Forage Yield Responses Over Two Years Following Hog Manure Application to Range and Pasture

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Hog production in Alberta is expanding in geographic scope within the province, frequently into semiarid regions where cultivated lands are unavailable for manure application. Instead, native rangelands and tame pastures are the most readily available sinks for manure disposal. Little is known, however, about the response of these vegetation types to hog manure application, particularly rangelands, which are often considered unresponsive to amendments. Research initiated in the fall of 1998 examined the agronomic response of 4 plant communities to liquid hog manure applied at 2 seasons (spring and fall), 2 methods (coulter injection and surface broadcast), and 5 rates of application (10, 20, 40, 80, and 160 kg/ha-NH3). Tame pastures included a Crested Wheatgrass and Meadow Brome-Alfalfa type, while the native communities were representative of moist Fescue Grassland and a dry Mixedgrass Prairie community. In the year following application, above normal precipitation aided in producing significant increases in grass biomass on all sites but the brome location. At the latter site, increases in grass yield appeared to occur with manure application up to 40 kg/ha-NH3, but coincided with reduced alfalfa yield. Crude protein yield (CPY; forage yield x crude protein) responded positively at all 4 research locations in 1999, increasingly linearly with manure application. Despite drought during the summer of 2000, 3 of the 4 locations (all but the Fescue Brassland) continued to demonstrate greater CPY under increasing manure application.

Implications

The results of this research indicate that forage production is aided by the application of manure, with residual effects present even into drought years. This highlights the potential for native rangeland and tame pasture to be successfully integrated with hog production in semiarid regions.