Herbicide Control and Revegetation of Medusahead Sites in Northeastern California

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The invasion of non-native annual grasses is considered by many private and public range managers to be one of the most serious pest problems in the West. These species dominate more than 130 million acres throughout California, Idaho, Oregon, Nevada, Washington, and Utah and continue to rapidly spread. Medusahead dramatically reduces plant diversity and richness, shrinks wildlife habitat, decreases livestock forage by 50-80%, and promotes out-of-control wildfires. Annual grass invasion is also a major obstacle for successful implementation of several Great Basin range projects including sage grouse habitat restoration, juniper removal, wildfire rehabilitation, and improving rangeland carry capacity. This project evaluated herbicide efficacy for medusahead control in big sagebrush rangeland. It also examined when native and introduced perennial grasses common to Northeastern California can be re-seeded following herbicide application.

Herbicide Efficacy for Medusahead Control

Fall applications of Matrix at rates ≥ 4 oz/A, Landmark XP at 1 oz/A, Oust at 1 oz/A, and Plateau at 6 oz/A gave >95% control of medusahead and Japanese brome. Fall (pre-emergence) application of Matrix provided better medusahead control compared to early spring (post-emergence) application. Low rates of glyphosate (Roundup Original 4L) at rates ≤ 16 oz/A applied in early spring (post-emergence) failed to give > 80% control of medusahead, but in other trials where the site was tilled before herbicide application, 1 qt/A of Roundup Original applied in early spring gave 100% control. Matrix at rates ≤ 6 oz/A and Plateau at 6 oz/A were safe on established squirreltail and California brome. Landmark XP, Oust, and Roundup at 16 oz/A caused > 50% injury to these perennial grasses.

Perennial Grass Plant-Black Safety Following Herbicide Application

Matrix, Landmark XP, and Plateau reduced perennial grass cover and yield compared to the untreated control when grasses were spring-seeded 4 months after winter herbicide application. The herbicides' reduction in spring-seeded grass yield differed between grass species and ranged from 34 to 84% for Matrix at 4 oz/A, 65 to 98% for Matrix at 8 oz/A, and 50% to 97% for Plateau at 6 oz/A five months after planting. None of the spring-seeded grass species established in plots treated with Landmark XP at 1.5 oz/A. Delaying perennial grass seeding a full growing season after herbicide treatment increased herbicide safety. When grasses were fall-seeded 8 months after herbicide application, Matrix at 4 and 8 oz/A and Plateau at 6 oz/A did not decrease seedling grass cover compared to the untreated control. Landmark XP at 1.5 oz/A reduced fall-seeded grass cover compared to the untreated control for all grass species,

but Landmark's injury to fall-seeded perennial grasses was less compared to the earlier spring seeding. It is important to note that Landmark XP at 1.5 oz/A is a high rate, and Landmark XP rates between 0.75 and 1.0 oz/A gave effective annual grass control in previous trials.