How Miner Institute is Serving the Dairy Industry
Ev Thomas
Oak Point Agronomics, Hammond, NY
Located in Northeastern NY...
...in the foothills of the Adirondack Mountains.
William H. Miner

- 1862: Born in Juneau, Wisconsin. Orphaned in 1873, raised by his aunt and uncle on their Chazy, NY. farm.

- 1880: Moved to Chicago to work in the railroad industry. In 1891 invented and patented a greatly improved shock absorber for rail cars. “Build a better mousetrap….”

- 1894: W.H. Miner, Inc. started in Chicago. Big success, got rich quick. (No income tax in U.S. until 1913.) 1898: Miner draft gear in use on 15,000 cars owned by 6 railroads.

- 1903: Moved back to Chazy, built Heart’s Delight Farm.
Heart’s Delight Farm

• 15,000 acres, 800 employees.

• A highly diversified farm. 300 buildings.

• Dairy barn had electric lights before the N.Y. governor’s mansion had them.
William H. Miner Agricultural Research Institute

- Miner was an orphan who married an orphan, and their only child died at a week of age. He died in 1930, no heirs.

- Farm enterprises declined rapidly after his death, last dairy cow left in the early 1950s.

- Miner Institute began in 1951 as a one-year junior college, 40 students.

- Objective: To teach “the science of agriculture”. Operated for about 10 years.
Relationships

- 1961: Cornell University began a crops research program involving 40 acres of tile-drained small plots. Still going.

- 1969: Regional Cooperative Extension Dairy and Field Crops Team formed. Offices at Miner Institute, at no cost to the taxpayer. Dairy animals returned to the farm.

Relationships

- 1979: Miner-Cornell agreement not renewed; dairy herd split, management reverted to Miner Institute.

  - …except that Miner Institute had no professional staff with any agricultural background.

  - …but the Cooperative Extension Dairy and Field Crops Team was on site and began managing the farm operation on a daily basis.
Miner Institute today
Research

Demonstration

Education

Dairy Research Barn
- Farm Manager’s Office
- Dairy Barn Classroom

Dry Cow Barn

Compost Site

Heifer Barn
Calan bins for individual feeding trials
## Current rations at Miner Institute

<table>
<thead>
<tr>
<th>Group</th>
<th>CS, %</th>
<th>BMR, % of CS</th>
<th>HCS, %</th>
<th>% Forage</th>
</tr>
</thead>
<tbody>
<tr>
<td>100#</td>
<td>77</td>
<td>60</td>
<td>23</td>
<td>56</td>
</tr>
<tr>
<td>95#</td>
<td>79</td>
<td>60</td>
<td>21</td>
<td>55</td>
</tr>
<tr>
<td>Fresh</td>
<td>77</td>
<td>72</td>
<td>23</td>
<td>56</td>
</tr>
<tr>
<td>Low 75#</td>
<td>62</td>
<td>0</td>
<td>38</td>
<td>61</td>
</tr>
<tr>
<td>Close-up dry</td>
<td>92</td>
<td>67</td>
<td>8 (straw)</td>
<td>67</td>
</tr>
<tr>
<td>Far off dry</td>
<td>17</td>
<td>0</td>
<td>83</td>
<td>90</td>
</tr>
</tbody>
</table>
Income

Annual budget over $6 million, primarily from the Miner Foundation.

Farm income and research grants are increasing as a proportion of the total.
Expenditures

Dairy farming is not Miner Institute’s primary business.

The farm is used to support the research and educational programs.

Education is the reason for the Institute’s tax exempt status.
Research

Primarily dairy and forage crops, some equine.

Emphasis is on practical, applied research.

Collaborations include Cornell Univ., UVM, Zennoh (Japan).
Research income is increasing

- About $600,000 in 2012 research grants as of August.

- Goal is $1,000,000 in annual research grants by 2016.

- Much lower overhead than Land Grant Universities, turnaround time is much faster because of less red tape.

- Having a 30,000 lb. herd average doesn’t hurt either.
Some recent research projects

- Reducing K inputs on dairy and cash crop farms.
- Blood lysine response of cows fed rumen-protected lysine.
- Evaluation of a direct-fed microbial (Bovamine) on early lactation Holsteins.
- Reducing subsurface N and P losses by drainage water management.
- Influence of free stall stocking density on milk production.
- Effect of carbohydrate source on performance of dairy cows fed low starch diets.
Impact of stocking density on co-mingled mature cows and first calf heifers

<table>
<thead>
<tr>
<th>Stocking density, %</th>
<th>100</th>
<th>113</th>
<th>131</th>
<th>142</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cow - Heifer</td>
<td>+ 6 lbs</td>
<td>+14 lbs</td>
<td>+21 lbs</td>
<td>+15 lbs</td>
</tr>
</tbody>
</table>

Increasing the stocking density affected first-calf heifers much more than it did mature cows.
Educational Programs

- Summer semesters in farm management, equine management, and agricultural research: College seniors mostly headed for vet college or grad school.

- Agriculture and the Environment: Fall semester for environmental science majors.

- Advanced Dairy Management: Spring semester for college juniors headed back to the farm or to agribusiness careers. Work on the Miner Institute farm about 30 hours/week.
Visibility

- About 40% of U.S. dairy cows are fed rations formulated using software co-invented by Miner Institute, U.Penn. and Cornell University (CPM Dairy, CNCPS and commercial variations).

- Approximately 50% of the dairy cows in Vermont and Northern NY are directly impacted by graduates of one of the Institute’s undergraduate education programs.

- Last year over 4000 people attended the 40+ meetings, workshops and other educational programs held at the Institute.
Miner Institute Farm Report

- Monthly. Free on request, not copyrighted.

- Over 1000 subscribers: 400 email and 625 “snail mail”.

- Bits and pieces picked up by Extension and other publications.

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FROM THE PRESIDENT’S DESK — TABLE FOR ONE?

Here’s a question given a choice between eating a delicious meal or some unpalatable food, which would you choose? Now, what if you had to sit beside a jock to eat the tasty food, but could eat the less appetizing food in peace? Finally, would it matter to you how close you had to sit to the boisterous person? I don’t know the answers to these questions for humans, but the most recent issue of the Journal of Dairy Science has a paper that answered these questions for dairy cows (Reja-Lang et al., 2012. J. Dairy Sci. 95:3954).

The researchers trained dairy cattle to prefer a “highly palatable feed” that was a pelleted grain containing molasses rather than a “low palatability feed” which was comprised of rolled barley and soybean meal. Both feeds had similar energy and protein content, but differed in palatability. Cows were presented with a choice: they could either choose the highly palatable feed or the low palatability feed. For the cows, this appeared to be a “no-brainer” with an 80% preference for the more palatable feed.

With the two smallest manger spaces per cow (18 or 12 inches), subordinate cows preferred to dine alone. However, when manger space was 24 or 30 inches/cow, the subordinate cows showed no preference. In other words, cows with lower social status within a pen willingly sacrificed higher food palatability, or quality, to avoid close proximity to dominant cows. From a building design perspective, these data tell us that feed bunk space...