Texas Dairy Matters

Higher Education Supporting the Industry

Environmental Repercussions of Drought

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Hot and dry weather conditions often result in reduced forage yields and lower forage quality. Although forage quality and yields are usually the focus for dairy producers during drought conditions, drought affects nutrient management decisions as well.

Most of the manure and nutrients are applied to fields either before the crop is planted or during early growth stages of plants. The rates of manure application are usually based on estimated yields for the upcoming growing season. If the expected yields are not met, the uptake and removal of nutrients from the soil will not be as great as expected.

In order to estimate if the nutrients applied to the soil were removed by the crop, multiply the yield of the crop by the nutrient content in the forage to calculate the nutrient removal of the crop. An example of the effects of reduced yields on nutrient removal is shown.

Nutrient Management Example

Scenario:

- 100 acre field of silage corn
- Expected dry matter yield of 4.2 tons/acre (12 wet tons/acre at 35% DM)
- Phosphorus content of 0.25% (DM basis)
- 2100 lbs of P were applied to the 100 acres to account for the expected phosphorus removal of 2100 lbs of P/100 acres
- Actual DM matter yield of 2.8 tons/acre (8 wet tons/acre at 35% DM)
- Calculated phosphorus removal of 1400 lbs of P/100 acres

Summary - An extra 700 lbs of P were applied to the crop and still remain in the field.

In the nutrient management example, drought conditions resulted in a build-up of nutrients in the soil due to lowered yields and reduced nutrient removal from the field. Account for the discrepancy in nutrient application and removal during the next growing season. Remember to apply a reduced amount of nutrients the following season because additional nutrients are already present in the soil.

Failing to account for unused nutrients results in a buildup of soil nutrients. Nutrient buildups are a special concern in areas where there are threshold levels for soil nutrients or there are increased risks of nutrients moving through the soil profile or into surface waters.