Millet Management Considerations in Mississippi Wetlands

Heath M. Hagy, *Department of Wildlife, Fisheries, and Aquaculture, Mississippi State University, MS 39762*

Richard M. Kaminski, *Department of Wildlife, Fisheries, and Aquaculture, Mississippi State University, MS 39762*

Alicia J. Wiseman, *Ducks Unlimited, South Louisiana Field Station, Lafayette, LA 70506*

Abstract: Millets (*Echinochloa* spp.) are native to North America, Eurasia, and Africa and are considered an economically important weed because of control costs. Millets prolifically produce seeds that are desirable to wildlife, especially waterfowl. Research indicates that post-harvest waste grain is often depleted or decomposed before waterfowl arrive in winter, thus farmers and wildlife managers sometimes seed crop stubble, mud flats, and moist-soil wetlands with commercially available Japanese millet (*Echinochloa frumentaceae*) or manage for moist-soil vegetation, including natural millets (e.g., barnyardgrass; *Echinochloa crus-galli*), to increase food for wintering waterfowl. However, millet not consumed by waterfowl or decomposed during winter may require control or compete with crops in spring and summer. We investigated the winter decomposition of barnyardgrass and Japanese millet in moist-soil wetlands in Mississippi. We placed 100 g (dry mass) of Japanese millet and barnyardgrass in individual 30 x 30-cm porous (~400 µm) fiberglass screen envelopes. We selected three wetlands in Mississippi where vegetation had been partially mowed, disked, or not manipulated (control) in each during late fall and placed five bags in each treatment and wetland combination. We placed the millet underwater in wetlands immediately after flooding (i.e., late November) and secured each envelope using single sheet of wire mesh. To address the assumption that drying seeds before placing them in wetlands did not increase the susceptibility to decomposition, we similarly placed envelopes of Japanese millet in two wetlands of similar treatments. We placed five envelopes in each treatment containing 100 g dry mass Japanese millet and five envelopes containing 100 g of undried seed. We dried 15 100-g samples of Japanese millet to constant mass to determine moisture content of undried millet. We retrieved all envelopes after 100 days of inundation (10–18 cm) when waterfowl began to depart wetlands and managers began dewatering. Decomposition of Japanese millet was greater than barnyardgrass ($\bar{x}$ = 17.4%); however, we did not detect an effect of treatment on decomposition. After 100 days of inundation, 54.4% (SE = 1.7%) and 65.9% (SE = 0.9%) of Japanese millet and barnyardgrass seed remained, respectively. Japanese millet dried before inundation decomposed less ($\bar{x}$ = 16%, SE = 1.6%) than undried Japanese millet, but there was no treatment effect. Although decomposition of Japanese millet exceeded that of barnyardgrass, greater than 50% remained after 100 days of inundation in winter. Therefore, subsequent spring or summer germination of seeds not lost to decomposition or depletion by waterfowl may be a consideration for farmers who manage post-harvest crop fields to promote barnyardgrass or plant Japanese millet. We encourage farmers to manage less-productive low-lying areas, field margins, and field borders for production of millet and moist-soil vegetation.

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