

**ALFALFA WEEVILS SLOWING REGROWTH IN NORTHEAST NEBRASKA**

Calls from consultants, coop managers, farmers and personal visits to area alfalfa fields are indicating that some fields in northeast Nebraska are not greening up as quickly as can be expected due to feeding by alfalfa weevils. This does not affect every field but we have received calls that cover almost our whole northeast area.

Most of the reason for failure to green up is being caused by larval feeding on the new growth. This is unusual but not unprecedented. Fields in Boyd, Holt, Knox, and Antelope counties experienced the same situation in 1999, and similar occurrences have been reported in the Panhandle over the years.

The cool spring has delayed alfalfa weevil development. Normally by now alfalfa weevils have pupated into cocoons and turned into adult weevils (small brown beetles with rigid snouts). It is the adult weevils that are normally associated with the delay in green up of the second cutting. However, this year the larvae are still present (small, yellow to green legless worms with white stripes down the back, about 1/8 to 1/4 inch in length) and feeding on new growth after the first cutting. The larvae will be smaller in the northern counties, while in the southern counties there may be a mixture of larvae, cocoons, and adults.

What to do now? If you have not yet cut your alfalfa, cut it and then remove it from the field as soon as possible. Often the cutting will kill enough larvae to eliminate the need for treatment. Also, most insecticides have 7 days or more preharvest intervals and most growers are at the point where they want to harvest alfalfa now rather than wait. (Mustang Max has the shortest preharvest interval: 3 days) First determine if the regrowth has been held back enough to justify an insecticide treatment (see Table 2.) Generally, with the rain we have had, anything not greening up 4-6 days after regrowth probably has a problem. Then determine the percentage of larvae, cocoons, and adults are present. If 2-3 larvae per crown are found and the alfalfa is not greening up, an insecticide is necessary. If there are no cocoons, spray as soon as possible. Spraying will not greatly affect the weevils in the cocoon stage until they emerge and become active. The pupae stage in the cocoon lasts from 7 to 14 days. Adults will feed for a week or so after emerging, so they may also hurt regrowth. Spraying now will enable the new growth to get a "jump" on any late emerging adults. Because of the lack of vegetation in the newly harvested fields, rates of registered insecticides in the low range should do the job. However, to get better residual activity, rates must be used in the mid - to upper end of the label. Some salesmen are suggesting a "combo" of 2 different products with 2 modes of action. For example, Lorsban (an organophosphate) with Warrior (a pyrethroid). While the rates of both may be lower in the combo, the price of

the two combined may be higher than to use a medium range rate of just one product alone. With the following products, we can see no reason to mix them as a “combo”, unless there are other harmful insects present. All of the suggested insecticides will control other alfalfa pests, as well.

**Table 1. Suggested insecticides for alfalfa weevil (All are labeled for larvae and adults): Prices are approximate and are used for comparison. Price per acre depends on the rate used. Contact your local dealer for current prices. Application costs are extra**

| Insecticide   | Rate per acre | Preharvest Interval                                  | Approximate Cost |
|---------------|---------------|--|------------------|
| Baythroid 2 E | 1.6-2.8 oz    | 7 days   | \$2.20 per oz    |
| Furadan 4 F   | 0.5-2.0 pts   | 0.5 pt, 7 days<br>1.0 pt, 14days<br>2.0 pts, 28 days | \$9.00 per pint  |
| Lorsban 4 E   | 1.0-2.0 pts   | 1.0 pt, 14 days. Over 1.0 pint, 21 days              | \$4.00 per pint  |
| Mustang Max   | 2.24-4.0 oz   | 3 days   | \$1.25 per oz    |
| Penncap-M     | 2-3 pts       | 15 days  | \$4.00 per pint  |
| Warrior       | 2.56-3.84 oz  | 1 day for forage, 7 days for hay                     | \$2.00 per oz    |

### Stubble Treatment Calculation for Defoliating Insects

After cutting and removing the hay, examine the stubble in several areas for evidence of continued feeding. Sift through the litter where the windrows were, checking in and around crowns for larvae, pupae, and adult weevils. Table 2 provides a calculation for determining if an insecticide treatment of the stubble would be necessary if regrowth will be delayed by alfalfa weevils. It calculates the number of days of complete defoliation that can be tolerated before an insecticide treatment will be economically warranted. The number of days will vary, depending on the cost of treatment, hay value and whether the hay is cut at first bloom or on a 28-day harvest schedule.

**Table 2. Alfalfa weevil stubble threshold calculation.**

| Factors  | Example                          |
|--|----------------------------------|
| A) Insecticide plus application  | \$10.00 costs (Dollars per acre) |
| B) Value of hay (dollars per ton)  | \$80.00                          |
| C) Loss Factor (cutting at first bloom 0.02; cutting at 28 day interval 0.035)   | 0.02                             |
| D) Days if complete defoliation  | 6.25 days that can be tolerated  |
| To estimate D, multiply B by C, and divide into A. The example is calculated as follows: $D = A/(B*C) = 10.00/(80.00*0.02) = 6.25$ |                                  |

### PURPLE LOOSESTRIFE – BIOLOGY AND CONTROL - ( PART II )

This is the second part of the article about the Purple Loosestrife published in the 5<sup>th</sup> issue.

**4. Herbicides:** Herbicides alone cannot provide economical control of this weed, however they are necessary part of an integrated approach to stop the expansion of currently infested acres. Herbicides are especially important for ‘spot spraying’ and control of this weed along roadsides and ditches. For example, there are many loosestrife plants along the shores of the Niobrara and Missouri rivers. They are especially evident along the two

rivers at the town of Niobrara and Niobrara State Park. Herbicides can be used for spot spraying along roadsides, especially along Hwy-12, at the section from Santee Indian Reservation to the town of Niobrara.

