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## Forage Testing—A Key Decision Aid in 2008

Oklahoma producers find themselves out of their "comfort zone" as they go into the winter of 2008. Many have adequate forage supplies. However quality of the hay may be different than in the past. Because of low, or no fertilizer applications, and because custom hay crews were over-booked and later than usual, the grass hay quality likely is not as good as in previous years. In some spotty areas, the hay may have been soaked with a heavy rain while still on the field or in the windrow.

Forage analysis can be a useful tool to remove some of the mystery concerning the hay that producers will feed this winter. The high cost of protein and energy supplements are further fuel to this advice. Testing the grass hays this year for protein and energy content will help the producer design winter supplementation programs most appropriate for the forage supply that is available. It is hard to think of any year when forage testing was more

important.

There are several good methods of sampling hay for forage analysis. Most nutritionists would prefer to use a mechanical coring probe made specifically for this purpose. The coring probe is usually a stainless steel tube with a serrated, cutting edge. It is 1 inch in diameter and is designed to fit on a 1/2 inch drill or brace. Cordless drills make these tools quite mobile so that the hay bales to be tested do not have to be hauled to be near an electrical outlet. The hay samples are placed in paper or plastic bags for transfer to a forage testing laboratory. Cores are taken from several bales at random to obtain a representative sample to be analyzed.

Grab samples can also be obtained and tested. To receive the best information, grab several samples by hand from about 6 inches into the open side of the bale or the middle third of a small round bale.

Place all of the sample in the bag. Do not discard weeds or stems, just be-

cause they look undesirable. They are still part of the hay that you are offering to the livestock. Be certain to label the forage samples accurately and immediately, in order for the laboratory analysis to be correctly assigned to the proper hay piles or bales. Obviously the more samples that are sent to the laboratory for analysis, the more information can be gained. Just as obvious is the fact that as the number of samples increase, the cost of forage testing increases. Any of the potential nitrate accumulating hays should be tested for nitrate concentration.

Samples can be brought to the Pottawatomie County OSU Extension Center and then sent to Stillwater. Feel free to contact the office for prices and the test that will best fit your situation. There are other commercial laboratories available that also do an excellent job of forage analysis.

**Don't forget!! The Pottawatomie County Fair opens to the public on Thursday, September 4, at 5:00 p.m. and runs through Saturday, September 6th.**

# Sprayer Calibration Fundamentals

Since producers are making attempts to go through applicator recertification the thought about spraying and common questions makes this article timely rather than the actual practice itself.

## Quick Facts...

- Inaccurate pesticide application rate and improper spray patterns and droplet size can lead to the movement of pesticides from the targeted area and reduce pesticide effectiveness.
  - The first step in sprayer calibration is to determine the correct nozzle type and size.
  - Nozzle material is important in reducing inaccurate applications due to nozzle wear.
- Due to timeliness and effectiveness, chemical pesticide application has become a leading method of weed and insect control in U.S. agricultural production. The continued use of pesticides in the agricultural industry has led to concerns such as chemical drift and groundwater contamination.

## Nozzle Selection

The first step in sprayer calibration is to determine the correct nozzle type and size (flow rate). Flat-fan nozzles are used for broadcast spraying of most herbicides and some insecticides where a medium droplet size is needed. Flat-fan nozzles are used for banding herbicides. Flooding type and full cone nozzles used for pre-plant herbicides produce drift-resistant large droplets, and wide nozzle spacing can be used. Hollow cone nozzles produce

smaller droplets and are used to apply insecticides and contact herbicides that need to penetrate the canopy.

## Calibration Procedure

### Spray Rig Preparation

1. Thoroughly clean the spray rig. Check for signs of rust, leaks or other problems.
2. Determine the gallons needed per acre based on the recommended application volume from the pesticide label and the amount of weed or crop foliage to be covered.
3. Calculate a rough estimate of nozzle application rates based on the planned application speed and boom pressure.
4. Check all nozzles on the spray boom for signs of wear, spray pattern uniformity and nozzle size. A catch test should be done on all nozzles. Replace damaged and worn nozzles and nozzles of the wrong size for the desired application. Damaged screens and check valves can also affect nozzle operation.

### Half-fill the spray tank with water and go to the prepared field. One Way to Calibrate a Sprayer

1. Measure the ground speed of the rig with the sprayer implement in place. (Average the travel time of the tractor in seconds over 300 feet in the field for two separate passes.)
2. Calculate the ground speed.
3. Measure the distance in inches between spray nozzles on the boom.
4. Calculate the desired nozzle

output (ounces or gallons).

5. Catch one minute's worth of water from two nozzles at the operating pressure and determine average nozzle output.
6. Adjust the pump pressure or ground speed until the desired nozzle output is reached.
7. Spray a measured area of land with water and determine the amount of water that was used. Calculate the acreage covered with one tank of water and determine the gallon per acre application rate.
8. Determine the amount of pesticide to use per tank of spray mixture.
9. Fill the spray tank with pesticide and water.

