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## **Leafy spurge: A rangeland invader (Summary of a slide-tape script)**

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Hanging may have been a solution to earlier day range thieves but today leafy spurge, a tougher range thief, is immune to hanging. It occupies 2.5 million acres of rangeland across the U.S. and Canada. Acreages of 860,000 are now reported in North Dakota with increases of 45,000 acres a year being reported. Other states reporting leafy spurge include: Minnesota - 800,000 acres; Montana - 600,000 acres; Nebraska - 105,000 acres; South Dakota - 60,000 acres; and Wyoming - 49,000 acres.

Even though Wyoming has only 49,000 acres, every county in the state has some infested acres. Counties in northeastern Wyoming have the largest number of acres infested. Wyoming had only a few isolated patches 25 years ago, even though controls were limited then we can look back today and see an early control program could have saved the people of the state millions of dollars.

In 1978, Wyoming passed the Leafy Spurge Control Act in the state legislature appropriating 1.4 million dollars for control that year and approximately the same amount each year since then.

At the present time, 3700 cooperators have initially treated 48,551 acres and retreated 80,409 acres in Wyoming. Total costs in Wyoming since 1978 have been greater than \$9,000,000 since this program started. In 1984, total costs of the program were 1.48 million dollars or \$72.34 per acre treated. Factors limiting control of leafy spurge in Wyoming are high costs and lack of accessibility of the spurge to be treated.

Have we always had leafy spurge? No, the plant was originally native to Europe but was accidentally introduced in South Dakota about 1827 by Mennonite farmers.

The plant should be identified and watched to prevent and control infestations while they are small. The plant has heart or kidney shaped upper leaves with showy yellow bracts below the seed capsules. Leaves are lance shaped and individually connected to a long, slender stem. The plant has white latex milky sap throughout the growing season. It has tremendous spreading capabilities with seed and extensive root systems. It will grow on lowland wet sites or high altitude dry sites. Seed is produced in a three-valved capsule that explodes sending seed up to 15 feet when ripe. Thirty-four hundred pounds of seed can be produced in a single year with viability lasting up to seven years. Seed is spread through waterways and animals and birds. Numerous pink buds reproduce a plant from depths up to five feet.

Rangeland infested with leafy spurge will only produce one-third what it would before the infestation. Cattle will not graze in infested areas because of the bitter flavor of

spurge. One example of cattle carrying capacity reductions might be Montana. An area of 600,000 acres would run about 20,000 cows before the spurge infestation but would be limited to 6,600 cows where fields are covered with leafy spurge. This represents a loss to the people of Montana of between three and four million dollars annually. In 1982, North Dakota reported a 12.9 million dollar loss to the state economy caused by leafy spurge.

Many people are working to overcome the problem. Pathologists are studying disease introductions that might control the plant. Animal scientists have used sheep to partially control the problem, weed scientists are studying chemical controls while entomologists are working on biological control methods.

Insect species introduced have included the cerambycid beetle and the leafy spurge hawkmoth. Even though they serve as valuable controls in their native European habitats, it has been found that the subspecies of spurge in Wyoming contains a substance toxic to the introduced insects. Wyoming winters have also taken their toll on insect introductions as well. All insect introductions are being done with great caution to prevent unwanted species. Even though this process is slow and expensive, it could prove to be very valuable.

Plant pathologists are selecting strains of fungi such as rusts that could help control leafy spurge. These are isolated in order to find one that will aid in the control of this plant. None have been found at this time.

Animal scientists in Montana have found that sheep can consume up to 50% of their diets as leafy spurge with little detrimental effects. Even though sheep will graze the floral parts of the plant preventing seed formation, they will not permanently control leafy spurge. It acts as an irritant to the digestive tract when force-fed to cattle.

Chemicals are presently the most effective means to control this undesirable plant. Chemical recommendations have been made as a result of research conducted by weed scientists at the University of Wyoming.

Evaluations of chemicals started as early as 1952 when 2,4-D, ureas, triazines and benzoic acids were evaluated as they become available.

In 1963, picloram sold under the trade name Tordon, was introduced and has proven to be a very effective treatment in a large number of trials conducted by the University of Wyoming. Even though picloram has proven to be effective for two or three years, when soil residues are depleted, both seedlings and roots regenerate and the problem starts again. Retreatments are a must to keep leafy spurge from taking over the range.

New herbicides currently being tested at the University of Wyoming such as fluoxypyr, sold in Europe under the trade name Starane, is showing considerable activity on leafy spurge but needs further testing to determine long term effects on leafy spurge.

Where do we go from here to control this problem weed species? It will take a united effort to control and maintain control of this range bandit. Educational programs such as those conducted by the Extension Service must be united with control practices offered by the County Weed and Pest Districts. Benefits derived from cost sharing programs now will pay big returns in the future. Individual groups are needed now in every county in the state to seek out new infestations and be sure they are treated and retreated until control is attained.