

An Optimization Model for Sustainable Long-Term Control of Sericea Lespedeza (*Lespedeza cuneata*) Invasion in the Great Plains

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Native grasslands in the Great Plains are threatened by the spread of sericea lespedeza (*Lespedeza cuneata*), an introduced legume from Asia, which can damage forage or hay production resulting in substantial economic loss for land managers. Therefore, policy makers and land managers need to find effective decision strategies for managing sericea lespedeza and reducing the related costs. In this research, we develop a dynamic nonlinear optimization model to find economically efficient strategies and provide insights for controlling the invasion of sericea lespedeza. Using empirical data, the economic loss arising from invasion of sericea lespedeza is minimized over time and optimal management strategies are presented for various cases.