

291-bushel corn on irrigated Delaware farm

BY DORIS HENRIQUE
MIDDLETOWN, Del. — What's it like to grow nearly 300 bushels of corn an acre in Delaware? The guy to ask is Middletown farmer F. William (Bill) Haas. This year he got 291.62 bushels an acre off a plot of irrigated no-till corn. The official count on another of his fields was nearly as good at 289.4 bushels.

Harvests like these are unheard of in Delaware. They're really something to shout about in a year when, because of the drought, a lot of dry-land corn is ranging down around 5 to 15 bushels an acre in some parts of the state. Even up in New Castle County where Haas is located, most dry-land yields are about half of normal.

Irrigation is a fairly recent innovation for Delaware corn farmers. But because of the uncertainty of rainfall during the growing season on Delmarva, quite a few have installed sprinkler systems over the past five years. The aim of most of these growers has been to harvest 200 bushels — a goal seldom reached in Delaware until last year when Wyoming farmer Pete Makin got 235 bushels to the acre.

Haas' achievement this summer shatters that highly respectable record.

"It also shows that our sights may have been set too low around here," says University of Delaware extension agronomist William Mitchell, one of the advocates of irrigation for field crops.

When Haas saw how quickly he was filling his grain wagon during harvest, he decided he'd better call in Mitchell and county agent Dean Belt for an accurate measure of the yield from the two best-looking areas in the field.

"I knew they were going to be up there," he says. "But I had no idea yields were going to be that good."

How did Bill Haas do it? Here's the breakdown on his cropping program for the two plots, which were both harvested between September 10-12. The top yield of 291.6 bushels at 15 percent moisture came from a 1.3 acre sample of Pioneer hybrid 3535 planted no-till in soybean stubble at a population of 30,000 in rows 30" apart. Moisture level of grain at harvest was 20.9 percent.

The 289.4 bushel yield came from a 1.2 acre test sample of Pioneer hybrid 3382 grown under minimum tillage after soybeans at a population of 44,000 plants in 30" rows. At harvest, grain from this field had a moisture level of 23 percent.

Both plantings received a total of 16" of water over the growing season — 9" in recorded rainfall (most of this early in the year), and 7" of irrigation water applied in 14 separate half-inch applications. With each application he also injected 20 pounds of liquid nitrogen into the system. Haas began irrigating when corn was knee-high and never let it dry out. He used a tensiometer to determine when to apply water.

From the start the Middletown farmer was aiming for 200 bushels or better. When he planted both plots on April 23, he banded 200 pounds of a 20-30-30 fertilizer, placing this 2" from the seed row. He used ammonium sulphate as the planter nitrogen. He applied an additional 100 pounds per acre of liquid nitrogen as the carrier for his herbicides, Atrax and Lasso. Both plots received 10 pounds of 10 percent granular Furadan at planting.

Sulfur was the only element showing low in the soil test for that field, which explains the decision to use ammonium sulphate in the planter fertilizer. Other elements were normal levels or above. Ear leaf tissue



This is the kind of corn crop that yielded 291.6 bushels an acre for Delaware farmer Bill Haas.

analysis at silking showed a level of .19 sulfur in the highest yielding corn. (See tables below.) Considering the proximity of Haas' farm to the Getty oil refinery in nearby Delaware City, Mitchell considers this an interesting point. The ammonium sulphate used in the starter fertilizer applied over 40 pounds of sulfur, which could have been important, says the agronomist.

Corn was grown on a Sassafras loam with a pH of 6.6 to 7.0. Both phosphorus (P) and potassium (K) readings were very high when the soil was tested last winter. Haas says this was because he and his dad, Fred W. Haas, have spent the last 30 years building up the fertility on their land.

"It's paying off for us now in reduced fertilizer use," he says. "Nitrogen costs less per pound today than P."

