The NYS Precision Feed Management Experience

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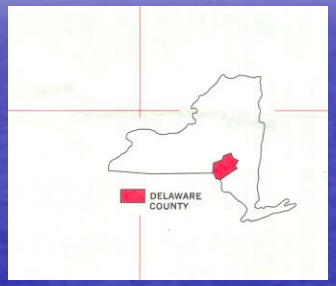
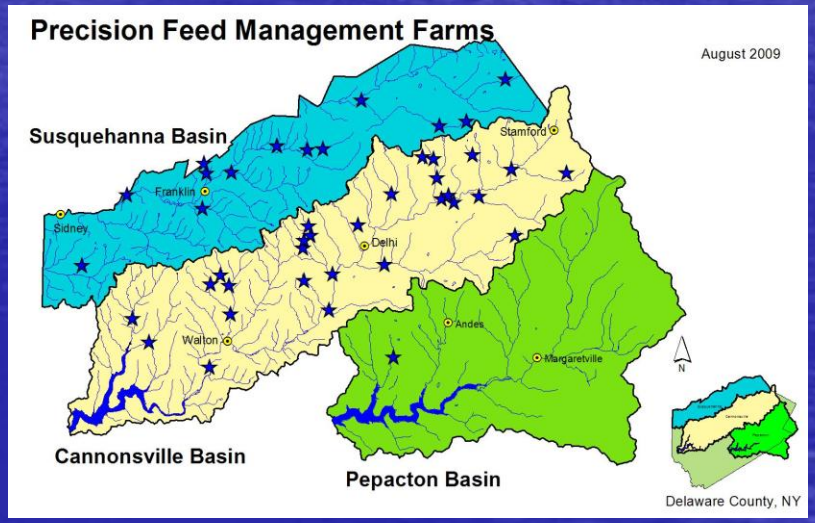
Scope of the PFM in NYS

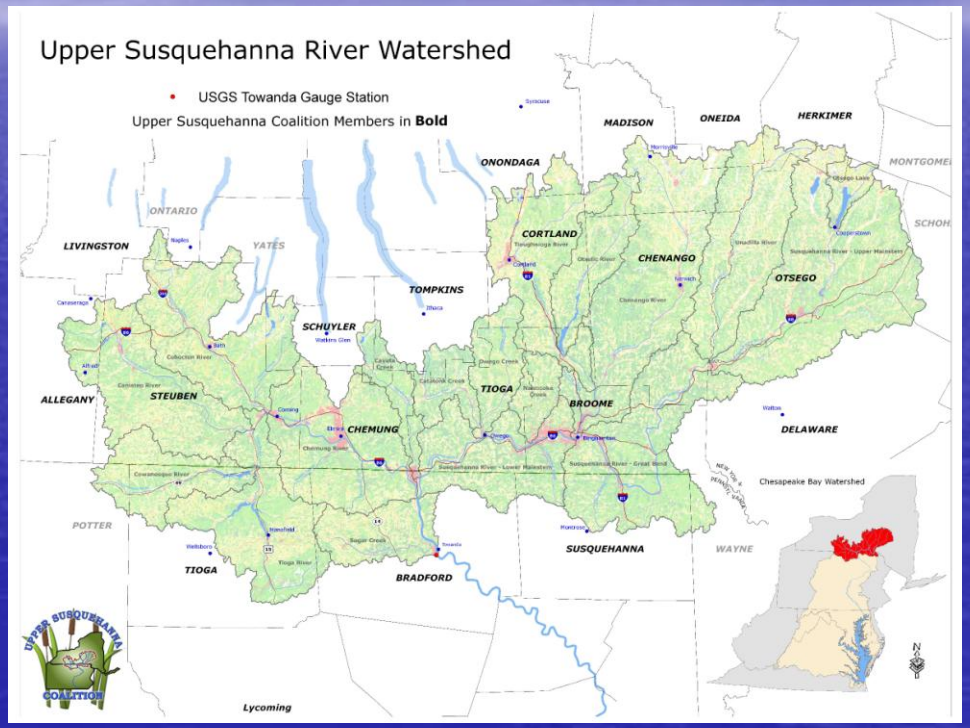
- Extensive (7+ yrs) in Delaware County
  - NYC Watershed
  - Susquehanna
  - 42 farms (25%)





PFM in NYS

- NYS Upper Susquehanna Watershed:
  - ~ 100 farms engaged in some level of PFM assessment & implementation over last 3 years.



