UNIVERSITY OF IDAHO
COLLEGE OF AGRICULTURE
Extension Division
D. R. Theophilus
Director

MOSCOW, DECEMBER, 1946 EXTENSION BULLETIN NO. 162

H. C. Manis and L. D. Tuthill
Entomologist and Assistant Entomologist, Idaho Agricultural Extension Service, Respectively.

Insects are man's principal competitors. They attack and annoy man and his domestic animals, carry diseases, eat his food and clothing, destroy crops, forests and stored materials. Not all insects are harmful however. Several, such as the honey bee, silk worm and lac insects produce materials which we use. Many insects feed upon other harmful ones. We must consider these as beneficial, for without their aid, we would be unable to hold the harmful ones in check. It is important that you learn to distinguish between pests and helpful insects.

The natural enemies of our insect pests include birds and other animals as well as insects. These friendly animals do not eliminate our insect enemies however, so it may be necessary to use various direct methods of combatting such pests. The ways we have of doing this vary with the insect to be controlled. For some pests simple changes in farming methods will serve to eliminate the damage. Others are best controlled by applying an insecticide to the insects or their food.

Any 4-H club member or an entire club may undertake one or more of these insect control activities. Projects other than those listed may be of more concern to you. If some pest not listed here is a problem on your farm, consult your club leader or county agent for methods of control. The control of house flies is certainly of great concern to all of us. They are dangerous as carriers of disease germs, and everyone hates their annoying habits. Controlling them on every farm in Idaho is a goal for every good citizen.

The rearing and collecting of insects, in addition to their practical value in acquainting us with these most common of animals, make very fascinating hobbies.

COOPERATIVE EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS OF THE STATE OF IDAHO UNIVERSITY OF IDAHO COLLEGE OF AGRICULTURE AND UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING

Printed and Distributed in Furtherance of the Purposes of the Cooperative Agricultural Extension Service Provided for in Act of Congress, May 8, 1914.

Entomology 1—House Fly Control

You can get very good control of house flies by using DDT properly. It is necessary to deposit the DDT on surfaces where the adult flies will rest. Thorough coverage of the walls, supports, ceilings, eaves of barns and other buildings, fence posts, outside of the house, especially around doors and windows will almost completely eliminate house flies from the premises. One, two or possibly three treatments during the fly season are all that are required. The DDT is easily applied as a water spray. The entire farmstead should be treated as a unit in controlling flies.

Record to be kept:

1. Number of dates of application.
2. Number of gallons of DDT used.
3. Number of hours required to spray the DDT.
4. Number of types of buildings sprayed.
5. Results obtained.

Entomology 2—Control of Biting Flies on Cattle

By spraying cattle with a water spray of DDT, hornflies and other biting flies are kept off cattle for a period of ten days to two weeks. Records kept on cattle so sprayed last season showed a 15-per cent increase in milk production of dairy cows and an additional gain of one-half pound per day on beef cattle.

Start spraying the cattle on your farm as soon as the flies appear on the cattle and repeat the treatment whenever they show up again throughout the season. Hornflies will not be controlled by spraying buildings for house flies.

Credit will be allowed for treatment of all the cattle on your farm.

Record to be kept:

1. Milk flow before treatment.
2. Number and breed of cattle treated.
3. Number of gallons of spray used.
4. Number and dates of spray applications.
5. Description of results obtained.

Entomology 3—Cattle Grub and Lice Control

Cattle grubs do great damage by passing through the flesh of cattle during the fall and winter. The adult flies cause cattle to run wildly in the summer and serious losses of milk and beef result in this manner. The mature grubs lodge in the back and do great damage to both the hide and the flesh in this region. The grubs may be killed in early spring when they come to the surface on the backs of the cattle. Two treatments with a rotenone spray or dust at that time effectively control the grubs. For best results in control of grubs community action is desirable. Such a program is a good project for an entire club.

Cattle lice are also serious pests. The principal damage occurs during the winter months. They may be controlled at any time of the year by one application of DDT or two applications of rotenone spray or dust.

Record to be kept:

1. Number and date of applications of spray material.
2. Method used.
3. Material used.
4. Number and breed of animals treated.
5. Description of results obtained.

Entomology 4—Sheep Tick Control

The insect commonly called the "sheep tick" is really not a tick but a wingless fly; however, true ticks do attack sheep. Both of these parasites may be controlled by spraying infested sheep with DDT. A power sprayer is necessary to obtain good results on these pests. Treatment of all the sheep on your farm will constitute one activity.

Record to be kept:

1. Number and dates of sheep treated.
2. Gallons of DDT used.
3. Description of results obtained.

Entomology 5—Bedbug Control

Eradication of bedbugs from an infested house is readily accomplished by the use of DDT. One treatment if properly done is sufficient to eliminate this disgusting pest.

Record to be kept:

1. Type of building treated.
2. Method of application of DDT.
3. Description of results obtained.

Entomology 6—Earwig Control

Earwigs are pests in an increasing area of the state. DDT dust or spray properly applied gives very effective control. The entire premises should be treated. The dust or spray should be applied around the base of plants, foundations, or, wherever earwigs tend to congregate.

