RESEARCH UPDATE

Effect of Row Direction on Corn Silage Yield

2013

Rationale

- Where terrain permits, corn rows can be planted in either a north-south or an east-west direction.
- Sunlight penetrates more deeply into the plant canopy with north-south than with east-west rows.

Objectives

- Compare corn silage yields and milk per ton or per acre to corn rows planted north-south versus east-west directions.
- Compare silage and milk yields at two plant populations.

Study Description

Location: 1 in central Illinois
Years: 2011-2012
Hybrids: 2 in 2011, 3 in 2012
Row Spacing: 30 inches
Factors:
Row Direction: North-south, East-west
Plant Population: 28,000 and 34,000 plants/acre

- Plant weights were measured at silage harvest.
- Potential milk yield was calculated from nutrient composition of plants.

Results

Row Direction

- Corn silage yield was greater (average = 14%) with north-south than east-west rows in both years of the study.
- Milk/ton of silage was similar between north-south and east-west rows, but due to greater silage yield, milk/acre of silage averaged 12% more with north-south than east-west rows.
- Silage starch content was not affected by row direction.

Plant Population

- Silage yield was significantly greater (average = 19%) with a plant population of 34,000 plants/acre than 28,000 plants/acre in both years of the study.
- Predicted milk/ton of silage tended to be slightly lower with the higher plant population.
- Predicted milk/ton of silage harvested averaged 21% more with the higher plant population primarily due to the greater yield of silage dry matter per acre.

Measurement	East-West	North-South	Probability Level	28,000 plants/acre	34,000 plants/acre	Probability Level
Silage Yield, ton DM/acre						
2011	7.8	9.6	P < 0.01	7.5	9.9	P < 0.01
2012	9.4	9.8	P < 0.04	9.3	10.0	P < 0.01
Silage Starch, % of DM						
2011	28.1	27.1	P = 0.50	26.4	28.8	P = 0.10
2012	36.2	35.1	P = 0.15	35.7	35.6	P = 0.83
Milk, lb/ton silage						
2011	3136	3087	P = 0.54	3063	3159	P = 0.24
2012	3389	3374	P = 0.40	3407	3356	P < 0.01
Milk, ton/acre silage						
2011	12.2	14.8	P < 0.01	11.5	15.6	P < 0.01
2012	16.0	16.6	P = 0.22	15.9	16.8	P < 0.02

Research conducted by Dr. Paul Walker, Illinois State University, as a part of the DuPont Pioneer Crop Management Research Awards (CMRA) Program. This program provides funds for agronomic and precision farming studies by university and USDA cooperators throughout North America. The awards extend for up to four years and address crop management information needs of DuPont Pioneer agronomists, Pioneer sales professionals and customers.