The NYS CIG PFM project

- Scope:
  - Develop a Practical Approach to PFM.
  - Implement PFM on farms in Upper Sus.
  - Determine nutrient reductions.
  - Quantify dairy farm mass nutrient balances.
  - Outreach to farms and feed industry.

The NYS CIG PFM Project:

Achievements

NY CIG PFM Project Achievements: Nutrient Management:

- Quantified Impact

NY CIG PFM Project Achievements: Nutrient Management:

Delaware County Level 2 Implementation:

- Manure P reductions: 12 lbs/cow/yr (22%)
- Manure N reductions: 23 lbs/cow/yr (8%)

- Farm P accumulation reduction:
  - 36 lbs/cow/yr (40-70+%)
- Farm N accumulation reduction
  - 369 lbs/cow/yr (40-70+%)

NY CIG PFM Project Achievements: Nutrient Management:

- Economic Impact
  - On average ~$30,000/farm/year for typical dairy
- Farm recognize the economic benefit

NY CIG PFM Project Achievements: Program Development

- Developed a common definition of Precision Feed Management for NYS.

The NYS Definition of Precision Feed Management

1. *A continual process…*
2. *Providing adequate, not excess, nutrients to the animal…*
3. *Deriving a majority of nutrients from homegrown feeds…*
4. *… through the integration of feeding and crop management for the purpose of maintaining environmental and economic sustainability.*

NY CIG PFM Project Achievements: Program Development

- Developed farm level PFM Benchmarks.
- PFM happens, or does not, at the cow….
- Accomplishment of a few key benchmarks
  1. Presupposes other key achievements (i.e. forage quality)
  2. Results in other key achievements (i.e. reductions in manure excretions and mass nutrient accumulations)

New York State Precision Feed Management Benchmarks

Benchmark	Goal	My Farm
1. Forage NDF intake as % of body weight	≥ 0.90%	
2. Forage as a percent of diet	≥ 60%	
3. Home grown feeds as a percent of diet	≥ 60%	
4. Ration P as percent of NRC requirement	< 105%	
5. Diet crude protein, % of DM	< 16.5%	
6. Milk Urea Nitrogen (MUN)	8-12	
7. Cows dead or culled less than 60 DIM	< 5%	

NY CIG PFM Project Achievements: Program Development

- Developed Benchmarking Software to ease implementation of ration monitoring.
  - Quantifies benchmarks and nutrient efficiencies;
  - Quantifies economic impacts;
- Further developed farm mass nutrient balance software to better characterize nutrient fluxes on the farm.

Farm Inputs	
Date	8/5/2009
Farm Name	Smithshire
Cow Group	Milking Herd
Average Body Weight of Cows	1420
Pounds milk per cow per day	70
Milk-%Fat	3.2
Milk-%True Protein	4
Net Milk Price per CWT	$ 13.64
MUN-Milk Urea Nitrogen	10
Freshenings per year	65
Cows dead/culled within 60 days fresh	0
1st calf heifers - number	17
Months - age of first calving	25
2nd lactation animals - number	12

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Precision Feed Management
Benchmark Calculator

Forage Inputs	Smithshire Milking Herd 8/5	
Feed	Baleage	Corn Silage TMF
lbs. as fed per cow per day	10.5	42.0
Cost per ton as fed	$ 40.00	$ 45.00
Purchased?	No	No
DM %	50.3	33.4

