Teff – A New Annual Forage Grass

Bruce Anderson
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Teff is an annual, hot weather cereal and hay crop originally from Ethiopia. It has a reputation for rapid seed germination and fast growth as well as being well adapted to dry climates. But it has virtually no tolerance for freezing temperatures. Thus, it needs to be planted between mid-May and early August in our region.

For most farms and ranches, teff is an alternative to growing foxtail millets like German and Siberian millet. Compared to millet, teff may be slightly finer stemmed and even faster developing, often starting to head in 50-60 days. As a single cutting, it probably won't yield any more than foxtail millet, but teff will regrow. This can be good or bad, depending on how you want it to fit into your crop rotation.

If you try some teff, you will discover it has very tiny seeds. It should be planted only 1/8- to 1/4-inch deep, so be careful if you use a drill. On tilled ground, a cultipacker seeder or even broadcasting probably works better than a drill.

In terms of forage quality, teff tends to contain more crude protein than millets. Its protein level is heavily influenced by nitrogen availability. It could be a good crop for recovering excess nitrates but might not do as well on low fertility soils.

Experience shows teff makes an excellent horse hay and also is well liked by cattle, sheep and other livestock. Don't gamble your entire farm on it, but teff might be worth a try.

Simplified Hand-Held Sprayer Calibration

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Pesticides must be applied according to label directions. The pesticide label always states a recommended dosage of chemical to apply to a given site for the control of a specific pest. By calibrating the sprayer, you can ensure the chemical application will be done according to label directions.

In order to apply the recommended amount of chemical through a sprayer, you need to know three things:

1) the quantity of total spray output being applied per unit of area, e.g., gallons per acre (GPA);
2) the formulation of the product; and
3) the recommended amount of product to apply per acre.

I recently came across a simplified method of calibrating hand-held sprayers whether they be backpack sprayers or powered wand sprayers (hand guns). I will list the steps required and then provide an example.

Steps

1) Measure and mark a square test area 18.5 feet by 18.5 feet.
2) Spray the test area with water in the manner you would normally when controlling the target pest and record the time in seconds to treat the test area.
3) Spray into a container for the same number of seconds (step 2) and measure the fluid ounces (fl-oz) caught.
4) The number of fl-oz caught in the container is equal to the gallons of spray per acre (GPA).
5) Determine the useful volume of the spray tank. Note: If using sprayer that uses compressed air to create pressure, note the "full" mark on the spray tank. Measure the volume of water needed to fill the sprayer to the full mark.
6) Divide the useful volume of the tank (step 5) by the spray output, GPA (step 4) to determine the decimal fraction of an acre covered by each tank of spray solution.
7) From the label, determine the volume of product to apply per acre.
8) Multiply the volume of product per acre (step 7) by the fractional acre covered per tank (step 6) to determine the amount of product to add per tank of spray.

Example

1) You have measured and marked a test area 18.5 feet by 18.5 feet.
2) You spray the test area and find it takes you 22 seconds.
3) You catch the output in a container for 22 seconds and measure 34 fluid ounces of water caught.
4) You, therefore, are spraying the equivalent of 34 gallons per acre.
5) Your backpack sprayer holds three gallons.
6) Each tank will cover 3 gallons/34 gallons/acre = 0.088 acre.
7) The product label recommends (32 fl-oz) of herbicide per acre.
8) You should add 32 fl-oz per acre x 0.088 acres per tank = 2.8 fl-oz per full spray tank.

Commercial Pesticide Applicator Initial Training, April 19

Commercial applicators are persons who apply restricted-use pesticides for any purpose on any property other than property owned or rented by the applicator or their employer or for hire or compensation. Commercial applicators shall also include any person who applies lawn care or structural pest control pesticides whether restricted- or general-use to property of another person. Public employees (employed by a town, county, state) applying mosquito control pesticides whether restricted- or general-use, must also hold a commercial or non-commercial certification.

