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## Forages and Feeding Dairy Cattle During Drought Conditions

Forages are the base ingredient in dairy cattle and heifer diets. Forages provide cattle fiber and roughage, and the quality of the forage affects animal production and health. Drought conditions create numerous challenges on a dairy farm, including slow regrowth of pasture, hay and crops to be ensiled, reduced yields, lower forage quality and increased production costs.

Reduced forage yields are expected during drought conditions when irrigation is not available. Yield reductions occur when water availability to move nutrients into and through the plant is reduced. If yield reductions caused by a drought are going to create forage shortages for the dairy farm, it becomes imperative to search for alternatives sooner rather than later. Options available when forage shortages occur include:

- Purchasing additional forage from other farmers or locations to increase forage supplies for the next year. If drought is persistent, standing corn crops might be available for harvesting as silage with reasonable quality at modest cost.
- Increasing the amount of purchased forages currently being included in the ration to extend the supplies of homegrown forages.
- Reducing the amount of forage in the diet by adding alternative fiber sources to the ration, such as soy hulls, wheat middlings, cottonseed hulls, etc.

A cost-effective strategy needs to be developed when coping with a forage shortage. This should include the use of alternative feeds, sourcing of forage resources and least-cost ration formulation. Planning ahead to compensate for forage shortages should provide additional options, as well as increasing flexibility in the purchase price

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of feedstuffs. Often prolonged droughts, even if not very widespread, are accompanied by increased commodity prices, so monitoring markets to lock in favorable contract prices of commodities is likely to be financially beneficial.

In some cases, severe yield reductions or crop losses mean crop insurance may be an option. Confer with crop insurance agencies or consultants early in the season to determine if insurance is an option, what requirements need to be met for insurance payment eligibility and to verify yield losses. Be sure to discuss crop insurance implications for drought conditions with owners of contracted crops, as well, and offer to meet with their insurance adjusters to avoid misunderstandings.

Yield reductions often become the focus during a drought year. However, the quality of crops can be equally as important when evaluating forage supplies. Just because there is a crop to harvest in a drought year does not mean that the quality is similar to that found during a normal year. Sometimes the cost of feeding poor-quality forages can be even greater than purchasing high-quality forage. If poor-quality forages cause a reduction in milk production and/or results in poor animal health, the cost of feeding low-quality forages can be significant.

To know the quality of forage, collect samples and send them to a certified laboratory for a nutrient analysis. (Test laboratories can be found on the National Forage Testing Association website at [www.foragetesting.org](http://www.foragetesting.org). Also, a brief list of some forage testing laboratories is provided in Appendix 1). The more quickly forages and feeds are tested, the more time there will be to plan ahead to make ration changes or purchase additional feeds. Waiting to test feeds until a day or two before beginning to feed them is too late and makes it increasingly more difficult to make proactive decisions. For example, test corn silage as it goes into the bunker to predict the actual quality of the silage. Even though some minor changes in nutritive values may occur and the quality of fermentation affects the feed value of the silage, sampling the forage before it is ensiled provides an indication as to the overall quality of the crop.

Although the pre-ensiling sample can be used as a management tool, it should not take the place of periodic forage tests during the feed out period. While ensiling in a bunker provides a more consistent quality at feed out, upright silos and silage bag storage systems can be especially susceptible to variability in quality, arising from harvesting crops during drought years because of inconsistencies in quality and less mixing of the forage.

Low-quality forages can be supplemented with grains, byproduct feeds or other forages. A decision also needs to be made as to whether the forage is of high enough quality to feed to lactating cows, and how much of the forage can be included in the ration without experiencing a loss in production.

Determining the costs of purchasing forages should be balanced with the costs associated with purchasing supplemental feeds and any anticipated effects on production losses and cow health. If the forage is decent quality but the nutritional value is lower than preferred, it might be more cost-effective to have a slight reduction in milk yield than to purchase higher quality feed. However, if the health of the cows would be in jeopardy, or if expected yield reduction would be significant, purchasing higher quality forages may be necessary.



