



Fall 2003, No. 7

NUTRIENT INPUTS FOR COOL SEASON GRASS PRODUCTION

Cool season grass species have the potential to provide relatively high quality forage for the fall and spring months. The digestibility of dry matter of cool season grasses is generally higher than warm season grasses, and annuals tend to be higher than perennials. The yield and quality of cool season grasses can be significantly affected by nutrient inputs, hence growers are well advised to carefully evaluate fertility programs for cool season grass production going into the fall.

While a comprehensive overview of cool season grass fertilization is not possible here, following are a few examples of how production of some species can be affected by nutrient inputs.

- **A 3-year annual ryegrass research project in southwestern Texas has shown that a balance between nitrogen and phosphorus fertilizer inputs is critical for optimal forage production.** The study area was irrigated and the initial soil test phosphorus level was in the “medium” range. When averaged over 3 years at the 240 pound nitrogen rate, phosphorus fertilizer (80 pounds of P_2O_5 per acre) increased forage yield by more than 4,500 pounds per acre...an increase of over 180% compared to nitrogen alone. Phosphorus fertilizer also increased nitrogen and water use efficiency, regardless of nitrogen rate. Protein was affected by nitrogen fertilization. In year two where 80 pounds of P_2O_5 per acre was applied, nitrogen fertilizer increased protein from 12 to 23%. Estimated profit from stocker gain was calculated for each fertilizer treatment in the study. Optimal nitrogen rate varied from 240 to 360 pounds per acre, depending on the year. Optimal phosphorus rate was 80 pounds P_2O_5 per acre. In year two where 240 pounds of nitrogen was applied, phosphorus (80 pounds P_2O_5 per acre) increased estimated profit by \$226 per acre.

- **Bromegrass (perennial) research in Kansas has demonstrated the importance of nutrient inputs in forage production.** When averaged over 31 site years, nitrogen alone (120 pounds per acre) increased forage yield by about 1,400 pounds per acre. When phosphorus fertilizer (30 pounds P_2O_5 per acre) was added, yield increased by almost 1,000 pounds per acre, thus demonstrating the importance of balanced nutrient input. The average net return from the phosphorus fertilizer was as high as \$16.25 per acre.

Another Kansas study investigated the effect of sulfur fertilization on bromegrass yield. When averaged over 9 site years, the application of 15 pounds of sulfur per acre resulted in an 11% increase in forage yield.

- **Winter wheat is a very important cool season annual forage crop in the southern plains of the U.S.** Several million acres of wheat are used for grazing in Texas, Oklahoma, and Kansas each year. An irrigated winter wheat forage study in the Texas panhandle investigated the effect of several levels of nitrogen and phosphorus fertility inputs on forage yield. A simple profit analysis based on stocker gain revealed that the optimum rates were 160 pounds of nitrogen and 40 pounds of P_2O_5 per acre. Where 160 pounds of nitrogen per acre was applied, 40 pounds P_2O_5 increased yield by 68%, and increased profit by about \$12 per acre.

Cool season grasses can provide excellent forage for grazing and hay production. Both yield and quality can be dramatically impacted by nutrient inputs. Soil tests should be used as guidelines for nutrient application. However, factors such as experience, nutrient removal, and local information can also be useful in developing nutrient management programs for cool season grasses.

—WMS—

For more information, contact Dr. W.M. (Mike) Stewart, Great Plains Director, PPI, P.O. Box 6827, Lubbock, TX 79493. Phone: (806) 795-3252. E-mail: mstewart@ppi-far.org.