Ear Leaf Tissue Analysis

Nutrient	At silking	
	3535	3382
Nitrogen	3.17	3.19
Phosphorus	.39	.33
Potassium	2.13	2.35
Magnesium	.17	.19
Calcium	.63	.60
Sulfur	.19	.15
	3535	3382

Micronutrient	PPM	
	3535	3382
Zinc	41	28
Manganese	36	40
Boron	14	13

Nutrient	Soil Analysis, Jan. 1980	
	Level	Level
Phosphorus	v.	high
Potassium	v.	high
Magnesium	v	high
Calcium	med	
Micronutrient	Level	
	Sulfur	low
Zinc	med.	
Manganese	high	
Boron	med.	

A silking, nitrogen levels in leaf samples collected from Haas' highest yielding plots were 3.17 and 3.19. The statewide average this year was 3.1. But 26 irrigated fields around the state had ear leaf nitrogen levels of 3.2 or more, and 11 had levels

of 3.4 or more, reports Mitchell.

Samples were taken from all of Haas' irrigated corn plots as well as from 60 other plots around the state as part of "The First State Irrigation Program," a demonstration project sponsored by the Delaware Cooperative Extension Service and aimed at boosting yields from irrigated corn. Forty growers irrigating a total of 7,000 acres of corn were involved in the project this summer. Except for Haas and a few others in New Castle County, most of the farmers who irrigated corn in Delaware are located in Sussex and Kent counties on sandy coastal plain soils with a very low water-holding capacity.

Haas used two Zimmatic center-pivot systems to deliver water to a total of 90 acres of corn this year. He figures the overall average from this irrigated corn was somewhere around 215 bushels an acre compared to only 75-80 bushels an acre on 130 acres of dry-land corn he share-cropped on nearby farms. Normally he gets about 130 bushels to the acre without irrigation.

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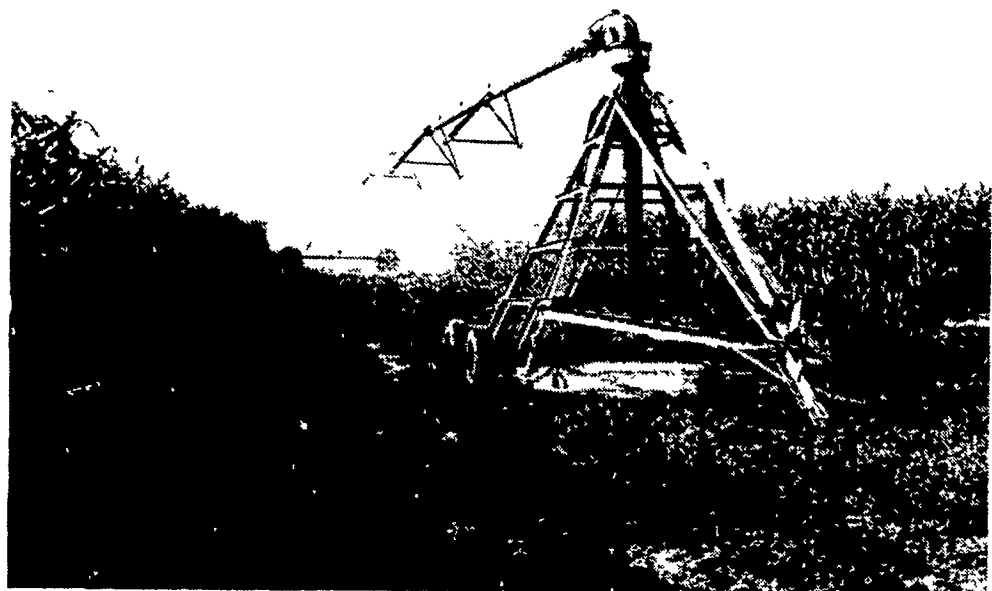
Lisa Haas, 23, drives tractor for disking and chisel plowing on family farm.



Thanksgiving turkey flock is checked by Fred W. "Pop" Haas.



Haas family, of Middletown, Del., includes, standing from left, Fred W. "Pop" Haas, F. William "Bill" Haas, and wife Phyllis; daughters Lisa, kneeling, and Cathi.



Flood jet nozzles on modified sprinkler system deliver water in fine mist for minimum puddling and runoff on Haas' cornfields.