Recommended herbicides include Rodeo (4-6 pts), Garlon 3A (3-5 pts), Escort (2-4 oz/acre), and 2, 4-D (3-5 pts/acre), and Arsenal under special circumstances (see further). Before using any herbicide check the label carefully for recommended rates, appropriate additives and plant species sensitivity. Each of the recommended herbicides has benefits and risks associated with its use. The question may still remain as to “which herbicide to use?”

Garlon or 2,4-D, or the mix of the two will prevent seed production and provide short-term suppression, which means yearly applications for at least several years, but annual expenses will be low. Longer-term control, which means spraying once in several years, can be achieved with Rodeo (and other aquatic glyphosates), Escort, Arsenal and a mixture of Escort and 2,4-D. Arsenal should be used for specifically targeted and controlled sites. Due to the non selective nature of these herbicides, they should be used as part of an integrated and site specific approach. Furthermore, these non-selective herbicides should not be used at the same site continuously for more than 2-3 years in order to allow the native vegetation to regrow.

Of the recommended herbicides (Table 1), only the three (aquatic glyphosate, aquatic 2,4-D and aquatic triclopyr (Garlon)) are currently registered in Nebraska for use in aquatic sites (sites that are continuously under water). Do not use non-aquatic glyphosates (eg. Roundup-named products, and other generic glyphosates registered for use in Roundup-Ready soybeans) for spraying aquatic sites. They are toxic for aquatic wild life (eg. fish, frogs, etc).

The best time to apply herbicide is at beginning of the flowering stage, which usually occurs from mid June to the end of July. Early flowering time is a preferred application time for few practical reasons: (a) easy identification by landowners (purple flowers), and (b) flowering time is one of the most vulnerable stages for chemical control of perennial species. Herbicide solutions can be applied using a back- pack sprayer, tractor mounted or pulled sprayer, from a boat or aerial application in solutions ranging from 10-20 gallons per acre.

For those of you who want to do some ‘spot spraying’ with a back pack sprayer, for example use 1 pint of Rodeo + 3 oz NIS per 3 gallons of water. The spray solution volume is on a spray-to-wet basis. The product is non-selective, therefore, avoid injuring native vegetation. As always, read and follow the product label directions.

**6. Biological control** using insects does not eliminate the target weeds, but in general, it can suppress weed population to a non-significant level. Bio-control agents alone cannot provide long-term control of purple loosestrife, however they are necessary part of an integrated approach to stop the expansion of currently infested acres. Several insect species were introduced from Europe, where the loosestrife originated. The list of insects includes: root weevil (*Hylobius sp.*), two beetles (*Galerucella sp.*), and two flower-feeding weevils (*Nanophyes sp.*). They are highly host specific to purple loosestrife, defoliating the plant as both adults and larvae. These insects, in combination with other plant species, so called natural competitors, have historically kept loosestrife under control at the European continent.

It is believed that insects alone cannot provide adequate control of purple loosestrife here at the North American continent. Experience from other parts of the USA and Canada suggest that it takes 7-15 years to observe some effect of insect feeding. If you are interested in rearing biocontrol agents, for more information see NebGuide (G01-1436-A), "*Rearing and Releasing Galerucella Beetles to Control Purple Loosestrife*" (by Knezevic and Smith).

Rearing and releasing insects however is just one step in the process of biocontrol. Monitoring insect establishment, spread, and impact is crucial for the success of the biological control program. Monitoring programs will determine the effectiveness of *Galerucella* beetles throughout Nebraska to optimize the beetle release program. For more information see Extension Publication (EC02-175) “*Biological Control of Purple Loosestrife: Monitoring Galerucella Establishment and Impact*” (by Hunt and Knezevic).

**7. Monitoring:** Monitor the sites for several years. New shoots may come up from plant remnants.

**How Can You Help?** Stop the spread. It is the best course of action currently available. We must all work together to prevent further planting and natural spread. If we do not stop purple loosestrife now, the economic burden to taxpayers will only increase as our vital waterways and wetlands become choked with this weed.

In local plantings and flower garden, you can do your part by pulling and burning any plant, root and seed material. You can help your friend and neighbors to do the same. Discourage any and all new purple loosestrife planting. Landscapers and gardeners have a wide variety of alternative perennial plants that are as ‘pretty ’ as loosestrife but pose no threat to the environment. Some examples are: spiked speedwell, lilies, Siberian iris, spiked gayfeather and garden sage. Check with your local extension office or horticultural organization for information on alternative landscape species. There are also several useful extension publications including “Growing Perennials (G-828), “Perennials” (G-1015) and “Perennial Flowers Water Wise Garden (G-1214), that can help in the alternative species selection process.

#### **SUMMARY:**

Purple loosestrife is a serious, perennial, weed found in wetlands of the Prairie states, including Nebraska. Due to the major characteristics of the loosestrife habitat (e.g. marshy land) it is believed that neither herbicides nor biocontrol agents used alone can provide long term control of this weed. However, if they are integrated with other weed management methods the long term and cost effective control goal may be achieved. Each management plan would work best when designed for a specific area. (SK)

#### **MANAGEMENT TIPS**

Visit your irrigated fields to measure soil water content once a week through June 15. Consider twice a week visits after the 10-12 leaf stage of corn or beginning flower in soybeans. (DL, BK, CS)

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