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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

No. 95-4
April 7, 1995

Treat thistles; observe grazing limits

Now is the perfect time to control musk and plumeless thistle, which are commonly found in untilled areas such as CRP acres, pasture, rangeland, and rights of way along railroads and highways. Plants are now in the rosette stage and are most susceptible to herbicides. Control declines rapidly once plants begin flower stalk elongation (bolting). Although later applications may visibly damage the plant, seed is still produced which perpetuates the problem.

In eastern and southern Nebraska, apply treatments by late April. In northern and western Nebraska, apply treatments 10-14 days later. Effective treatments for pasture, range, and CRP acres include the following products and rates per acre:

- 2/10 to 3/10 ounce Ally plus surfactant
- 1 1/2 to 2 quarts 2,4-D
- 1 quart 2,4-D + 1/2 pint of Banvel

-6 to 8 ounces of Tordon 22K + 1 quart of 2,4-D

(2,4-D rates are based on 4 pound formulations.)

Curtil at 2 to 4 pints also provides effective control of musk thistle and can be used on CRP acres and small grains.

Grazing restrictions vary with the herbicide and the type of livestock. Ally has no grazing restrictions. With 2,4-D, lactating dairy animals should not be grazed on treated areas within seven days after application. However, certain manufacturers and formulations have more restrictive guidelines. Check the label of the product you're using. In pastures treated with Tordon, do not move grazing livestock to broadleaf crop areas without first allowing seven days grazing on nontreated pastures.

With Banvel, the grazing restrictions vary with the application rate and the type of livestock. Remove meat animals from treated

areas 30 days before slaughter. For dairy animals the grazing restrictions are seven days for a 1 pint per acre application and 21 days for a 1 quart per acre application. Do not harvest hay for dairy animals within 37 days of a 1 pint per acre application and within 51 days of a 1 quart per acre application. There is no restriction on hay fed to meat animals. Grazing restrictions are the same for Banvel with 2,4-D or Banvel alone.

Pastures can not be grazed for 14 days after Curtil is applied and hay can't be harvested for dairy use for at least 30 days. For beef and non-lactating animals, there is no grazing restriction; however animals should be removed at least seven days before slaughter. Wait 30 days before harvesting hay treated with Curtil.

John W. McNamara
Extension Asst. -- Weeds
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Extension Weeds Specialist

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Dollars and cents of farming

Ranking fourth in the United States, Nebraska's total cash receipts from farm and ranch marketings amounted to \$8.9 billion in 1993, according to a report from the Nebraska Agricultural Statistics Service. Receipts for livestock and livestock products totaled \$5.8 billion and crops, \$3.1

billion. Government payments were \$.8 billion, non-cash income was \$164.5 million, and other farm income was \$324.4 million. The total realized gross farm income, including net commodity credit corporation loans and farm households was \$9.9 billion.



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The why's of cleaning pesticide clothing

Pesticide safety doesn't end when the sprayer leaves the field or even when the operator calls it a day. It is crucial that clothing worn during pesticide application be laundered correctly to avoid further contamination.

Laundering methods may vary slightly according to the degree of pesticide toxicity, the product formulation and the amount and type of exposure. It is important for the person doing the laundry to read the manufacturer's label and be aware of how the particular pesticide is used.

The guidelines below tell you why certain steps are followed for the safety of the launderer and the rest of the family.

- Start cleaning procedures immediately after the pesticide use by hanging the clothes outdoors to air prior to washing. Remember to wear rubber gloves when handling highly contaminated clothing to prevent pesticide absorption into the body. Air allows some chemical breakdown before the clothing enters the home.

- Avoid transferring pesticide residue to family clothes by putting contaminated clothes in a garbage bag separate from other family clothes. Only wash together garments contaminated with the same pesticide.

- Pretreat contaminated clothing. This helps remove pesticide residue, especially if the pesticide is a wettable powder. To pretreat, use a prewash product, soak the clothing in water, rinse-out-of-doors or use a prewash cycle on the washing machine.

- Hot water washing is recommended because the hotter the water (140 degree or higher) the better the removal of pesticides. Avoid cold water washes because they are less effective. A cool water rinse can be used.