Pesticide drift is a major concern. In addition to reducing effectiveness, pesticide drift can damage non-target areas. One method to decrease drift is to use a low volatile formulation that is less likely to volatilize and drift. Pesticide drift can also be controlled by reducing the number of small droplets emitted from the sprayer. Nozzle type, angle and orientation, boom height, and operating pressure can influence the production of drift-susceptible drops. A droplet of 100 microns in diameter can drift about 50 feet in a 3 mph breeze; a 10-micron droplet can drift 3,000 feet.

For further assistance, refer to OSU Fact Sheet BAE-1216.



## OSU Goat/Cattle Research Field Day

An OSU Goat/Cattle Research Field will be held on **Saturday, September 6th** in Bartlesville, OK.

The program will look at grazing goats and cattle together. They will look at the benefits, economics and land effects it will have on our rangeland.

A meal is sponsored and the program is from 9:30 a.m. until 2:00 p.m. R.S.V.P. by September 2nd at (918) 534-2216 and get directions.

## Horse Owners Symposium

The OSU Horse Owners Symposium is scheduled for **September 20th** in Stillwater. Topics this year will include eye problems, lameness related to shoeing, proper dental care, vaccine protocols and parasite control. The cost is \$35.00 per person, which includes a meal and is due by September 8th. Call the Pottawatomie County Extension Office to pre-register at (405) 273-7683.

## Cattle Producers Plan Meeting

The OSU Extension Center and the Pottawatomie County Cattle Producers Association will host a seminar on the new COOL legislation that goes into effect September 30. The legislation relates to labeling of beef products. Producers will need to start keeping some records on the cattle they produce. Dr. Darrel Peel, OSU State Extension Ag Economist, will discuss what will be needed to comply with the new law and what kind of records and system you might need.

The meeting is set for **September 23rd, beginning at 6:30 p.m.** in the **Tecumseh Ag Building** on the campus of Tecumseh High School. Your meal will be provided by First National Bank and Trust of Shawnee. Please R.S.V.P. to the OSU Extension Office, 273-7683, no later than 4:30 p.m. on **September 18th.**

## Predicting Time of Calving

One of the advantages of fall-calving compared to spring (late winter) calving is the pleasant weather that the cow calf operator finds at 2:00 AM when he or she goes out to check the heifers. The downside of fall calving is the fact that these cows and heifers are not being fed from the truck or hay feeder. In most years, they are getting plenty of nutrition from the standing forage in the pasture. Therefore, the rancher will have less influence on the time of day that the cow goes into labor. As has been documented many times, if the cows are fed late in the day, a higher percentage of calves will come during daylight hours.

Very precise records about the previous history of adult cows may give some help to that portion of the herd. Oregon State and Utah State Universities conducted an interesting study to determine whether individual beef cows display a repeatable pattern of calving time from year to year. Cows in this study ranged from 3 to 7 years of age and the number of calvings per cow ranged from 2 to 5, resulting in 523 parturitions for 201 individual cows. This data was gathered in late winter/spring calving seasons which began in late January and ended in late April. Cows were fed each day in late afternoon. Days were divided into 6 periods of 4 hours each. The percentage of cows calving within each period was: 6 AM – 10 AM, 34.2%; 10 AM – 2 PM, 21.2%; 2 PM – 6 PM, 29.8%; 6 PM – 10 PM, 8.4%; 10 PM – 2 AM, 4.4%; and 2 AM – 6 AM, 1.9%. By feeding late in the day, 85.2% of the calves came between 6 AM and 6 PM.

Average time of day of calving was determined for each cow. The difference between the individual's average and her calving time for each year was then calculated. The average difference for all cows was plus/minus 2.65 hours. Statistical analysis confirmed the average difference was significantly less than 3 hours. These results indicated that for this herd of cows, which was fed in late afternoon, the time that calving will occur may be predicted within about 2 to 3 hours based on the average time of day that a cow had previously calved. The authors noted, however, that alteration of feeding time could affect the predictability of calving time. Unfortunately, two-year olds do not have previous records to predict their calving time.

## Length of the Breeding Season

Breeding seasons vary from as short as 45 days to leaving bulls with the cows year round. Short breeding and calving seasons greatly simplify nutritional programs since most cows will be in similar stages of gestation or lactation. Observation of calving, health programs, castration, and weaning are easier to manage as well.

While high pregnancy rates are difficult with very short breeding seasons, most cows capable of conceiving should do so in a 90-day period. Longer breeding seasons, besides compounding nutritional and health management, can decrease weaning weights.

Late calves usually are weaned at younger ages than early calves. Weaning weights of late spring calves are further depressed by the poor quality of summer forage available when the calves are old enough to begin utilizing forage.

Management of year-round calving programs is difficult. Cows and calves must be gathered several times to administer vaccinations, wean, and work older calves.

Marketing is a challenge since calves are weaned each month. An efficient supplementation program is difficult because open cows, wet cows, early pregnant and late pregnant cows are run together. Most studies have shown that reproductive performance is actually better in herds using controlled breeding seasons.



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