

GUZA, COREY J.*, JAMES F. STEWART, and LEE A. HUBBLE, Michigan Sugar Company, 725 South Almer St., Caro, MI 48723. **Implementation of BeetCast, a predictive model for managing cercospora leafspot, in Michigan.**

BeetCast is a predictive model designed to improve fungicide application timing for management of cercospora leafspot. The objective of this study was to evaluate the accuracy of BeetCast in Michigan. Studies were conducted at six locations; Beckenridge, Saginaw, Fairgrove, Pigeon, Sandusky and Ruth, MI. Treatments included applying fungicides based on BeetCast and applying fungicides based on visual disease symptoms. BeetCast combines temperature and leaf wetness to create a disease severity value (DSV). The DSV can be used to predict cercospora leafspot disease development. Fungicides can then be applying based on the number of disease severity values (DSVs) that have accumulated. Traditionally fungicides were applied based on first symptoms of disease (1st spot) and then reapplied every 14 to 21 days after 1st spot based on the fungicide label. Fungicides were first applied when 55 DSVs accumulated, 70 DSVs accumulated and when the 1st spots appeared. Follow up applications were made when 35 DSVs accumulated, 55 DSVs accumulated, 70 DSVs accumulated and when 18 days had passed. Following BeetCast by applying fungicides when 55 DSVs accumulated required fewer fungicide applications compared applying fungicides based on visual disease symptoms to achieve the same level of cercospora leafspot control. In 2 of 6 locations, sugarbeet yield was improved by applying fungicides starting when 55 DSVs accumulated, and then reapplying fungicides when 35 or 55 DSVs accumulated, compared to applying fungicides every 70 DSVs or based on visual disease symptoms.

2002
PERCENT TABLE

Average of 2 Locations	Beck	Jank	Wegner	TREATMENT
1.4	0.8	1.9	1.8	Smooth Root 87
	0.9	1.9	2.5	Smooth Root 95
2.1	1.5	2.4	2.5	Smooth Root 97
2.8	1.5	2.9	3.3	Baro 8738
2.7	2.3	2.8	3.0	SX Fungicide
2.9	2.7	3.0	3.2	HM E-332
2.7	1.6	3.9	2.7	GM
0.7	0.6	1.8	1.8	LSD (5%)
10.1	33.5	34.0	48.7	CV%

**2003
PERCENT TARE**

TREATMENT	Dumaw	Knochel	Maxwell	Average of 3 Locations
Smooth Root 87	0.85	0.44	0.58	0.62
HM E-17	1.50	1.38	2.00	1.63
Smooth Root 97	0.89	0.90	1.20	0.99
Smooth Root 95	0.89	0.56	0.24	0.56
SX Prompt	1.62	2.26	1.51	1.80
Beta 5736	1.73	2.40	2.12	2.08
GM	1.25	1.3	1.3	1.3
LSD (5%)	0.63	0.9	1.0	0.5
CV%	41.9	59.5	65.3	56.8

**2004
PERCENT TARE**

TREATMENT	Jurek
Smooth Root 87	1.33
HM E-17	4.05
Smooth Root 97	2.12
Smooth Root 95	1.28
SX Prompt	2.91
Beta 5736	3.63
GM	2.56
LSD (5%)	1.14
CV%	37.5

**AVERAGE OF THREE YEARS
PERCENT TARE**

TREATMENT	
Smooth Root 87	1.07
Smooth Root 95	1.12
Smooth Root 97	1.58
SX Prompt	2.76
HM E-17	2.97
Beta 5736	2.98
GM	2.08
LSD (5%)	0.47
CV%	52.2

RESULTS: Comparisons were made from seven locations over three years. The tare of the traditional varieties varied from 1.62 to 5.83% at different locations. There was a significant reduction in soil tare on the smooth root beets at all seven locations tested. The lowest tare reduction was 28.4% and the remaining six ranged from 45.7 to 68.7% less tare on the smooth root beets. Over all locations there was a 56.6% reduction in tare for the average of the three smooth root lines compared to the average of the three traditional varieties.

CONCLUSIONS: The reduction in soil that adheres to smoother root beets would be of significant benefit. To have this trait incorporated into commercial varieties would benefit the growers and processors financially.

TREATMENT	1999	2000	2001	GM	LSD (5%)	CV%
Smooth Root 87	1.80	1.81	1.3	1.3	0.3	28.9
Smooth Root 85	1.62	2.26	1.3	1.3	0.3	28.9
Smooth Root 87	1.73	2.40	1.3	1.3	0.3	28.9
SX Prompt	1.62	2.26	1.3	1.3	0.3	28.9
Beta 5738	1.73	2.40	1.3	1.3	0.3	28.9
GM	1.25	1.3	1.3	1.3	0.3	28.9
LSD (5%)	0.63	0.9	1.0	1.0	0.3	28.9
CV%	41.9	29.5	62.3	62.3	0.3	28.9

2004
PERCENT TARE

TREATMENT	June
Smooth Root 87	1.33
HM E-17	4.05
Smooth Root 87	2.12
Smooth Root 85	1.28
SX Prompt	2.91
Beta 5738	2.83
GM	2.28
LSD (5%)	1.14
CV%	37.5

AVERAGE OF THREE YEARS
PERCENT TARE

TREATMENT	Average
Smooth Root 87	1.07
Smooth Root 85	1.12
Smooth Root 87	1.28
SX Prompt	2.78
HM E-17	2.97
Beta 5738	2.98
GM	2.08
LSD (5%)	0.47
CV%	22.2