Costs and Losses Imposed on California Ranchers by Yellow Starthistle

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Abstract

While the significant ecosystem damage caused by invasive weeds has been well documented, the economic consequences of specific invasive weed species are poorly understood. Yellow starthistle (*Centaurea solstitialis* L., hereafter YST) is the most widespread noncrop weed in California, resulting in serious damage to forage on natural range and improved pasture. A survey was administered to California cattle ranchers to investigate YST infestation rates, loss of forage quantity and value, and control or eradication efforts. The results were used to estimate countywide losses and costs for 3 focus counties, as well as statewide losses/costs, due to YST in California. Total losses of livestock forage value due to YST on private land for the state of California are estimated at $7.65 million per year, with ranchers' out-of-pocket expenditures on YST control amounting to $9.45 million per year. Together, these amount to the equivalent of 6%–7% of the total annual harvested pasture value for the state. Therefore, while the impacts are relatively small within the statewide total agricultural production system, losses and costs due to YST infestation do constrain California's livestock grazing sector.

Resumen

Mientras que el daño causado a los ecosistemas por las malezas invasoras ha sido bien documentado, las consecuencias económicas es especies especificas de maleza invasoras son pobremente entendidos. El "Yellow starthistle" (*Centaurea solstitialis* L., de aquí en delante YST) es la maleza de terrenos no cultivados más ampliamente dispersa en California, que produce un serio daño al forraje de los pastizales nativos y praderas mejoradas. Se aplicó una entrevista a los ganaderos de bovinos de carne de California para investigar las tasas de infestación de YST, las pérdidas en la cantidad de forraje y su valor y los esfuerzos de control o erradicación. Los resultados se usaron para estimar las pérdidas a nivel de municipal y los costos en tres municipalidades objetivo, así como las perdidas/costos a nivel estatal resultantes del YST en California. Las pérdidas totales de forraje de valor para el ganado de carne por el YST en terrenos privados del estado de California son estimadas en $7.65 millones por año, y con los gastos realizados por los ganaderos para controlar el YST esta cantidad asciende a $9.45 millones por año. En conjunto, estas cantidades equivalen al 6%–7% de valor total anual del forraje cosechado en el estado. Por lo tanto, mientras que los impactos son relativamente pequeños dentro del sistema de producción agrícola estatal, las pérdidas y costos debidos a la infestación de YST constriñen el sector ganadero de California.

Key Words: forage values, invasive weed economics, invasive weeds, nonnative species

INTRODUCTION

Nonindigenous invasive weed species can have substantial impacts on forage quantity and quality, increasing management costs, imposing land use changes, and thereby reducing ranch profitability. Environmental damage and losses due to the approximately 50 000 nonindigenous species in the United States have been estimated at more than $136 billion per year, with $6 billion due to weeds in pastures (Pimentel et al. 2000). Although the impacts of invasive weeds on livestock grazing are significant, relatively few studies have estimated the economic effects of specific weed species on the ranching sector. Notable exceptions include studies of leafy spurge (*Euphorbia esula* L.) (Leistritz et al. 1992; Leitch et al. 1996) and various species of knapweed (*Centaurea diffusa* Lam., *C. maculosa* Lam., and *Acroptilon repens* L.; Hirsch and Leitch 1996).

Yellow starthistle (*Centaurea solstitialis* L., hereafter YST), a Eurasian native believed to have been introduced in the mid-19th century in imported contaminated alfalfa seed (DiTomaso and Gerlach 2000), is the most widely distributed noncrop weed in California (DiTomaso et al. 2000). It may now be found in much of the United States, although by far the heaviest infestations, in addition to California, are in other western states, including Idaho, Oregon, and Washington (USGS 2005; USDA 2006). Surveys of county agricultural commissioners reveal that the area in California infested by YST has increased significantly over the past 5 decades, from 1.2 million acres in 1958 to 1.9 million acres in 1965, 7.9 million acres in 1985, and 14.3 million acres in 2002 (Maddox and Mayfield 1985; Pitcairn et al. 2004).

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