

## Use of “Corn Picker for Silage” to Evaluate Corn Silage Hybrids

### A.S. Leaflet R2519

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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-2009” FM-1712 and “Livestock Enterprise Budget for Iowa-2009” 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 a partial budget Excel 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 R2430 (2009 ISU Animal Industry Report). Data from the 2008 corn silage hybrid trial, 2008 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. These data have not yet been compiled for the 2009 corn silage hybrid trial. Ration characteristics were provided by Clint Renken, Nelson Farm Consultants, who provides dairy nutritional service to the Foundation. Actual costs of production for the 2008 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 2008 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](http://www.msu.edu/~mdr/cornpicker.html).

#### Results and Discussion

Comparative ranking of corn silage hybrids from the 2008 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.

#### 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.

#### Acknowledgements

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.

#### Participating Seed Companies:

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

**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 62<sup>nd</sup> Ave, Johnston, IA 50131

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**Table 1. 2008 Costs of Producing Corn Silage at the Northeast Iowa Dairy Foundation**

<u>Item</u>		<u>2008</u>
Acres harvested		172.00
Loads @ 11 ton		343.00
Tons		3773.00
Tons/acre		21.94
Field Operations/acre		
Planting		10.00
Field Cultivate		4.00
Chisel		5.50
Haul Manure		
10,000 gal @0.00825		82.50
Fuel @\$3.617@16/ac		57.87
Repairs		0.00
Insecticide (20%)		3.56
Herbicide		
Hornet		8.34
Harness		21.71
Spray		5.50
Fertilizer		
80# urea + spread		16.58
Fungicide (% of acres)		17.71
Insurance Hail		<u>6.75</u>
	Sub Total/Acre	240.02
<i>Harvest, Haul, Pack @343 loads</i>		
11 T @ \$69.71/load		139.01
Fuel 8.91 gal/ac @ \$3.617/gal		<u>32.23</u>
	Per Acre	171.24
	Per Ton	7.81
<i>Storage @ total tons harvested</i>		
Bags 3	935.00	0.25
Innoculant	1005.00	0.27
Bunker covers	\$930.00	0.25
DIRTI-5 Bunkers	13,410	<u>3.55</u>
	Sub Total	4.31
0.35	DM Basis	12.33
	Per Acre	94.65
Rent		150.00
<i>Totals</i>		
	<i>Per Acre</i>	<i>655.91</i>
	<i>Per Ton</i>	<i>29.90</i>

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**Table 2. Farm Specific Inputs.<sup>1</sup>**

Shrinkage/spoilage, % of Dry Matter	13%
Feed Refusals, %	2%
Corn silage production cost,\$/acre	\$240.02
Corn silage harvest cost, \$/wet ton	\$7.80
Corn silage storage cost, \$/ton Dry Matter	\$12.33
Corn grain storage cost, \$/ton Dry Matter	\$0.00
Land rent equivalent, \$/acre per year	\$150.00
Milk price, \$/100 lb	\$17.43
Corn Grain, dry ground, \$/ton as fed	\$107.00
Soybean meal 48%, \$/ton as fed	\$263.00

<sup>1</sup>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	112	56	24
DM intake, Lb/animal/day	53.05	49.04	40.03
Forage NDF of diet, % of Dry Matter	24%	26%	24%
Corn silage, % of forage NDF	71%	61%	48%
Diet Cost, \$/Lb Dry Matter	\$0.080	\$0.072	\$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	23	0
Dry Matter Intake, lb/animal per day	28.5	0
Forage NDF of diet, % of DM	43%	0
Corn Silage, % of Forage NDF	14%	0

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	20	75
Dry Matter Intake, lb/animal per day	4	18.45
Forage NDF of diet, % of DM	40%	45%
Corn Silage, % of forage NDF	10%	8%

**Table 4. Comparative Ranking of Corn Silage Hybrids.**

Rank	Hybrid	Corn Picker Profit Advantage	Rank Milk 2006	Milk 2006 Milk/Acre
1	AO E810-Lfy	\$6,792	5	31,318
2	AO-VTX-751	4,926	4	31,555
3	P35F44	3,058	7	30,815
4	P35P94	1,079	1	33,707
5	P34A89	413	6	31,266
6	M F2F725	0	11	27,221
7	M TMF1Q716	-3,572	10	28,673
8	DKC 63-42	-7,001	8	30,398
9	DKC 61-69	-7,385	3	31,800
10	DKC 59-64	-13,120	2	32,761
11	M TMF2Q759	-14,159	9	29,673

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