# Tansy Ragwort:

## *An Increasing Problem In Western Oregon*

**The larvae of the Cinnabar Moth offers a possible new biological control for this livestock-poisoning weed**

**Oregon State University**
**Extension Service**

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Tansy ragwort is becoming more of an agricultural problem in western Oregon as it continues to spread and intensify on cutover forest lands, hill pastures, and other grazed and non-grazed lands. Over 500,000 acres have become infested with the weed since its introduction into Oregon about 50 years ago.

In addition to crowding out desirable forage plants, tansy ragwort causes production loss, severe liver damage, and death in several animal species. Cattle and horses are most commonly affected, and swine occasionally die of poisoning. Sheep may consume large quantities for several years without experiencing clinical loss, but even in sheep, tansy does alter liver cells and may increase susceptibility to other toxic substances.

Each year the OSU Veterinary Diagnostic Laboratory reports an increasing number of cattle deaths resulting from consuming tansy ragwort, along with some horses. These identical poisonings probably represent only a small portion of the actual losses in western Oregon.

### Conditions of Poisoning

Under ordinary pasture conditions, cattle and horses avoid eating tansy ragwort, but this is not true when feed becomes scarce. There is evidence to suggest that a lethal addiction may occur in some animals.

Tansy ragwort will invade improved pastures and alfalfa fields heavily. When this occurs, the cattle do not discriminate against the young growing plants and consume them with other plants available.

Hay and silage may be sources of tansy ragwort in winter months. Neither the drying process for making hay nor the fermentation of making silage will alter the toxic component in tansy ragwort, and livestock can become poisoned from these sources.

Cattle have been known to die from irreparable liver damage up to six months following the removal of tansy ragwort from the diet. Nutritional and environmental stress contributes to susceptibility to tansy ragwort poisoning. Once clinical disease is observed, death usually follows in one to five days.

In dairy cattle, less extensive liver damage probably contributes to secondary ketosis and reduced milk production, with eventual recovery rather than death as the end result.

Horses frequently are poisoned by tansy ragwort in the summer months. Investigation usually reveals an inadequate feed supply, which forces horses to eat tansy ragwort. Horses eat tansy ragwort when it is included in hay and are known to have been poisoned from this source.

### Signs of Poisoning

Pyrolizidine alkaloids are the toxins in tansy ragwort responsible for losses in livestock. These toxins primarily affect the liver and signs observed are associated with liver pathology. The rate of tansy ragwort consumption has a definite influence on the clinical signs exhibited by the affected animals. Usually, there is emaciation, persistent diarrhea, abnormal thirst, and weakness. Icterus (yellow coloring) is commonly observed in the mucous membranes. Central nervous dyfunction may occur. Horses and cattle usually do not manifest high temperatures, although swine do.

Impaired blood flow through the diseased liver contributes to fluid accumulation in the abdominal cavity. Several gallons of excess fluid have been observed on autopsy.

### Diagnosis and Control

Call a veterinarian to assist in establishing the specific cause of illness or death. Liver function tests on live animals and histopathology specimens obtained at autopsy can be helpful in establishing a diagnosis.

When tansy ragwort poisoning has been diagnosed, it is essential that the source be identified and removed from the diet. Adequate tansy-ragwort-free feed, including several pounds of grain daily, should be made available to exposed animals. Salt and mineral supplements should be available, as these dietary components are necessary for rebuilding body tissues.

### Control of Tansy Ragwort

Tansy ragwort control on improved lands, using herbicides or cultivation, often is feasible. This is not always practicable or economical on unimproved pastures. Even if such control could be accomplished, however, it would be short-lived because of the super-abundant source of seeds on recently logged areas in federal and private ownership; lands on which traditional control attempts are economically unjustified.

Other means of trying to cope with the problem include use of biological control techniques (using animals that will feed on tansy ragwort) or combinations of the various control methods.

We do not have a total solution to the problem, but serious attempts are under way to seek one.

#### *Biological Control*

A biological control being investigated uses an insect, the cinnabar moth, whose larvae feed only on tansy ragwort and its close relatives.

The cinnabar moth is native to Europe and was introduced into the United States (1958) near Fort Bragg, California. Introductions were made in Oregon (1960) in Linn County and in Coos County (1964) by Oregon State University. Since then, private owners have collected the insects from various sources and made an unknown number of additional releases in western Oregon.

It wasn't until 1967 that any evidence was found that the insect was exerting any beneficial effect. Since then, in both Linn and Coos Counties, several local populations of the insect have increased in size and are apparently bringing tansy ragwort under control. However, because of different kinds of problems, mostly biological and many unknown, the insect spreads slowly from a release point.

