Sustainable livestock systems are being developed that support wildlife populations in conjunction with profitable agricultural systems. Grazing systems are incorporating native plant species to provide an appropriate habitat for wild birds as well as forages for beef cattle. The objective of this study is to quantify the nutritional qualities of native Missouri grasses harvested during the summer. The nutritional value of 11 species was evaluated. Samples of each species were taken at a local farm every 28 days from May to September 2004. Forage samples were weighed and then dried for 48 hours in a 55°C forced air oven. Dried samples were ground to pass through a 2mm screen. The samples were then analyzed for Acid Detergent Fiber (ADF), Neutral Detergent Fiber (NDF), and crude protein (CP). At the initial sampling, all forages contained greater than 6.8% CP which would meet the maintenance nutritional needs of beef cattle. As the summer progressed, Canada Wildrye, Virginia Wildrye, Compass Plant, Indian Grass, Little Bluestem, and Sawtoothed Sunflower had inadequate levels of protein. However, the regrowth of these forages had higher CP levels than the first cuttings at a given sampling period. ADF levels increased over the summer from an across species average of 31.36% (15.45% to 40.85% range) at the first sampling to 47.02% at the final sampling (39.60% to 53.25% range). As ADF levels increase, forage digestibility decreases. NDF levels showed a similar trend. The average across all species changed from 57.65% (19.27% to 83.23% range) at the first sampling to 68.93% (47.86% to 83.73% range) at the final sampling. The NDF increase causes a decline in intake of the forages over the summer. This decline in intake occurs simultaneously to the decline in the nutrient content of the forages. This study shows that nutritional supplements fed to beef cattle must be adjusted during the summer to match the changes in nutrient content of native grasses. Furthermore, management strategies that keep the forage in a more vegetative stage will improve the nutritional value of the forages during the summer grazing season. To successfully incorporate native Missouri plant species into a profitable and environmentally sustainable forage based cattle operation, grazing and supplementation strategies must be adjusted to optimize cattle performance.