Careful laundering is essential to avoid further contamination and the transfer of pesticide to family clothes.

- When selecting a detergent, use a heavy duty detergent for oil-based emulsifiable concentrate formulations which are effective in removing oily soils. Consider selecting a powdered phosphate detergent for wettable powder formulations, although a heavy duty detergent is suitable. Provide more detergent for heavy soil or hard water, but do not use more than twice the recommended amount. Excess detergent suds can cushion the agitation and decrease

pesticide removal. Agitate the machine for a normal, 12-minute cycle.

- Additives such as bleach and fabric softener do not affect pesticide absorption or removal and may be used.

- Starch acts as a pesticide trap on the fabric surface to reduce the area of contamination.

- Rinse the washing machine thoroughly after laundering

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Lisa Brown Jasa, Editor

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Dandelions moving into farm fields

ID: *The common dandelion*

Description

Common dandelion is a perennial herb with milky juice. Its branched taproot can extend up to several feet long. It reproduces by seeds and by new shoots from the root crowns. Leaves, 2 to 12 inches long, are clustered at the top of the root crown. The genus *Taraxacum* is a taxonomically confusing group subject to many interpretations as to the number of species. Most authorities now favor lumping the taxa into two species — *T. laevigatum* (Willd.) DC. and *T. officinale* Weber (from *Weeds of the West*).

Habitat

Common dandelion, native to Europe, is now cosmopolitan. It grows in moist soils, including lawns, meadows, pastures and overgrazed areas. It is good forage on the ranges, and is especially relished by sheep and cattle. Flowering occurs almost nine months of the year in temperate climates.

Suggested control

Home Lawns — Cut the plant off well below the crown using a sharp cutting tool. Repeated treatment may be necessary. 2,4-D can be applied in the spring or fall.

Cropland — Fall or spring tillage will destroy existing plants. Normally cultivation and herbicides used to control broadleaf weeds will control it in row cops.

Pastures and Noncropland — Spray with 2,4-D in spring (from *Weeds of the U.S. and Their Control*).

Dandelions are increasing in ridge plant and no-till fields. To control dandelion in a corn field, herbicide application in the fall or

spring works best. Dandelions remain active late in the fall and begin growth early in the spring much like rosettes of musk thistle or curled dock. Products and rates to use are:

- 2,4-D LV ester at 1.0-1.5 qt/A*
- Banvel at 1.0 pint/A
- Roundup at 3.0 qt/A
- 2,4-D + Banvel at 1.0 qt + 0.5 pt/A*
- 2,4-D + Roundup at 1.0 pt + 1.0 pt/A*

*Assuming 2,4-D is a 4 lb/gal formulation

Good coverage of the dandelion rosettes is important. Normally these products will be effective when daytime temperatures are in the 50s or higher; however effectiveness depends more on the weed's metabolic activity than on air temperature. Dandelion is a cool-season plant and its low growth keeps the rosette active when the soil is warm, similar to musk thistle.

The rates of Banvel and 2,4-D needed to kill dandelions are too risky to use at planting, so apply these rates at least two weeks before planting corn or after corn emergence. Do not apply Banvel in a field to be planted to soybean. There is a 30-day waiting period prior to planting soybean when 1 qt of 2,4-D is used. At lower rates, these herbicides will be less effective on dandelion.

