

# Maximizing Forages in Rations to Control Feed Cost

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# Considerations in including more forages in the ration

## Advantages:

- Reduction in feed cost
- Increase health of cows
- Increase feed efficiency
- Part of nutrient management plan

## Disadvantages:

- Need more farmland
- Multiple cropping strategy
- Keeping multiple forage faces clean and unspoiled
- If forages run out before new harvest, then have to buy other feeds or forage

# Forages available to use in southeast dairy operations

- Corn Silage
- Sorghum Silage
- Ryegrass Haylage
- Oat Silage
- Triticale Silage
- Wheat Silage
- Alfalfa hay or haylage
- BMR (corn or sorghum)
- Sudangrass
- Bermudagrass
- Bahia grass
- Millet
- Crosses (sorghum sudan)
- Soybean
- Clovers
- Others (dwarf sorghum)

# Factors that affect forage yield and quality which then affect animal performance

- Hybrid/Variety
- Fertility
- Irrigation/Rainfall
- Time of Harvest/Maturity
- Processing of forage or chop length
- Optimum Methods during Harvest
- Storage of forage (Silo, bags, bales, pile)
- Management of forage during feedout
- Weather

This year may be the year to implement higher forage rations.

Commodities prices are still high.

Outlook for fall prices are uncertain.

All other input costs (fuel, fertilizer, seed, supplies, etc.) have increased.

Greater choices of forages that can supply nutrients to support higher milk production are available.

Change of weather this year where sufficient to generous rainfall has occurred in the southeast.



# Level of forage in the ration depends on many factors

- Availability of forages
- Dry matter percent
- Fiber (NDF) content
- NDF digestibility
- Energy content
- Carbohydrate level (starches & sugars)
- Soluble protein content
- Mycotoxins, nitrates & other unwanted items

If your goal in your feeding program for dairy cows is to:

- Feed high levels of forage (> 50 % of ration DMI) in the lactation ration all the time
- Produce high levels of milk production through the year

Then the key to this goal is: **Quality Forages!!**

## Use values from lab analysis in evaluating forage quality

- Laboratory analysis will provide standard nutrient (CP, NDF, ADF, Fat, starches, sugars, minerals, etc.) levels.
- Further lab analysis will provide digestibility of some nutrients (NDF and starch) and fermentation profile will provide information on how well the fermentation process occurred in a silage.
- RFV and RFQ are indexes used to describe the quality of forage within a forage type. RFV is based on analyzed ADF and NDF values.
- RFQ calculation includes the estimated nutrient digestibility (NDF digestibility) of the fiber in the forage and should provide a better indication of the available energy of the forage.

# Defining Forage Quality

- Quality should be defined in terms relative to how the animal can use the forage to meet the nutrient requirements for maintenance, growth, production and reproduction.
- Forages should be palatable, contain proper dry matter percent, provide a desirable nutrient content and these nutrients must be digestible.
- Quality forages do not contain significant levels of mycotoxins, nitrates, or undesirable end-products/bacteria/yeast.

## Producing and Maintaining High Quality Silage

Look under the silage cover to evaluate fermentation process and loss of forage dry matter.

Do you see a dark layer and mold growth on the surface and sides of the forage pit?

If you find a dark layer, that forage should not be fed to cows and decreases amount of forages available to be fed to lactating cows.



Body of forage is good quality, but the air pockets running underneath top of the plastic allowed mold growth and loss of forage. So how much forage is loss in this situation? Or how much moldy silage is being fed to cows?



Is this a storage or  
feed out problem  
with this pit? Or  
did the problem  
start at harvest?



## A Nutritionist Nightmare!

Do you really expect your cows to milk well on this type of forage?



## Maintaining High Quality Silage is a Every Day Focus

Growth in field went well.

Harvest in pit went well.

Fermentation of silage went well.

Now the feed out phase will determine any change in quality.

- Uneven pit face
- Uncovered too much silage on top
- Time to feed across the pit face
- Depth of forage face removed each day



# Keys to Feeding High Forage Diets and Producing High Levels of Milk Production and Control Feed Cost

- Blend of forages to provide desired level of nutrients (protein, soluble protein, starch, sugars, NDF, minerals, etc.)

- Quality! Find the limitation(s) to achieving quality forages.

Growth → Harvest → Storage → Feed out

- Forage Shrink

This area can have unrealized significant loss of money!

## What other forages could be blended with corn silage to enhance the total forage program?

- Sorghum silage would provide more effective fiber and digestible fiber (BMR), but still provide reasonable energy.
- Ryegrass would provide more total protein and soluble protein plus potassium. Fiber level is dependent on maturity at harvest.
- Grass hay or haylage would provide needed fiber if using high starch corn silage.
- Many combinations are possible. Based on the forages available to feed, figure out what is needed in ration and choose forage that best fits the need of the cows.



