

Cornell's Winter Dairy Management 2006  
*Enhance Dairy Profitability: Achieve Balance Between Crops and Cows*

Case Farm:

***McMAHON'S E-Z ACRES***  
***HOMER, New York***



# Farm overview

- McMahon's EZ-Acres
  - Located in Homer NY
  - Owned by two brothers
  - Soils are a mix of
    - Deep well-drained gravel
      - Valley floor
      - Aquifer for over 50,000 people
    - Shallow, poorly drained, acidic clay's
  - 675 cows and typically 505 heifers
    - 6 row free-stall built in 1995
    - Heifer facilities (weaned calves through breeding) built in 1996
    - Dry cow facilities built in 2000
    - Bred Heifer Facility (with pasture system) in 2005
  - DEC protected brown-trout stream flows through all of valley land



Edie



Pete



Mike



# 1997: *Historical Perspective*

- **Consolidated from 4 aging tie-stall barns in '95**
- **Average of 515 cows in new 6-row free stall barn**
- **New double 14 parallel parlor**
- **20,162 lbs. shipped per cow**
- **Grow herd capacity from within**

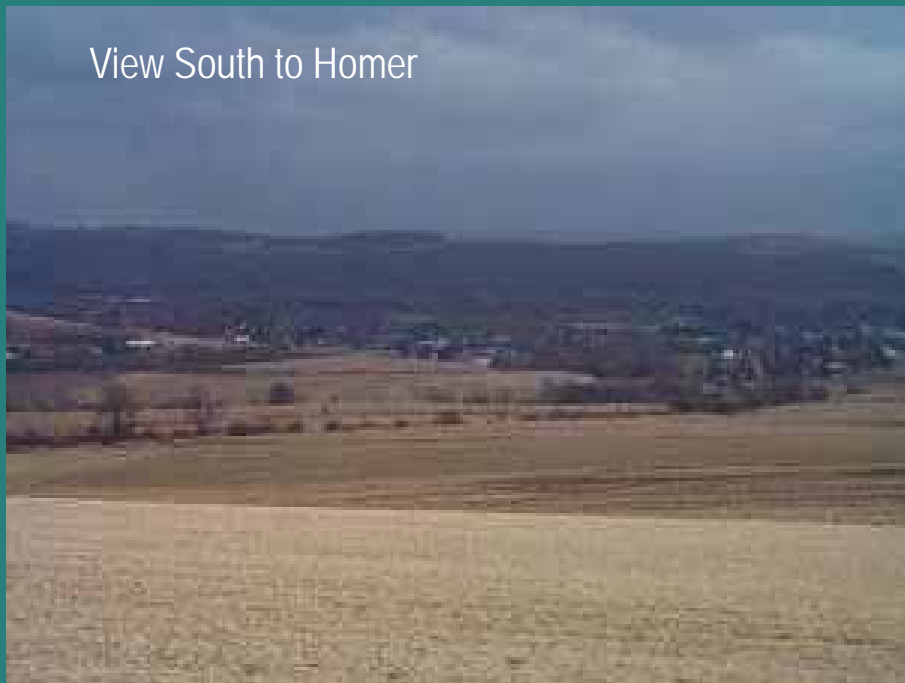




# *1997: Major Issues*

- ***Located in environmentally-sensitive area***
  - *50%+ of tillable land over sole-source aquifer*
  - *Only 10-14 days of manure storage*
- ***Perception: Land insufficient to provide enough forage***
  - *Homegrown forage at 43%*
  - *Bunk space inadequate*
  - *Purchased feed costs high*
- ***Production and herd health problems***
  - *Milk per cow stagnant at 68 lbs/cow*
  - *Cull rate at 42% to 44%*

View South to Homer



Houses/Fields/Manure



North to Skaneateles -> 2 miles



Brown Trout Stream



# BEGINNING WITH CUNMPS

- Agreed to participate in early 1997
- Hoped to gain advantage for environmental and regulatory issues (CAFO)
- Many unanticipated benefits
- “Precision Farming” led to improvements in every enterprise of the dairy.

# ECONOMIC IMPACT

## *GROWING OUR WAY TO PROFITABILITY*

- In 1997, debt per cow was increasing post expansion. Bad.
- Benchmark indicators of profitability below desired levels. Bad.
- High fixed costs demanded increased productivity per cow *without increasing debt load*
- Rigorous budgeting process with per cow & cwt. targets
- Critical “stretch” targets met in 2001 and beyond for feed costs, hired labor and machinery cost.



