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From Scientific Staff of the
International Plant Nutrition Institute (IPNI)
3500 Parkway Lane, Suite 550
Norcross, Georgia 30092-2806 USA
Phone: 770-447-0335 Fax: 770-448-0439
E-mail: info@ipni.net Website: www.ipni.net

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NUTRIENT INPUTS AND COOL SEASON FORAGE GRASSES

Cool season grass species can provide high quality forage and pasture 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 it is a good idea to carefully evaluate fertility programs for these systems going into the fall. This is especially true with today's fertilizer prices, in that we need to do everything possible to assure application of the appropriate balance and rates of nutrients to achieve the desired goal.

It is well known that N fertilizer can dramatically affect forage grass yield. For example, when averaged over 31 site-years, N alone (120 lb N/A) increased bromegrass forage yield by about 1,400 lb/A in a long-term Kansas study. Nitrogen nutrition also influences forage quality. The primary effect of N on forage quality is usually that of increased crude protein. Up to a point, N application increases protein where other nutrients are not limiting. A good example of this was seen in an irrigated ryegrass study in Texas where N fertilizer increased crude protein from 12 to 23%.

Higher N fertilizer prices make mixing legumes in cool season grass pasture an increasingly attractive option. Legumes are not a cure-all, but with proper management they can certainly enhance forage production systems and provide additional N. Local extension and seed industry professionals can help in identifying suitable species and establishment practices for specific environments.

The application of P can also significantly impact cool season grass yield. In the above mentioned ryegrass study, the application of P fertilizer increased yield by over 180%. Phosphorus is most often associated with early root development, but it also affects winter-hardiness, disease resistance, drought tolerance, early growth, and seedling vigor. It can also impact N and water use efficiency. Winter forages usually have higher P content than summer forages. Phosphorus application can increase P tissue levels, thereby impacting forage mineral quality.

The K level in cool season forage tissue is about the same as N. Where soil levels are low, K can dramatically improve pasture and forage crop performance. Other nutrients may also be needed for optimal cool season grass nutrition. Deficiency of S is not uncommon in cool season production. Yields may be increased and forage digestibility may be enhanced by application of S where deficient.

Finally, remember that nutrient release from organic matter in soils tends to be reduced during cool season production because of reduced soil temperatures, thus increasing the probability of need for input from external sources. A good soil test is usually a good foundation upon which to make nutrient input decisions. Complete and balanced fertility is key to producing optimal yielding and high quality winter pasture and forages.

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Dr. W.M. (Mike) Stewart, Southern and Central Great Plains Director, IPNI, 2423 Rogers Key, San Antonio, TX 78258. Phone: (210) 764-1588. E-mail: mstewart@ipni.net.

Abbbreviations in this article: N = nitrogen; P = phosphorus; K = potassium; S = sulfur.