To become licensed initially as a commercial applicator, one must pass a written examination in the general standards category and one or more additional categories. A commercial license is good for three years. Once licensed in a category, you can maintain commercial certification by attending a re-certification training session or by passing a written examination.

UNL Extension will offer an Initial Commercial Certification Training Session on Thursday, April 19 at the Lancaster Extension Education Center, 444 Cherrycreek Road, Lincoln. The general standards session will begin at 9 a.m. and other categories at 1 p.m. or 3 p.m.

Call the UNL Pesticide Education office at 472-1632 to register for a session. The training fee is $30.Commercial applicators meeting the requirements for certification will receive an invoice from the Nebraska Department of Agriculture for $90 for the license fee.

It is highly recommended you obtain and review written study materials prior to attending the training session. This will greatly improve your chances of passing the written examination. Study materials for all commercial categories may be purchased from the pesticide education office, 101 Natural Resources Hall on East Campus, 472-1632 or materials can be purchased on the UNL Pesticide Education Web site at http://pested.unl.edu

Cost of Pumping Water for Domestic and Acreage Needs

Tom Dorn
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Question: "How much does it cost to pump water with our domestic well?"
Note: This discussion is for electricity cost only and does not include an estimate of depreciation and repairs resulting from use of the pumping equipment.

Answer: The horsepower and electricity required to pump water depends on four factors:

1. The distance the water must be lifted from the pumping water level in the well to the soil surface (lift component).
2. The pressure in the distribution system (pressure component).
3. The volume of water pumped per minute, gallons per minute (GPM).
4. The efficiency of the pump and motor.

Note: The lift component and the pressure component combine to make up the total head the pump is working against. Head is expressed in feet. Each PSI of system pressure the pump must produce is equivalent to lifting water an extra 2.31 feet.

Total head (ft) = lift (ft) + PSI x 2.31 ft/PSI

Let's look at the example of a domestic well pumping 10 gallons per minute while lifting water from 125 feet pumping depth and producing 45 PSI pressure in the distribution system.

Water horsepower (the useful work imparted to the water) is computed as follows:

Water horsepower (WHP) = GPM x Total head (ft)/3960

WHP = 10 GPM x (125 ft + 45 x 2.31)/3960

WHP = 10 x (125 + 289)/3960

WHP = 10 x 414/3960

WHP = 1.05

If we assume the pump is 75 percent efficient, the motor driving the pump must produce 1.05/0.75 = 1.4 horsepower to drive the pump. Assuming the single phase (220 volt) motor is 70 percent efficient, the pump motor consumes 1.07 kWh of electricity for each horsepower-hour. Therefore, we would expect this pump to use 1.07 kWh/hp x 1.4hp = 1.5 kWh for each hour of operation.

A family of four will use about 250 gallons of water per day (91,250 gallons per year) for domestic uses.

This pump would have to run 9,125 minutes or 152 hours a year to supply domestic uses. Total annual electrical use for domestic use is 152 hours x 1.5 kWh/hour = 228 kWh. At $0.09 per kWh the annual cost for pumping water for the household would be $20.52.

If the family also irrigates a 10,000 square foot (0.23 acre) lawn an average of 0.75 inch per week from May 1 through September 30, add 102,750 gallons for the lawn, making the total water used on the acreage 194,000 gallons per year. The electrical cost would be 323 hours x 1.5 kWh/hour = 485 kWh x $0.09 per kWh = $43.65.

Question: What should a landowner charge for pumping drinking water for cattle on pasture?

Answer: In the summer months, cows nursing a calf require about 22 gallons of water per day. Each cow will drink about 22 x 31 = 680 gallons of water per month.

The pump described above would need to run 68 minutes = 1.13 hours per month to pump the water needs of each nursing cow. The electricity usage would be 1.74 kWh x 1.13 hours = 2 kWh per nursing cow per month. At $0.09 per kWh the electricity cost would be about $0.18 per month per cow.