Use of "Corn Picker for Silage" to Evaluate Corn Silage Hybrids
2010 Trials Update

A.S. Leaflet R2606

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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 2010 corn silage hybrid trial, 2010 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 2010 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 2010 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 2010 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.

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.

Table 1. 2010 Costs of producing corn silage at the Northeast Iowa Dairy Foundation.

Item		2010
Acres harvested		100
Loads @ 11 ton		253
Tons		2783
Tons/acre		27.83
Field Operations/acre		
Planting		$16.50
Field Cultivate		$4.00
Chisel+ rotary hoe	($0.66 rotary hoe)	$6.16
Haul Manure		
10,000 gal @0.0109		$109.00
Fuel 16 gal/ac @$2.28		$36.48
Repairs		0.00
Insecticide (15% refuge)		0.00
Herbicide		
Hornet		$7.84
Harness		$21.38
Spray		$5.05
Fertilizer		
67 Lbs N	(28% N) C/C	$34.65
Fungicide (% of acres)		$16.09
Hail Insurance		$10.90
	Sub Total/Acre	$268.05
Harvest, Haul, Pack - 253 Loads		$5.45/T
Fuel(chop) $2.54/gal 8.91 gal/acre=2263.14		$0.813/T
Fuel (truck) $2.89/gal		$0.26/T
		$1.07/T
	Per Acre	$181.54
	Per Ton	$6.52
Storage @ total tons harvested		
Bags –no bags		
Innoculant	2616.02	$26.42/A
Bunker covers	1243.50	$12.52/A
DIRTI-5 Bunkers	13,410.00	$134.10/A
Per Ton	Sub Total	$6.21
33% Dry Matter	DM Basis	$18.80
	Per Acre	$172.82
Rent		$185.00
Totals	(Excludes Seed)	
	Per Acre	$807.63
	Per Ton	$29.02

Table 2. Farm specific inputs.[1]

Shrinkage/spoilage, % of Dry Matter	11%
Feed Refusals, %	2%
Corn silage production cost, $/acre	$268.05
Corn silage harvest cost, $/wet ton	$6.52
Corn silage storage cost, $/ton Dry Matter	$18.80
Corn grain storage cost, $/ton Dry Matter	$19.87
Land rent equivalent, $/acre per year	$185.00
Milk price, $/100 lb	$17.69
Corn Grain, dry ground, $/ton as fed	$180.00
Soybean meal 48%, $/ton as fed	$341.80

[1]assumed to be the same for all hybrids

Table 3. Cow group inputs.

Group ID (lactating)	**Lactating #1**	**Lactation #2**	**Lactating #3**
Description	Freestall cows	Low	Post Fresh
Number of animals	176	40	27
DM intake, Lb/animal/day	54.01	46.64	40.04
Forage NDF of diet, % of Dry Matter	24%	25%	24%
Corn silage, % of forage NDF	78%	65%	65%
Diet Cost, $/Lb Dry Matter	$0.087	$0.080	$0.100
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	39	16
Dry Matter Intake, lb/animal per day	28.51	27.09
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	20	77
Dry Matter Intake, lb/animal per day	9	18.45
Forage NDF of diet, % of DM	40%	40%
Corn Silage, % of forage NDF	10%	10%

Table 4. Comparative ranking of corn silage hybrids.

Rank	Hybrid	Corn Picker Profit Advantage	Rank Milk 2006	Milk 2006 Milk/Acre
1	American Organic D915	$38,821	3	31,860
2	Mycogen F2F665	38,315	10	29,637
3	Croplan S4900	4,564	5	31,214
4	NuTech 3T-713	0	1	33,930
5	Pioneer P1011XR-X127	-8,355	4	31,613
6	Dekalb DKC61-69	-8600	2	32,777
7	Croplan S6100	-14,616	11	28,052
8	American Organic E810	-17,398	12	26,346
9	NuTech 5X-007	-18,638	6	31,088
10	Pioneer P1162XR-X127	-26,437	9	30,099
11	Mycogen TMF2W727	-30,576	7	30,876
12	Dekalb DKC 59-64	-36,603	8	30,417

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www.american-organic.com
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