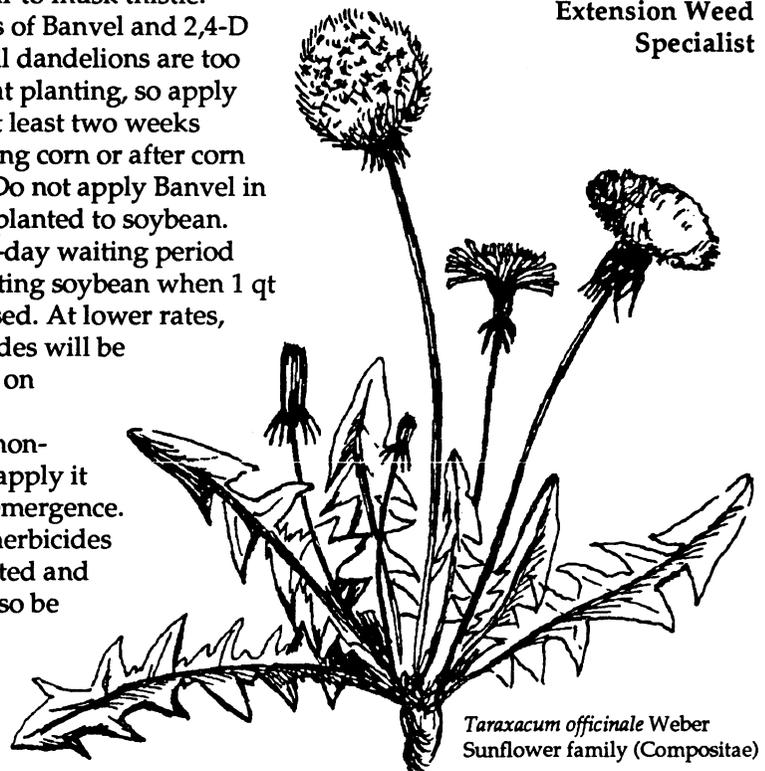
Roundup is non-selective, so apply it before crop emergence. All of these herbicides are translocated and slow-acting, so be patient.

Contact herbicides such as atrazine,

metribuzin, or Pursuit will not kill established perennial plants, but they can control seedlings. Mixing contact herbicides with translocated herbicides sometimes reduces overall effectiveness because a contact herbicide rapidly disrupts the plant tissue before translocation is complete. Contact herbicides with soil activity can provide residual seedling control and root uptake for a sustained effect; however, a translocated, foliar-applied herbicide will be needed for perennial plant control because the crown buds have to be killed for total effectiveness.

For cost effectiveness, 2,4-D is hard to beat. However, the additional presence of curled dock, Canada thistle, and other cool season weeds calls for a combination of products. For example, 2,4-D is weak on curled dock but 2,4-D + Banvel will be effective on both species.

Fred Roeth
Extension Weed
Specialist



Taraxacum officinale Weber
Sunflower family (Compositae)

Nurture a crop's natural enemies

Conservation of natural enemies is arguably the most important concept in the practice of biological control. It's also one of the easiest to understand. Simply put, conservation of natural enemies means avoiding practices which can harm natural enemies and using practices which benefit them. Sounds like good common sense. The tricky part comes in understanding exactly what practices are harmful and how beneficial practices can be integrated into your production system. That requires understanding the biology of the natural enemies and modifying practices to accommodate them.

Everyone understands that a dairy cow needs food, water,

This is the third of a three-part series on the roles of importation, conservation and augmentation in biocontrol pest strategies.

shelter and protection from adverse conditions. To perform her best she also needs protection from biting flies, diseases and in some cases, predators which may injure or kill her. The dairy producer knows her requirements change through the year and makes provisions to provide for these needs. In the winter, shelter is critical, while in summer adequate water and shade are necessary. In some months, grazing may provide all food requirements, but as

pasture growth slows, supplemental food may be needed.

Natural enemies have exactly the same types of needs as the dairy cow. To perform their best, they need food, shelter and protection from adverse conditions. Frequently, we do not fully understand or make allowances to provide for these needs. The result is many instances where biological control could be very effective, but has failed or resulted in less than adequate control because we did not provide for the natural enemies' basic requirements.

Avoid harmful practices

The most obvious practice to avoid is the use of insecticides at times when natural enemies will be harmed. Insecticides can have direct effects on natural enemies by poisoning them or indirect effects by eliminating their hosts and causing starvation. In some cases, insecticides can be successfully integrated into the system without harming natural enemies. This may be through the use of a selective insecticide such as Bt, timing the application to avoid periods when important natural enemies would be exposed, or placing the insecticide where natural enemies will not contact it. In other cases, adequately protecting natural enemies may require eliminating insecticide use.

Certain cultural practices also can be detrimental to natural enemies. Avoid plowing, cultiva-

Farmer grants available

Producers interested in sustainable agriculture can apply for producer grants from the North Central Region Sustainable Agriculture Research and Education (NCR SARE) Program to conduct on-farm projects.

