

# Increasing the Productivity of Range and Pastures: An Integrated Pest Management Strategy for Leafy Spurge

The spread and infestation levels of leafy spurge are difficult to manage and control. One Integrated Pest Management (IPM) strategy that is often overlooked by landowners and managers is to increase the competitiveness of the productive biomass of the range.

The productive biomass of range and pastures is the collection of all the plant material that can be used as a food source for grazing livestock. Various species that make up the productive biomass act as competitors for spurge. The productive biomass also provides vegetative cover and litter that help decrease the amount of bare ground. Bare ground is more easily disturbed and more susceptible to infestations of spurge and other types of undesirable plant species.

The IPM strategy to increase the productive biomass is a combination of fertilizer application with mechanical, chemical and grazing controls. Landowners and managers should plan on three to five years of planned management to minimize the soil seed bank and reduce reproducing vegetative plant parts.

The following combination of fertilizer application and mechanical and herbicide controls is a guideline for this IPM strategy:

- *Spring fertilization.* Spring fertilization helps desirable and non-desirable plants increase their overall growth and competitiveness due to their shallow-rooted systems. A more shallow-rooted system helps increase the efficacy of all of the controls, particularly chemical controls.
- *Mowing.* Mowing in late June is aimed at removing any spurge top growth and discouraging seed set. Mowing may also cause the main stems of the spurge plants to shift their system of feeder roots closer to the soil surface – therefore further increasing the susceptibility of these plants to herbicide applications.
- *Summer herbicide application.*
- *Fall herbicide application.* A fall-applied herbicide is used to control and weaken any re-growth of the spurge plants.



## Return on Investment for Spring Fertilization and Herbicide Application

Spring fertilization and herbicide application can be significant expenses to landowners. However, over the long term, the combination of fertilizer, mowing and herbicide application is a viable option when the increase in hay or grazing capacity is taken into consideration.

## The Economic Analysis of Spring Fertilization and Herbicide Application

The following analysis is based on hay land that is heavily infested (> 25% plant population) with spurge with little or no productive hay. Using costs from 2006 the following analysis provides the potential return on investment of spring fertilization and herbicide application.



	Example 1	Example 2
	Fall applied herbicide costs: \$21.75 / acre  Nitrogen fertilizer costs: (heavy rate) \$61.47 / acre	Fall applied herbicide costs: \$21.75 / acre  Nitrogen fertilizer costs: (moderate to light rate) \$21.00 / acre
Projected Cost	Fall herbicide – 21.75/acre 46-0-0 – 61.47/acre Total \$ 83.22/acre	Fall herbicide – 21.75/acre 46-0-0 – 21.00/acre Total \$42.75/acre
Projected Revenue (using 1.5 tonnes hay production /ac)	\$66.12/acre	\$66.12/acre
Profit (+) or Loss (-)	(-) \$17.10/acre	(+) \$23.37/acre
Projected Revenue (using 1.75 tonnes/ac)	\$77.14/acre	\$77.14/acre
Profit (+) or Loss (-)	(-) \$6.08/acre	(+) \$34.39/acre
Projected Revenue (using 2.00 tonnes/ac)	\$88.16/acre	\$88.16/acre
Profit (+) or Loss (-)	(+) \$4.94/acre	(+) \$45.41/acre

This economic analysis has been prepared for discussion purposes only. Landowners and managers should analyze their return on investment based on their own situation including levels of infestation and land use practices.