# Results

- Debt per cow decreasing. **Good.**

✓ 1997- \$4700; 2003 - \$3187; 2004 - \$2922; 2005 - \$3220 (↑ Heifer Barn, Chopper)

- Benchmark indicators of profitability well above desired levels. **Good, but hope to get back into DFBS top 20% in 2006.**
- Total productivity increasing while controlling debt. **Good, more later.**



Questions?

EZ Acres – *Feeding System* as Part of Whole

## EZ Acres Forage Lab Results – Key Feeding and Storage Quality Factors

<u>Date</u>	<u>DM%</u>	<u>NDF%</u>	<u>24 hr. dNDF%</u>	<u>CP%</u>	<u>Sol. P %of CP</u>	<u>Lactic Acid%</u>	<u>Acetic Acid%</u>	<u>Butyric Acid%</u>
<b>Grass</b>								
4/06/05	25.9	51.7	48	25.7	53			
6/14/05	46.5	58.2	55	13	45	2.25	1.1	0
8/18/05	38.6	57.3		18.5	48.6			
9/23/05	29.8	49.6	53	18.9	57	5.13	2.17	0.03
11/14/05	90(Hay)	63.6		16	19			
<b>Legume</b>								
2/1/05	28.9	42.2	37	24.8	63			
8/18/05	50.8	45	47 (30hr)	18.1	43.9			
9/23/05	58.2	36.8	59	25.2	47	1.6	.65	0
<b>Corn Silage</b>								
				<u>Starch%</u>	<u>NE<sub>L</sub></u>			
9/23/05	31.3	40.8	36	32.2	.78	6.31	1.6	0
11/08/05	33.2	43.6	32	32.2	.72	1.95	.26	0
1/04/06	31.4	40.4	42	32.3	.80	7.5	3.49	0

# Ration objectives

- Maximize forage intake
  - Goal: 1% bodyweight as NDF capacity (but not at the expense of “Rumen Healthy Income over Feed Cost”)
    - E.g. 1400 pound cow, 1% BW = 14 pounds NDF. If forage is 50% NDF, she can eat 28 pounds of forage. If 60% NDF, she can only eat 23 pounds.
  - Entire herd is currently about 0.94%
    - Need inventory, quality and a little **luck with weather (high dNDF)** to achieve this!
- Bottom-line: FORAGE QUALITY!

# STAYING THE COURSE: RESULTS OF HIGH FORAGE DIET

Herd struggled to recover from acidosis thru 2001, but

	1997	Today
Herd Average #	20,165*	26,000*
Cull Rate	44 %	33%**
Purchased Feed (concentrate)	5.45/cwt	4.65/cwt *3X, No bST, shipped **Full barn, many dairy sales
IOPCFC (\$13.50 Milk) (Income Over Purchased Concentrate Feed Costs)	\$1623/cow	\$2301/cow

IOPCFC Differential over herd is \$457,650/yr.

Dairy Sales @ 10% of Cows, \$1000 differential over beef is \$67,500/yr.

# Impact-Ratios

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	<u>Proportion of diet</u>		Purchased Feed Cost Per cwt
	Homegrown	purchased	
1997	42.9%	57.1%	\$5.45
1999	48.9%	51.1%	\$4.06
2000	47.5%	52.5%	\$4.55
2001	55.0%	45.0%	\$3.57
2002	59.1%	40.9%	\$3.43
2005	61%	39%	\$4.65
05 vs. 97	142%	68%	85.3%

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# HERD HEALTH IMPACT

*Herd health key to growing cow numbers without adding debt*

- Fresh cows leaving herd <40 DIM:
  - 1998 = 9.4%
  - 2005 = 2.4%
- Barn at full capacity – someone goes
- Milk production at 129% of incremental improvement start in 2000
- Decrease in daily fluctuations from pounds to tenths.
  - ✓ Was 2 – 3 lbs.; Now 0.2 – 0.3 lbs.!







Questions?