Cinnabar moths have one generation a year, commencing with flight of the colorful black and red moths from April through July. They lay their yellow eggs in clusters on the underside of tansy ragwort leaves. Eggs hatch in about two weeks and the yellow and black larvae feed until late summer, when they seek places to pupate and hibernate until the following spring.

Cinnabar moths, eggs, larvae, and pupae are killed by such things as predation by insects, birds, and small mammals, from diseases, and from unfavorable weather. If means could be found to prevent or reduce the incidence of these factors, the insect undoubtedly would increase faster in areas of release.

Repeated feeding by the larvae can kill the tansy ragwort plants or prevent them from going to seed. In those areas where the insect has achieved some control, a dynamic balance usually develops, in which the insect does not eradicate the tansy ragwort but reduces it to a low level and holds it there.

At the present time, the cinnabar moth is most prevalent in those areas of original release and subsequent movement; about 100 square miles in eastern Linn County and most of southwestern Coos County. The exact location of other colonies established by private releases is unknown.

The research program at Oregon State University has been underway for four years and is concerned with trying to find ways to enhance the survival of field populations of the cinnabar moth and to increase the rate of liberations in western Oregon. The university does not intend to become a major supplier of the insect, but will continue to provide technical help and scientific expertise as needed.

How soon might we know if the cinnabar moth is capable of doing this job? Following releases, it is difficult to estimate the time necessary for the cinnabar moth to show some beneficial results. *Remember, to date the apparent successes have been observed only in fairly small-sized areas.* However, it should be possible to assess the success or potential of the insect in less than 10 years.

When insects do become available for general distribution, the problem as to who gets them first will arise. Priorities will need to be determined, and probably should be done by each of the concerned counties. The responsibility for this will rest upon livestockmen, with assistance from county Extension agents and OSU researchers.

There are also other insects that feed on tansy ragwort, some native and others that have been in-

troduced from Europe. None of the native insects has shown any substantial beneficial effect. Other introduced insects, being studied by the USDA in California, are being used experimentally.

One apparently successful means of bringing tansy ragwort under control biologically is by grazing with sheep. Sheep are not only able to reduce the amount of standing tansy ragwort, but also do not appear to be subject to the toxic effects of the weed.

### *Cultural and Mechanical Control*

Tansy ragwort seldom is a problem in cultivated areas, as cultivation precludes maturation of biennials. Often, however, tansy ragwort does occur in improved pastures, mint, grasses, alfalfa, and other crops that require infrequent cultivation. In these areas tansy ragwort may be undesirable because of its toxicity, because it displaces desirable plants or because its seed or foliage may contaminate a crop. When chemical means of control are impractical tansy ragwort must be controlled mechanically by uprooting entire plants. Cutting usually results only in creating more robust plants because of tansy ragwort's considerable ability to regenerate.

### *Chemical Control*

Tansy ragwort should be sprayed in the rosette stage (April or early May). Applications after flowers appear are much less effective. Thorough coverage is important. Wetting agents as recommended by herbicide manufacturers will enhance control. Windblown or late germinating seed, missed plants, and the biennial nature of tansy ragwort may necessitate respraying.

For spot treatment on non-grazed land, use 3 pounds of 2,4-D low volatile ester, amine, or emulsifiable acid or 1 pound of dicamba in at least 50 gallons of water per acre. For small tanks, add 4 tablespoons of 2,4-D per gallon of water.

**Chemical Control in Pastures**

| Herbicides | Rate/acre of active ingredient | Water dilution | Waiting period before grazing |
|---|---|---|---|
| 2,4-D (low volatile ester, amine or emulsifiable acid)[1] | 1.0 to 3.0 lbs. | 10 gals. or more | 7 days |
| dicamba (Banvel)[2] | .50 to 1.0 lb. | 10 to 40 gals. | 7 days (up to .5 lb.)<br>21 days (1 lb.) |

[1] 2,4-D may injure white and subterranean clover and will kill alfalfa, red clover and trefoil. Use the lower rate when clover and only small tansy ragwort are present.

[2] Dicamba will kill legumes. Do not graze meat animals in treated fields within 30 days of slaughter. Consult dicamba label for limitations on feeding treated hay to dairy animals.

### Guidelines

**Avoid drift of herbicides onto adjacent crops**

- Provide adequate feed so that livestock are not forced to consume tansy ragwort.
- Sheep are the livestock of choice to utilize pastures where tansy ragwort is abundant.
- Investigate the cause of livestock losses. Tansy ragwort poisonings are becoming more common.
- Avoid alternate grazing and irrigation in pastures infested with tansy ragwort, as this practice may encourage acute tansy ragwort infestations.
- Do not hesitate to call your county Extension agent concerning any aspect of the tansy ragwort problem.

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