Record to be kept:

1. Amount of DDT used.
2. Where and when applied.
3. Description of results obtained.

Entomology 7—Control of Stored Products Insects

A number of beetles and moths attack stored grains, flour, cereals, and other foods. There are various ways of getting rid of them when they are discovered. Clean-up measures are of most importance. Placing all materials which may be attacked in insect proof containers will serve to prevent much of this type of damage. For stored materials which are not to be used as food for man or animals, DDT dust is effective as a preventive control measure.

Record to be kept:

1. Kinds of insect treated.
2. Treatment used.
3. Description of results obtained.

Entomology 8—Insect Collecting and Identification

The collection, proper mounting, labeling and proper naming to order of 50 kinds of insects will allow 25 points; or collection, mounting, labeling and naming to order of 100 kinds of insects will allow 50 points. Each species which is found causing damage to man or his possessions should be determined and both the common and scientific name recorded. (Example--alfalfa weevil—**Hypera postica**—order Coleoptera.) For these species, which are of economic importance, 5 points will be allowed for each one so determined and accompanied by a written report including the type and extent of damage, the general importance of the pest, and the control method or methods which may be used against it.

Equipment for collecting and preserving may be made at home or purchased from a biological supply company. Your county extension agent or extension entomologist can give you the names of such companies.

Entomology 9—Insect Rearing

Rearing insects through their life cycle is a very interesting activity. Many of our common insects are easily reared. It is best to start with eggs if possible; otherwise, nymphs or larvae may be the starting stage. The common plant-feeding kinds are the simplest to rear. A lamp chimney or screen wire cage is very effective for confining the animals (see bulletins for details). The larvae or nymphs must be supplied with fresh food as often as necessary, usually daily. Many of our common insects go through a pupa or resting stage either in the soil or above ground. They should not be disturbed while in this condition but left quiet.

After some time adult insects will emerge from these pupae. Some forms of insects do not have such a pupa stage and will be active right through to the adult.

Some of the insects you try to rear may have parasites within them which will kill them and later emerge as adults themselves. These will probably be flies or wasps. They are common in many caterpillars, alfalfa weevil and many others. If you get such parasites, mount them and put the host's name on the label also.

All insects reared through to the adult stage should be mounted and labeled.

Keep a daily record of the development of each insect including a description of each stage, size, color, when they molt their exoskeleton, habits, when they pupate, etc. It is fun and adds greatly to the record to make a drawing of each stage. The final report should also include the distribution of the insect, its economic importance if any, complete yearly life cycle, etc.

For each kind of insect reared, preserved and accompanied by a detailed report 10 points will be allowed.

References Supplying Detailed Information

JONES, M. P.
4-H CLUB INSECT MANUAL
U. S. D. A. Miscellaneous Publication 318. 1939.

OMAN, P. W. & CUSHMAN, A. D.
COLLECTION & PRESERVATION OF INSECTS
U. S. D. A. Misc. Pub. 601. 1946

SHULL, W. E.
IDAHO RECOMMENDATIONS FOR INSECT CONTROL
University of Idaho Experiment Station, Bulletin 252. 1944.

SHULL, W.E., MANIS, H.C. & HOLM, GLENN C.
GRUBS AND LICE ON CATTLE
University of Idaho Extension Bulletin, 155. 1945.

SHULL, W.E., HOLM, GLENN C., MANIS, H.C., & TUTHILL, L.D.
TICK CONTROL ON SHEEP
University of Idaho Extension Circular 92, 1946.

ENTOMOLGY DEPARTMENT
IDAHO SUGGESTIONS FOR USE OF DDT IN INSECT CONTROL
University of Idaho Experiment Station and Extension Division, Mimeo-leaflet 99, 1946.

SHULL, W. E. AND TUTHILL, L. D.
HOUSEFLY CONTROL WITH DDT
Univeristy of Idaho Extension Circular 90, 1946.

These bulletins may be obtained from your county extension agent or by writing the University of Idaho Extension Division, Moscow.

The following commonly available books will be helpful also; others may be available in your local library.

COMSTOCK, J. H. AND A. B
HOW TO KNOW THE BUTTERFLIES
Comstock Publishing Co., Ithaca, New York. 1920.

ESSIG, E. O.
INSECTS OF WESTERN NORTH AMERICA
MacMillan Co., New York. 1926

HOLLAND, W. J.
THE BUTTERFLY BOOK
Doubleday, Doran and Co., Garden City, New York. 1929.

METCALF, C. L. AND FLINT, W. P.
DESTRUCTIVE AND USEFUL INSECTS
McGraw-Hill Co., New York City. 1928.

Summary of Completed Activities

Activity No.	Title	Points Earned*

*Twenty-five points will be allowed for each control program completed and written up. Five additional points may be earned by inducing a neighbor to carry out such work on his farm. One-hundred points earned in any of the activities or combination of activities will be the equivalent of a standard 4-H club project.

Report Form

Activities 1-7:

Insect Controlled	Insectide Used	No. of Applications	No. of Hrs. spent	No. of animals, rooms, etc., treated	COST

Story: "What I Have Done to Control Insects on our Farm.."

(If more space is needed use additional sheets).