## Dairy Rations with Limited Forage Amounts

Forages may be in short supply because of lowered yields resulting from hot and dry weather conditions. Typically, dairy rations are designed to maximize forage use. Nevertheless, properly formulated rations designed to minimize forage use still can provide a healthy rumen environment to support cow productivity and health. Cows, however, need a minimum amount of fiber in their diets, and alternative feeds, such as byproducts, can be used to partially meet their dietary fiber needs and help keep the rumen functioning properly.

Table 1 provides a list of nutrient values of common forages and byproduct feeds that can be used in dairy diets. The values listed in the table are book values. Forages and byproduct feeds always should be analyzed for nutrient concentrations before balancing rations and feeding them to dairy animals.

If forage yields and quality are a concern, consult a nutritionist as soon as possible to develop a feeding strategy for the upcoming year. Developing a plan for managing feedstuffs and stretching the use of those in short supply will help ensure optimum animal performance and health, minimize costs and maximize profit potential during the rest of the year as drought-stressed crops are fed.

**Table 1.** Book nutrient values for common forages and byproduct feeds (Dairy NRC, 2001).

| Feedstuff                   | CP<br>% of dry matter | NDF<br>Mcal/lb | ADF<br>% | Fat<br>% | NEI (3x) |
|-----------------------------|-----------------------|----------------|----------|----------|----------|
| Alfalfa                     | 20.8                  | 42.9           | 33.4     | 2.0      | 0.58     |
| Beet pulp                   | 10.0                  | 45.8           | 23.1     | 1.1      | 0.67     |
| Brewers grain               | 29.2                  | 47.4           | 22.2     | 5.2      | 0.78     |
| Citrus pulp                 | 6.9                   | 24.2           | 22.2     | 4.9      | 0.80     |
| Corn silage                 | 8.8                   | 45.0           | 28.1     | 3.2      | 0.66     |
| Cottonseed hulls            | 6.2                   | 85.0           | 64.9     | 2.5      | 0.22     |
| Cottonseed (whole)          | 23.5                  | 50.3           | 40.1     | 1.9      | 0.88     |
| Distillers grain w/solubles | 29.7                  | 38.8           | 19.7     | 10.0     | 0.89     |
| Hominy                      | 11.9                  | 21.1           | 6.2      | 4.2      | 0.85     |
| Sorghum silage              | 9.1                   | 60.7           | 38.7     | 2.9      | 0.50     |
| Soybean hulls               | 13.9                  | 60.3           | 44.6     | 2.7      | 0.66     |
| Wheat middlings             | 18.5                  | 36.7           | 12.1     | 4.5      | 0.76     |

National Research Council. 2001. Nutrient Requirements of Dairy Cattle. 7<sup>th</sup> rev. ed. National Academy of Science, Washington, D.C.

**Appendix 1.** Examples of forage-testing laboratories for analyzing nutrient values of forages and feeds. No endorsement is intended or implied.

A&L Great Lakes Laboratories Inc.  
3505 Conestoga Drive  
Fort Wayne, Ind. 46808  
Phone: 260-483-4759  
Fax: 260-483-5274  
<http://www.algreatlakes.com/index.php>

Cumberland Valley Analytical Services Inc.  
14515 Industry Drive  
Hagerstown, Md. 21742  
Phone: 1-800-282-7522  
Fax: 301-790-1981  
<http://www.foragelab.com/>

Dairy One  
730 Warren Road  
Ithaca, N.Y. 14850  
Phone: 1-800-496-3344 or 607-257-1272  
Fax: 607-257-6808  
<http://www.dairyone.com/>

Midwest Laboratories  
13611 B St.  
Omaha, Neb. 68144  
Phone: 402-334-7770  
Fax: 402-334-9121  
<https://www.midwestlabs.com/>

Rock River Laboratory Inc.  
710 Commerce Drive  
P.O. Box 169  
Watertown, Wis. 53094-0169  
Phone: 920-261-0446  
<http://www.rockriverlab.com/>

Sure-Tech Laboratories  
Feed Laboratory  
2435 Kentucky Ave., Building 9  
Indianapolis, Ind. 46221  
Phone: 1-800-266-7176  
Fax: 317-243-1527  
[SureTechFeedLab@landolakes.com](mailto:SureTechFeedLab@landolakes.com)

Apr 2013

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