down varieties of organic field corn that are best suited for production on his farm.

- He tested nine varieties, three of which were bred for organic management.
- He grew unreplicated strips of six of the varieties and, with excess seed, two strips each of three varieties.
- Michael observed relatively uniform growth and development among varieties, and yield was excellent in the trial and across the farm.
- Pioneer 9998, 9608, and 0157 had the highest yields (two replicates each), but P0157 also had high harvest moisture.
- Moving forward, Michael will continue to grow and compare Pioneer 9998 and 9608.

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MOTIVATION

This is Michael's first year growing field corn organically. When he talked to other organic farmers about variety selection, he found that not a lot was known about the best varieties for his region.

This trial is set up as a screening trial with no replicate plots of each variety. As such, we can't assign probability to any differences we see among varieties. Rather, Michael hopes to identify any large differences among varieties, to narrow down varieties for a potential replicated variety trial in the future. He also wants to use the screening trial to see how much work it will require to adjust the inter-row cultivator for the different varieties before committing to a replicated trial.

METHODS

Michael randomized the order of 9 varieties of corn from four breeding sources, of which three were bred for organic production (**Table 1**).

He planted each variety with a 12 row corn planter and a 12 row cultivator in strips that were 180" wide and ~ 1085' long. For three of the varieties (Pioneer 9608, 9998 and 0157), Michael planted extra seed in duplicate strips on the west end of the plot (**Photos 1-3**).

Michael managed all varieties in the same way with respect to manure application (7000g/ac), weeding, etc. At harvest, he combined each strip separately using a weigh wagon and measured harvest moisture, bushel weight and dry yield (**Photos 4 & 5**).



Photo 1. An aerial photo of Michael's screening trial, July 2021.

FINDINGS

As an unreplicated screening trial, Michael's design does not permit us to run statistics or make statements about the differences among varieties with a degree of confidence.

However, the trial gave Michael experience growing organic field corn and an overall sense of the performance of the different varieties.

Overall, 2021 was a great year for field corn on Heidi Farms, with yields exceeding 200 bu/acre under organic management (**Table 2**).

While Pioneer 9998 had higher yields in two replicates than 9608, it also had lower test weight. Because a high test weight is important for chicken feed, Michael would not want to grow all his acres with this variety. As a nice balance of high test weight, moisture content and yield, Michael will also grow Pioneer 9608. Although Pioneer 0157 had the greatest yield, he will not grow it again as it has high heat unit requirements and high harvest moisture and may not reach maturity in some years.

NEXT STEPS

Michael will continue to compare his top varieties to further refine his organic field corn production.

Table 1. The layout of corn varieties in Michael's trial. The order of varieties was randomized except the last rows.

ORDER OF VARIETIES IN THE FIELD
Pioneer 9608
Saatbau Leonido - organic seed
Pride Seeds A6015
Pride Seeds A5925
Dedell 3808 - organic seed
Saatbau Danubio - organic seed
Dedell 3146
Pioneer 9998
Pioneer 0157
Pioneer 9608*
Pioneer 0157*
Pioneer 9998*

** Rows planted with excess seed.*



Photo 2. Michael pouring seed to the planter on May 13, 2021.



Photo 4. Recording data from the weigh wagon for each strip separately.



Photo 3. Preparing the field to plant.



Photo 5. A view of the combine during harvest.

Table 2. Results from Michael’s screening trial of organic field corn. The average yield for Pioneer 9608 was 241 bu/ac, Pioneer 9998 was 252 bu/ac, and Pioneer 0157 was 254 bu/ac.

SOURCE	ORDER IN THE FIELD	VARIETY	YIELD (TONS/ACRE)	YIELD (BU/ACRE)	MTS%	WT (LBS)	LENGTH (FT)	WIDTH (INCHES)	KG/HECTO-LITER
Saatbau	6	Danubio*	5.18	204	20.4	4565	1085	180	74.5
Saatbau	2	Leonido*	5.28	208	20.7	4675	1085	180	74.4
Pride	3	A6015	5.72	225	21.6	5105	1085	180	65.9
Dedell	7	3146	5.79	228	20.2	5085	1085	180	69.1
Pride	4	A5925	5.82	229	20.8	5160	1085	180	65
Dedell	5	3808*	5.87	231	21.5	5204	1085	180	66.6
Pioneer	1	9608	6.05	238	20.9	5380	1080	180	69.9
Pioneer	10	9608	6.2	244	21	5355	1058	180	69.9
Pioneer	12	9998	6.4	251.8	22.7	5805	1087	180	66.8
Pioneer	8	9998	6.53	257	23.3	5965	1086	180	66.6
Pioneer	11	0157	6.53	257	24	6045	1087	180	68.6
Pioneer	9	0157	6.6	259.7	24.5	6125	1086	180	67.9

* Varieties bred for organic production

TAKE HOME MESSAGE

This screening trial gave Michael experience growing field corn organically and gave him a sense of the different varieties available to him. Based on the unreplicated data he collected, Michael will move forward growing and comparing Pioneer 9998 and Pioneer 9608.

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