## Example Dairy Ration – 47% DMI from Forage

- Dairy ration contains 3 forages plus several bought feeds which are ground corn (\$320/T), soybean meal (\$500/T), distillers grains (\$ 300/T), whole cottonseed (\$330/T), citrus pulp (\$250/T) and custom mineral (\$700/T).
- Forages are corn silage (\$60/T) containing 24% starch, ryegrass haylage (\$58/T) containing 10% total protein and sorghum silage (\$48/T) containing 8% starch.
- Ration balanced for 80 pounds of milk at 3.8% fat and 50 pounds of DMI.
- Ration cost is \$7.65/cow/day.



## Example Dairy Ration – 54% DMI from Forage

- Same 3 forages and purchased feeds as before, but increase dry matter pounds from quality forages. Now corn silage contains 32% starch, ryegrass contains 18% total protein and sorghum contains 16% starch.
- Ration balanced for 80 pounds of milk at 3.8% fat and 50 pounds of DMI. Cost of all feeds and forages are the same.
- Ration contains a reduced amount of ground corn (3.5%), SBM (1.8%) and DDG (1.7%) in total ration dry matter. An increased amount of forages make up the difference.
- Ration cost is \$6.80/cow/day. Savings of \$0.85/cow/day.
- If feeding 100 cows, savings of \$2550/month.
- If feeding 500 cows, savings of \$12,750/month.
- If feeding 1000 cows, savings of \$25,500/month.



## What about shrink in forages?

Normal shrink in fermentation processes of silages accounts for about 12 percent of the volume of forage.

If a dairy harvests 25,000 tons of corn silage with the normal shrink (12%), then 22,000 tons of silage are available to use. Corn silage is valued at \$60/ton.

If 15% shrink, then loss of 750 tons to feed and \$45,000.

If 18% shrink, then loss of 1500 tons of feed and \$90,000.

If 22% shrink, then loss of 2500 tons of feed and \$150,000.

With optimum harvest and storage management, these significant monetary losses can be stopped!



# Harvest Event is the Most Critical Time for Forage Quality

Develop the plan of action and review the checklist.

Is the equipment ready for harvest?

Are the pit, bags and plastic ready for the forage?

Do we have enough tractors and personnel to push and pack the incoming forage?

Do we have enough trucks to haul forage?

Do we have the inoculant on hand and know how to mix and apply it?

Is there someone in place to run moisture tests on the incoming forage?

Is there someone in charge to watch processing of incoming corn forage?

Have we communicated all important information to the custom operator?

Is there enough tires/sidewalls to cover the plastic on top of the pit?

Is there a way to cover the silage pit in case of a rain storm?

## Optimum Hay Storage

While dry hay is limited in Lactation Rations, it would be used at higher levels in dry cow and heifers diets.

Common loss of dry hay from harvest and storage accounts for 15 to 40 % of the crop.

Proper harvest, storage and handling of dry hay will reduce loss and increase availability and quality to those many heifers and dry cows on the dairy.



## Benefits of including more quality forage in Dairy Rations

Help reduce feed costs by purchasing less grains for lactating cows. Better forages in heifer and dry cow diets will also help lower total feed cost.

Increase feed efficiency.

Increase cow health.

The right blend of forages will promote high milk production.



## Summary to Maximizing Forages to Control Feed Costs and continue to make high milk yield

- Develop a strategy to include a higher level of forages in the rations.
- Decide which forages best suit the needs of the cows and work within the limitations of your farm.
- Harvest each forage under the optimum conditions. This includes the maturity of the crop, mechanics of the harvest, packing the silage in pit/filling the bag, use of inoculants and storage conditions.
- Evaluate shrink at harvest, storage and feed out. If excessive, uncover and fix the problem.
- Calculate the actual cost of production with each forage crop.
- Identify any bottleneck to producing **Quality Forages**. Remove the bottleneck.





Any Questions?

# Dairy cattle and dietary NDF

- High producing dairy cows
  - Must consume large amounts of feed (dry matter) each day to meet the energy (NEL) and protein (DIP and UIP) requirements of milk production.
  - Feed intake is limited by physical fill (NDF), especially in early lactation.
  - Feed ingredients must be highly digestible to supply required nutrients to produce milk while maintaining proper body condition.
  - Adequate effective fiber (NDF) is required to maintain a healthy rumen environment and prevent metabolic problems (acidosis, DA's, etc.).
- Young calves and replacement heifers
  - Rumen size is limited in calves, so forage NDF should be highly digestible to allow proper rumen development. Forage NDF affects growth on heifers.



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