Grants of up to \$5,000 are available through a competitive process for producers to conduct research and education projects related to sustainable agriculture. Previous projects have addressed reduced pesticide use, biocontrol measures, rotational grazing, alternative crops, tillage systems, dairy systems, composting, and whole-farm solutions for waste and nutrient management. Eighty-seven grants have been awarded in the 12-state North Central region in the past three years.

Application forms are available from the NCR SARE Office and

must be submitted by 5 p.m. May 1 at the regional office. Faxed applications will not be accepted.

To obtain a copy of the application form or a publication listing all previously funded producer grants, contact the NCR SARE Office at 13A Activities Building, University of Nebraska-Lincoln, Lincoln, NE 68583-0840 or call (402) 472-7081.

SARE is funded by the U.S. Department of Agriculture to increase knowledge about and help farmers and ranchers adopt sustainable practices that are profitable, environmentally sound and beneficial to society. The producer program is one of five grant divisions offered in the North Central Region.

Lisa Jasa
NCR Communications Specialist

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Nurture *(Continued from page 28)*

tion, mowing or harvesting operations which disrupt natural enemies at critical points in their life cycle. Excessive amounts of dust from roads or cultural operations also can disrupt the activities of predators and parasitoids resulting in reduced control. Burning crop residues or irrigating at the "wrong" time also may kill natural enemies.

Finally the ambiguous category of "clean farming", which includes removing weeds and noncrop habitats, has been identified as detrimental to many natural enemies.

Beneficial practices

Here is where a detailed understanding of the biology of the important natural enemies in your system becomes extremely critical. If you do not know what natural enemies you want to manage, it is doubtful that you will be successful. The first step is to gather information on the types of natural enemies you want to conserve. Then consider these points:

Where does the natural enemy overwinter. In England, a group of researchers discovered that important predators of aphids in wheat overwintered in areas of tussock grasses in hedgerows in field edges. The predators migrated into the fields in spring, but got there too late to control aphids at the field center. By planting a one meter strip of tussock grasses in the center of the field, overwintering predator numbers soared and the aphids were controlled.

What alternate food sources do my natural enemies need? Are these present at the right times and close to my field? After emerging from overwintering, spotted lady beetles feed on plant pollen (dandelion, spring beauty, etc.) for several weeks before moving into alfalfa

and wheat fields to feed on aphids. Many parasitoids also require the protein-rich pollen to develop new eggs. Many parasitoids need sugar (carbohydrate), which they frequently obtain from the nectar of flowering plants or from aphid honeydew. In many cases having a diversity of plants in and around fields has been shown to improve biological control.

Do my natural enemies need alternative prey/hosts? Many predators and parasitoids require alternative hosts at some point in their life cycle. *Lydella thompsoni* is a tachnid fly which parasitizes European corn borer. It emerges before European Corn Borer larvae are present in the spring and completes its first generation on common stalk borer instead. Clean farming practices which eliminate hosts for the stalkborer are thought to have contributed to the decline of this parasitoid. Alternative prey also may be important in building up predators in a field prior to the appearance of the pest you wish them to control. Lady beetles and minute pirate bugs can consume many European corn borer eggs, but alternative prey must be present in the field prior to European Corn Borer egg laying to maintain high predator numbers.

What shelter do natural enemies need during the growing season? The activity of ground dwelling predators may be limited by high soil temperatures during the day. Incorporating cover crops or intercrops may help reduce soil temperatures and extend their activity period. Similarly, many parasitoids require moderate temperatures and higher relative humidity and may need to leave fields in the heat of the day to seek shelter in shady areas. For example, the activity of predatory paper wasps increases when given

wood nest boxes which provide a protected place for them to build their nests in and near fields.

Conclusion

Consideration of the biological and ecological needs of natural enemies is critical for the success of any biological control effort. It is one of the easiest ways for producers to initiate biological control on their farms and should be a major consideration in any importation or augmentation program.

This article was adapted from material published in Midwest Biological Control Newsletter.

