

Use of “Corn Picker for Silage” to Evaluate Corn Silage Hybrids 2009 Trials Update

A.S. Leaflet R2607

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Summary and Implications

“Corn Picker for Corn Silage” is an Excel spreadsheet program that more accurately determines a superior corn silage hybrid based on all relevant costs and returns that affect corn silage and dairy nutrition. It can be localized to specific farm situations or one can use a standard set of costs such as “Estimated Costs of Crop Production in Iowa-2010” FM-1712 and “Livestock Enterprise Budget for Iowa-2010” FM-1815. Both are available from ISU County Extension Offices.

Ranking of hybrids for total farm net profit gives considerably different results than using “Milk2006” per acre.

Introduction

Corn Picker for Silage is an Excel partial budget program that compares corn silage hybrids for silage or farm profits by comparing one hybrid (Challenger) to another (Defender).

Materials and Methods

Corn hybrids and methods of comparing were reported in A.S. Leaflet R2518 (2010 ISU Animal Industry Report). Data from the 2009 corn silage hybrid trial, 2009 costs for producing, harvesting and storing corn silage at the Northeast Iowa Dairy Foundation (Table 1 and Table 2), and cow groups, ration characteristics and herd numbers from the Foundation (Table 3) were used. Ration characteristics were provided by Clint Renken, Nelson Farm Consultants, who provides dairy nutritional service to the Foundation. Actual costs of production for the 2009 corn silage crop were provided by the Foundation. Some appropriate estimates were made for fixed costs for the Foundation. Seed costs were provided by the cooperating seed dealers. All prices were current as of the 2009 harvest date.

“Corn Picker for Silage” was developed by Dr. Mike Allen, Michigan State University and is available at www.msu.edu/~mdr/cornpicker.html.

Results and Discussion

Comparative ranking of corn silage hybrids from the 2009 trial using Corn Picker and Milk 2006 are shown in

Table 4. Results from these ranking tools are dramatically different.

Increasingly, dairy nutritionists feel there are more factors than those used in Milk2006 involved in ranking hybrids for farm profits across farms and over time. Corn Picker for Silage, developed by Mike Allen (Michigan State University), is a partial budget program that considers all economically important traits that vary by hybrid for corn silage production. The output is an estimate of the profitability of one hybrid compared to another. Hybrid inputs include dry matter yield, concentrations of NDF, CP, in-vitro NDFD and seed cost.

In the Northeast Iowa Dairy Foundation herd of 272 cows there is \$156 per cow difference in net farm profit from the highest hybrid to the lowest hybrid based on the Corn Picker analysis.

Calculations are as follows:

1. Total corn silage needs from the hybrids compared for the entire farm.
2. Cost of corn silage produced from each hybrid including seed, production, harvest, storage, and land.
3. Adjustment for difference in cost of supplemental corn grain and soybean meal because of differences in concentrations of NDF (or starch) and CP.
4. Value of differences in milk yield and feed intake because of difference in IVNDFD.
5. Number of acres of land required for each hybrid.
6. The total cost of corn silage plus/minus adjustments for Challenger compared to cost of corn silage for Defender.

Corn Picker considers the corn silage required for the entire herd and considers the intake based on the NDF digestibility of the hybrid and forage NDF concentration of the diet. It considers all costs of producing corn silage including fixed costs of storage and machinery. It adjusts for differences in supplementation with either corn or SBOM and difference in IVNDFD affect on milk yield. Differences in supplement needed and milk yield costs are adjusted for as well as the amount of land (cost/ac) to produce the needed corn silage. Partial budgets, such as Corn Picker, account for economically important information related to corn hybrid selection that varies by farm and over time.

Appreciation is extended to the Northeast Iowa Dairy Foundation, Northeast Iowa Community College, the seed corn dealers, Nelson Farm Consultants and volunteers who assisted in the establishment and harvest of this trial.

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Table 1. 2009 Costs of producing corn silage at the Northeast Iowa Dairy Foundation.