EZ Acres – *Crops* as Part of Whole

# FIRST STEP: FIELD CROPS

- **Match the crop to the soil resources.**
- **Low yield fields rotated to Intensively Managed Grass**
  - **17 tons/acre eased forage inventory concerns**
  - **Voracious “sinks” for liquid manure**
  - **95% of original IMGs continue high yield**



- ✓ Was “not corn or alfalfa, it’s a weed”!
- ✓ 200 Acres in first year
- ✓ 80% Reeds Canary, 20% Orchard
- ✓ 4 appl. Manure, 12,000 gallons per year
- ✓ 200 Lbs. urea @ greenup + 150 lbs. post-harvest
- ✓ Skip urea → lose 3 – 4% CP

# FIRST STEP: FIELD CROPS

***Silage corn varieties carefully  
matched to soil/elevation\***

- **Planting dates & maturities used to lengthen harvest window**
- **Corn starter custom matched to nutrient levels**
  - ✓ Was 200 lbs. 6:24:24
  - ✓ Now whatever called for of 20:20:0
- **PSNTs used to assess supplemental N needs**

# LESSONS IN FORAGE QUALITY

- **Quantity is good but quality is crucial**
  - **Clear quality goals**
    - **NDF based, not protein**
      - ✓ 300 A grass (2 days) → 400 A Alfalfa (2 days)
      - ✓ Grass start May 25 + 30D + 30D + 30D
      - ✓ Alfalfa start May 30 + 35D + 35D + watch growth
  - **Cutting intervals**
  - **Field drying time**
  - **Harvesting quickly**
  - **Apply recommended fertilizer amounts**
- **Investment in SP Harvester with kernel processor**
- **Custom mowing, harvesting & hauling at peak times**

## Adequate Iron?

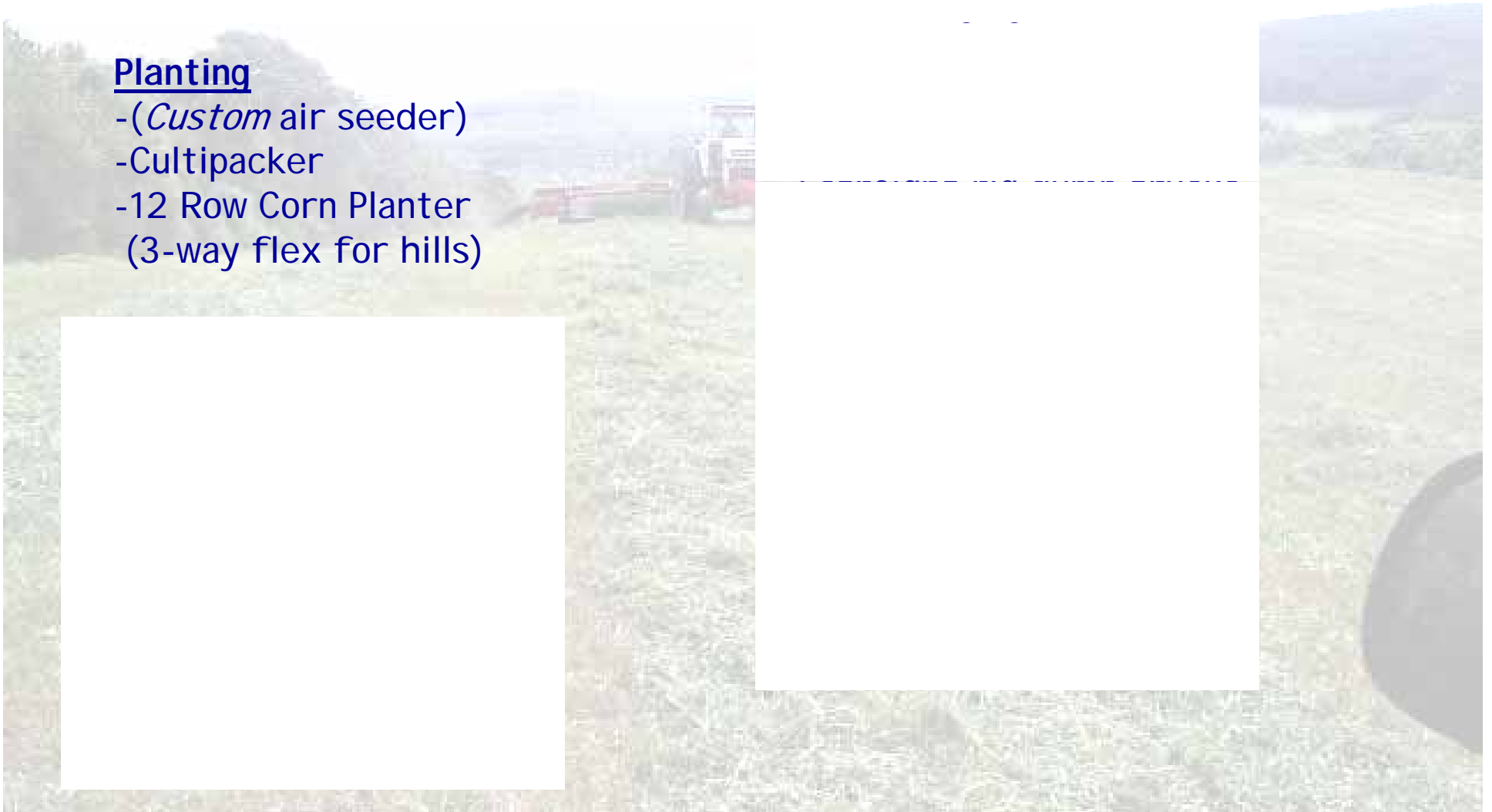
Machinery Inventory EZ Acres (700 Acres Hay Crop, 605 Acres Corn)

