

# EXPERIENCES WITH "TEFF" (SUMMER LOVE GRASS) IN KENTUCKY

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## Reports on the performance of Teff Hay in 2005 - Ken Rykbost

Following publicity about the Klamath Experiment Station evaluation of Teff as an annual forage in 2003 and 2004, requests for more information and seed sources kept KES staff busy for weeks last spring. We received over 300 contacts from 41 states. Local seed salesman Laverne Hankins processed over 150 orders for more than 5 tons of seed. Those who received seed were sent a questionnaire this fall in hopes that we would get feedback on growers experience with this new forage species. To date we have received responses from about 15 growers.

Results have varied widely as expected. Eastern U.S. producers experienced drought through much of the year, however, there are several positive replies. A Western Kentucky University study achieved over 6 tons/acre in 3 cuttings. In South Carolina, a farmer produced over 4 tons/acre in two cuttings and reported excellent acceptance by his customers including dairy goat, horse, and sheep owners. On the western border of Ohio, a farmer took 5 cuttings for a total of 5.4 tons/acre. In Northern New York, an extension agent conducted trials following different crop sequences. With a planting date of July 21, the crop produced 4.6 tons/acre in 2 cuttings. Quality tests indicated good quality for dairy use. A Delaware planting produced 4.5 tons/acre in 2 cuttings. A Missouri farmer produced 2.5 tons/acre in 2 cuttings with very little rainfall throughout the summer.

The only negative feedback from the east was one report of nitrate levels at 1 % in a test in North Carolina. Several producers from the east indicated that disease problems with cool season grasses, including orchardgrass, have become serious and no disease in Teff may make it an attractive alternative forage in their areas. A couple of reports of slow germination due to drought conditions noted good production when rains 2-3 weeks after planting brought on germination, emergence, and good crop development.

Western U.S. reports included a producer in Scott Valley in northern California who admitted poor seed bed preparation, but about 4 tons/acre production in a Teff/Millet blend. He and several others have confirmed our belief that seed bed preparation should be done well. A southern California producer achieved 5 tons/acre in 2 cuttings and reported excellent acceptance by his horse owner customers. Two Klamath County, Oregon fields produced about 3 tons/acre in a first cutting but neither attempted to take a second cutting. A Wyoming farmer produced 2 tons/acre in one cutting and grazed the aftermath, getting 6 weeks of feed for one cow/calf and one

horse per acre. He flood irrigated only 5 times after planting. Hay growers in the mid-Columbia Basin in Washington produced about 700 acres of Teff in 2005 with favorable results, including reports of 6 tons/acre in 3 cuttings. They expect to expand production significantly in 2006 and hope to develop an export market for Teff.

Several reports include quality analysis data. Crude protein levels range from about 12-18 %. RFV levels range from 80s to 120s. The New York study reported RFQ as high as 154 in one test. Several reports of potassium at 2.5 to 3.0 percent may represent a potential problem. We have had some dairymen indicate a concern for dry cows at this level. Others, including the NY extension agent, indicate they are not concerned at that level and often encounter higher levels in clover and other forages.

Several of the replies received indicated some problems in cutting or curing Teff compared to their standard crops. Disc Bines pulled plants in a couple of cases and a few reported needing an extra day or two for curing compared to other species. We anticipated the problem of plants being pulled up by the roots as we have experienced this when plants have lodged. However, the Wyoming farmer who grazed the aftermath did not indicate a problem with livestock pulling plants up. His frugal irrigation management (only 5 irrigations) may have resulted in development of a better root system compared with our frequent irrigations.

Tests were conducted at the Klamath, Ontario, and Medford experiment stations in 2005 to evaluate irrigation and nitrogen rate responses. In all sites, there was no economic advantage for N rates of about 200 lb N/acre over a 100 lb N/acre rate, either in yield or quality. In most cases high N increased crude protein levels by 3-4 % but had little affect on RFV or RFQ. Typical values for ADF were 32-36 at Klamath, 34-40 at Ontario and 39-41 at Medford. NDF values were 53-60 at Klamath, 67-71 at Medford, and 56-63 at Ontario.

Irrigation response was measured using a line source irrigation system following standard irrigation practices for crop establishment. At Klamath, irrigation at 3 distances from the line source was estimated at 18, 8, and 0 inches for the season following establishment. Very little production occurred at the farthest distance (about 40 feet) from the irrigation line. At both Medford and Klamath Falls, yields were only slightly lower (.5 tons/acre or less) at the intermediate irrigation rate. Some carryover of moisture from the establishment period was partly responsible.

At Klamath Falls we also evaluated seeding rates of 3 and 6 lbs seed/acre in 2005. There were no measurable yield differences between rates. Under good seed bed and soil moisture conditions, a seeding rate of 3 lbs/acre is probably very adequate. Under less than ideal conditions, higher seeding rates may offset other limitations and provide economic benefits, particularly as seed costs are minimal compared with crops that require 15 to 20 lb/acre seeding rates.

## **Summary**

We will continue to seek input from around the country on the performance of Teff under a wide range of climate, soil, and management conditions. Early seed orders for 2006 currently exceed 60 % of 2005 sales for our local seed salesman. Seed sales from Idaho are apparently also significant but we do not have any information on that volume except to note that Washington crops used Idaho seed primarily. Based on the limited feedback received to date, it would appear that the overall reaction to Teff hay has been very positive and it may become an important forage species in several areas around the country.