Smithshire

Farm Inputs	Benchmark 1	Benchmark 2	Benchmark 3	Benchmark 4	
Date	8/5/2009	1/27/2010	5/14/2010	8/23/2010	
Cow Group	Milking Herd	Milking Herd	Milking Herd	Milking Herd	Average
Average Body Weight of Cows	1420	1450	1410	1450	1433
Pounds milk per cow per day	70	82	81	77	77
Milk-% Fat	3.2	3.2	3.3	3.1	3.2
Milk-% True Protein	4.0	4.1	4.1	3.8	4.0
Net Milk Price per CWT	$13.64	$17.85	$17.36	$15.76	$16.15
Benchmarks					
Forage NDF intake as % of body weight	1.10	0.93	0.95	1.01	1.00
Forage as a percent of diet	70.1	64.7	67.9	70.2	68.2
Home grown feeds as a percent of diet	70.1	64.8	67.9	70.2	68.2
Ration P as percent of requirement	97.4	94.0	96.6	101.6	97.4
Diet crude protein	16.2	15.8	17.1	19.8	17.2
Milk Urea Nitrogen (MUN)	10.0	10.3	10.3	10.0	10.2
Cows dead or culled less than 60 DIM	0.0	0.0	0.0	1.6	0.4
Efficiencies					
% CP in Ration	16.2	15.8	17.1	19.8	17.2
% N use efficiency	35.9	42.1	39.7	31.3	37.3
Purchased Feed N - Milk N, lbs	0.0	3.3	3.0	0.0	1.6
% P in Ration	0.35	0.36	0.37	0.39	0.4
% P use efficiency	35.6	38.8	38.0	35.7	37.0
Feed P - Milk P, lbs	0.0068	0.0238	0.0040	-0.0019	0.0082
Profitability: $ per cow per day					
Milk income	$ 9.55	$ 14.69	$ 14.07	$ 12.06	$12.59
Feed cost	$ 4.79	$ 5.89	$ 5.03	$ 4.78	$5.12
Milk income-feed cost	$ 4.76	$ 8.80	$ 9.03	$ 7.28	$7.47
Forage cost	$ 2.19	$ 2.21	$ 1.92	$ 2.00	$2.08
Concentrate feed cost	$ 2.60	$ 3.68	$ 3.11	$ 2.78	$3.04

NY CIG PFM Project Achievements: Program Development

- Educational outreach using benchmarking;
- Popular press articles on PFM;
- Outreach to Feed Industry

NY CIG PFM Project Achievements: Program Development

- Providing Input to NY NRCS for development and implementation of NY 592 feed management standard.
- Have leveraged additional funding (state) to implement PFM in Upper Susquehanna (and elsewhere) since the CIG.
    - Writing Feed Management Plans and implementing

NY CIG PFM Project Achievements: Program Development

- Developed good working relationship with feed industry in NY.
- Gotten voluntary participation of farmers
- Developed a coalition of professionals interested and committed to implementing PFM in NYS.

The NYS CIG PFM Project

Challenges/Barriers to Adoption

NY CIG PFM Project: Challenges/Barriers to Adoption

- Objectives of NY PFM are in direct conflict with short term interests of feed industry:
  - Most small dairies are serviced by feed company nutritionists

NY CIG PFM Project: Challenges/Barriers to Adoption

- Economic benefits from PFM alone may not be enough to result in farmers/feed industry implementing PFM on their own.
  - *I already know how to farm better than I do."*
  - *I know what I want to, but not how to do it."*
    - Technical assistance
    - Bean counting

NY CIG PFM Project: Challenges/Barriers to Adoption

- Developing PFM as a management BMP where farmers exercise more initiative and control.
  - Developing a mindset that PFM is a process undertaken by the farm, not an event that happens to the farm.

NY CIG PFM Project: Challenges/Barriers to Adoption

- Having enough capacity for widespread uniform implementation of PFM.
  - Interest
  - Capacity for regular relationship with farm
  - Workable mechanism

NY CIG PFM Project: Challenges/Barriers to Adoption

- Ability to maintain regular relationship with farm.
  - Feed management is not a once and done BMP.
  - Securing meaningful funding for sustained efforts in PFM.

NY CIG PFM Project: Challenges/Barriers to Adoption

- Moving Feed Management beyond a plan to actual implementation.
- Developing the next level of implementation (beyond current benchmarks).
  - PFM is a work in progress.

NYS Dairy PFM in 2025

A Vision

NYS PFM in 2025:

- Recognition of the importance of homegrown feed management in PFM and inclusion of in PFM funding programs;

NYS PFM in 2025:

- Continued deployment of the best science in field ready tools.

NYS PFM in 2025:

- Watershed (state) wide coordination of PFM efforts:
  - Uniform approach/process
  - Plans and implementation
  - Use of software tools to provide quantification of nutrient management impacts of PFM

NYS PFM in 2025:

- Recognition of the on going nature of nutrient management on dairy farms:
  - Policies, programs built and funded for long term relationships for the implementation of the feed management plan.