### Tillage

- Disk Ripper (min. tillage)
- Offset Disk

### Planting

- (*Custom* air seeder)
- Cultipacker
- 12 Row Corn Planter  
(3-way flex for hills)





Questions?

EZ Acres – *Harvest System* as Part of Whole



# Harvest Intent

- ✓ 350 A grass (2 days) → 350 A Alfalfa (2 days)
- ✓ Grass start May 25 + 30D + 30D + 30D
- ✓ Alfalfa start May 30 + 35D + 35D + watch growth

## Adequate Iron?

### Machinery Inventory EZ Acres (700 Acres Hay Crop, 605 Acres Corn)

#### Chopping

- 2005 forced upgrade to JD 7300 (385 HP)  
(center pivot on 13' pickup)

#### Hauling

- 3 straight rig dump trucks
- 1 dumping trailer

#### Packing

- JD 9400 @ 56,000 Lbs.  
(12 wheels - 6/axel)

#### Other

- 5' x 5' Round Baler
- Occasional Rented Bagger

#### Mowing

- (2) 15' Pull Behind Rotary  
plus 2 more custom
- (2) Custom mowers
- 9' Swath - Alfalfa  
(less with grasses)

#### Merging

- (2) Mergers 3 → 1  
(in 1<sup>st</sup> Crop)





Questions?

EZ Acres – *Storage System* as Part of Whole

# FEED STORAGE: A PROBLEM FROM SUCCESS

- Forage resulted in overload on existing bunks
- Bags were short-term band-aid
- Started segregating by type, not cutting
- Build flexibility into your feed storage system (e.g. open ended bunks)
- High-quality tarps to minimize sun degradation



Feed Center and view of “telephone pole high” corn silage bunk in use before new setup across the road. Silo is now part of well-divided hay crop storage.

“PackMaster Pete” risking life and limb on over-height bunk. Next slide shows much better situation with new bunk.





25' Center Height

New Corn Silage Bunker – *Stretch* goal for 2006 is to feed no new crop corn silage until after the first of the year.



## Newly Opened Corn Silage Bunker Slope (2004 & 2005)



90'W x 200'L x 13' side wall

## Alfalfa Bunker

● ← 14.6 lbs./ft<sup>3</sup>

60'W x 200'L x 12' side wall

## Grass Bunker

● ← 14.4 lbs./ft<sup>3</sup>

32'W x 200'L x 12' side wall

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- Dairy Comp 305 ----- MCMAHON'S E-Z ACRES -----
- Command : BREDSUM
- Expanded:
-
- C: COWFILE1.DAT -----

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Date	Br Elig	Bred	Pct	Pg Elig	Preg	Pct	A
1/11/05	165	102	62	162	18	11	
2/01/05	175	115	66	171	24	14	
2/22/05	173	113	65	172	30	17	
3/15/05	181	123	68	181	32	18	
4/05/05	171	115	67	171	46	27	
4/26/05	144	81	56	143	22	15	0
5/17/05	162	102	63	161	31	19	3
6/07/05	160	99	62	159	23	14	2
6/28/05	165	94	57	163	19	12	
7/19/05	177	113	64	175	28	16	
8/09/05	185	120	65	184	28	15	
8/30/05	198	126	64	196	30	15	1
9/20/05	199	134	67	194	46	24	0
10/11/05	179	125	70	177	33	19	0
11/01/05	168	115	68	167	36	22	1
11/22/05	156	100	64	153	25	16	0
12/13/05	144	100	69	0	0	0	0 ???
1/03/06	121	100	83	0	0	0	0 ???
Total	2758	1777	64	2729	471	17	19

Pregnancy Rate

Mycotoxin problem discovered through trouble shooting sharp dip in conception rate. Took several 21 day cycles to play through.

Record summer heat is no picnic either!



Questions?