<u>Item</u>		<u>2009</u>
Acres harvested		160
Loads @ 10.13 ton		320
Tons		3242.0
Tons/acre		20.26
<u>Field Operations/acre</u>		
Planting		\$13.50
Field Cultivate		4.00
Chisel		5.50
<u>Haul Manure</u>		
7,406 gal @0.00974	77 Ac @10,000 83 ac Sod @5000 gal	72.14
Fuel 16 gal/ac @\$2.25		36.00
Repairs		0.00
Insecticide (15% refuge)		2.95
<u>Herbicide</u>		
Hornet		11.28
Harness		21.23
Spray		5.75
<u>Fertilizer</u>		
58.7 Lbs N	(28% N) C/C	28.19
Fungicide (% of acres)		0.00
Hail Insurance		<u>6.47</u>
	Sub Total/Acre	207.01
<u>Harvest, Haul, Pack - 320 Loads</u>		
10.13 T/L @ \$60.00	2 Loads/Acre	120.00
Fuel 8.91 gal/ac @ \$2.28/gal		<u>20.31</u>
	Per Acre	\$140.31
	Per Ton	\$6.93
<u>Storage @ total tons harvested</u>		
Bags (1) (7.1% of tons)	\$1,562.50	0.48
Innoculant	2763.60	0.85
Bunker covers	1,128.50	0.35
DIRTI-5 Bunkers	13,410.00	<u>4.14</u>
	Sub Total	\$5.82
38% Dry Matter	DM Basis	15.32
	Per Acre	\$117.91
Rent		\$180.00
<u>Totals</u>		
	(Excludes Seed)	
	Per Acre	\$645.23
	Per Ton	\$31.84

Table 2. Farm specific inputs.¹

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Shrinkage/spoilage, % of Dry Matter	11%
Feed Refusals, %	2%
Corn silage production cost, \$/acre	\$207.01
Corn silage harvest cost, \$/wet ton	\$6.93
Corn silage storage cost, \$/ton Dry Matter	\$15.32
Corn grain storage cost, \$/ton Dry Matter	\$0.00
Land rent equivalent, \$/acre per year	\$180.00
Milk price, \$/100 lb	\$16.48
Corn Grain, dry ground, \$/ton as fed	\$129.76
Soybean meal 48%, \$/ton as fed	\$284.00

[†]assumed to be the same for all hybrids

Table 3. Cow group inputs.

Group ID (lactating)	Lactating #1	Lactation #2	Lactating #3
Description	2Yr/Highs	Low	Post Fresh
Number of animals	172	40	24
DM intake, Lb/animal/day	53.05	45.57	40.03
Forage NDF of diet, % of Dry Matter	23%	24%	24%
Corn silage, % of forage NDF	76%	53%	48%
Diet Cost, \$/Lb Dry Matter	\$0.081	\$0.077	\$0.111
Milk Yield response pr unit of IVNDFD, lb 4% FCM /unit	.55	.55	.55

Group ID (non-lactating)	Non-lactating #1	Non-lactating #2
Description	Far-off Dry Cows	Close-up Dry Cows
Number of animals	22	14
Dry Matter Intake, lb/animal per day	28.5	24.75
Forage NDF of diet, % of DM	43%	31%
Corn Silage, % of Forage NDF	23%	28%

Group ID (non-lactating only)	Non-lactating #3	Non-lactating #4
Description	Heifers < 12 months old	Heifers > 12 months old
Number of animals in this group	0	99
Dry Matter Intake, lb/animal per day	0	22.16
Forage NDF of diet, % of DM	0	40%
Corn Silage, % of forage NDF	0	10%

Table 4. Comparative ranking of corn silage hybrids.

Rank	Hybrid	Corn Picker Profit Advantage	Rank Milk 2006	Milk 2006 Milk/Acre
1	M F2F725	\$18,406	12	16,303
2	M F2F569	11,788	10	17,564
3	DKC61-69	0	1	23,007
4	DG V5082	-2,953	3	21,595
5	B 688743SK	-7,897	8	18,328
6	B 64143 SK	-12,920	9	18,009
7	DG V4884	-15,779	4	20,914
8	P1395	-18,564	11	16,457
9	DS 8208	-19,197	6	19,424
10	P34A89	-19,618	5	19,942
11	DS 9009	-20,002	7	19,105
12	DKC 59-64	-24,387	2	21,841

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Funds for this project (“Corn Silage Test Plot to Increase Profitability for Dairy Farmers and Reduce Winter Wind and Water Erosion through the Planting of Winter Rye”) are partially provided by the Leopold Center for Sustainable Agriculture. Established by the 1987 Iowa Groundwater Protection Act, the Leopold Center supports the development of profitable farming systems that conserve natural resources. More information about the Leopold Center is available on the web at: www.leopold.iastate.edu, or by calling the Center at (515) 294-3711

Participating Seed Companies:

American Organics, P.O. Box 382, Warren, IL 46792

Dairyland Seeds Co Inc, 3570 County Rd H, Kewaskum, WI 53040

Dyna-Gro, 1065 Broadway Ave, San Pablo, CA 94806-2260

Monsanto Seed Group, DeKalb Genetics, 3100 Sycamore Road, DeKalb, IL 60115

Mycogen Seeds, 9330 Zionsville Rd, Indianapolis, IN 46268

Pioneer Hi-Bred International, 7000 NW 62nd Ave, Johnston, IA 50131