**Bob Wright, Ext. Entomologist
South Central Research and
Extension Center, Clay Center**

Laundering

(Continued from page 26)

contaminated clothing to reduce the transfer of any pesticide to the family laundry. Run an empty load using hot water, the same detergent, machine settings and cycles used for laundering the contaminated clothing.

- Line dry clothing if possible since many pesticides break down in sunlight.

- Additional guidelines to follow include: rewash the contaminated clothing two or three times for effective removal of the pesticide, wash a few contaminated garments at a time, and launder clothing daily when applying pesticide daily. If clothing is thoroughly saturated or contaminated with highly toxic pesticides, discard the clothing by following the directions for disposal on the pesticide container.

**Rose Marie Tondl
Extension Clothing Specialist**

State's agriculture = big business

Nebraska's economy is fueled by agriculture, as indicated by the following economic information.

- As of Jan. 1, 1994, total assets in Nebraska farms and ranches was \$38.3 billion. Farm and ranch equity was estimated at \$31.2 billion. (Both figures exclude operator households.)

- Equipment for producing Nebraska's agricultural output includes: 148,000 wheel tractors; 116,000 motor trucks; 97,000 power elevators; 49,000 power tractor mowers; 41,000 corn planters; 25,000 corn heads for combines; 40,000 manure spreaders; 39,000 grain drills; 29,000 self-propelled grain and bean

combines; 13,000 field forage harvesters; and 18,000 pick-up balers.

- In 1993, Nebraska farmers paid \$313 million for taxes on farm and ranch property; \$589 million in net rent to non-operator landlords. They also paid \$222 million in interest on farm real estate mortgage debt and \$335 million on non-real estate interest.

- Nebraska leads all states in production of alfalfa meal. The 19 alfalfa mills produced 220 thousand short tons of alfalfa meal valued at \$22.5 million from May 1993 to April 1994.

- Dairy products manufactured in 1993 had a wholesale value of about \$280 million. Nebraska's 12 dairy plants employed 1,300 people with a payroll of about \$30 million.

- In 1993, Nebraska producers spent \$197 million for seed, \$367 to maintain buildings, motor vehicles and other machinery, spent \$339 million on petroleum fuel, oil and electricity used in farm business and \$236 million on hired labor.

Nebraska Agricultural
Statistics Service

New publications address ag issues

The following publications were recently released by the University of Nebraska-Lincoln Cooperative Extension.

Average Composition of Feeds Used in Nebraska, G91-1048, revised March 1995: A four-page table presents an analysis of frequently used feedstuffs according to 13 divisions of three factors: protein, energy and minerals. Major categories of feeds are: grains, by-product energy feeds, protein sources, dry roughages, silages, grazed forages – crops, grazed forages – Eastern Nebraska, grazed forages – Sandhills Range, grazed forages – nonirrigated meadow, and minerals.

Planning for Healthy Eating: G89-935, revised in November 1994: A buyer's guide and user's tips on eating right to stay healthy and reduce the risk of certain diseases. Also includes the dietary recommendations of the National Research Council.

Annual Broadleaf Weed Control in Winter Wheat, G95-1241: Discusses preventive, cultural and chemical weed control in winter wheat, emphasizing that success is achieved by combining all three strategies.

Insect-resistant Crops Through Genetic Engineering, part of the Biotechnology Information Series, North Central Region Extension Publication 553: Discusses how plants can be genetically engineered to produce their own bacillus thuringiensis (Bt), a bacterium that otherwise occurs naturally in soil, and how it can be used to create corn that's resistant to the European corn borer, cotton that's resistant to the bollworm, and potatoes that are resistant to the Colorado potato beetle.

Insect Management Guide for Nebraska Alfalfa, Soybeans, Wheat, Range and Pasture, EC95-1511: Discusses variety of pests, provid-

ing identification and scouting guides, lists of registered treatments for specific pests, and four-color photos to help distinguish between beneficial and detrimental insects.

To order these or other Extension publications, contact your local Extension Office or write Publications Distribution, Box 830918, University of Nebraska-Lincoln, Lincoln, NE 68583-0918 or call (402) 472-9714.

Coming soon

- Shattercane control
- No-till drills

Next issue April 14.