

Kentucky FARM AND HOME *Science*

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READ—

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of
Older Persons

Earth Helps
Heat Greenhouse

Systemic
Insecticides
Control
Webworm

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KENTUCKY AGRICULTURAL EXPERIMENT STATION

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In This Issue

HEALTH PROBLEMS OF OLDER PERSONS IN KENTUCKY STUDIED
 By E. Grant Youmans

Page 3

EARTH HELPS HEAT GREENHOUSE
 By Frank B. Borries, Jr.

Page 4

SYSTEMIC INSECTICIDES PROVIDE NEW METHOD TO CONTROL MIMOSA WEBWORM
 By J. G. Rodriguez

Page 6

The Cover



These blue grass experimental plots are being harvested to compare dry matter yield, one phase of their evaluation. Growing on the Experiment Station Farm, Lexington, are 25 strains and 6 commercial lots. The strains were selected from old sods and pastures in Kentucky; the lots were sent here from other states. Preliminary results indicate that nine strains are superior to the commercial lots in dry matter yield and in retarding crab grass invasion. This joint project of the U.K. Agricultural Experiment Station and the Agricultural Research Service, U.S.D.A., was started in 1950. R. C. Buckner is in charge. (Photo—R. C. May)

Seven out of each 10 of a total of 1,236 persons 60 years or more old reported having bothersome ailments

Health Problems of Older Persons In Kentucky Studied

By E. GRANT YOUMANS
Department of Rural Sociology

Health is the major problem of older age, according to a recent survey¹ in Kentucky.

In 1959, a total of 1,236 Kentuckians aged 60 and over were interviewed in their homes. Half lived in Casey county and half in Lexington. No institutionalized persons were included. Two out of 5 men and women (42 percent) named health as their most important problem.

One out of 5 (23 percent) named finances as a major problem. Others named "feel rejected" (9 percent), others said "feel useless" (6 percent), almost 2 out of 5 persons (38 percent) said they had no serious problems, and 11 percent named miscellaneous problems.

Asked to Name Ailments

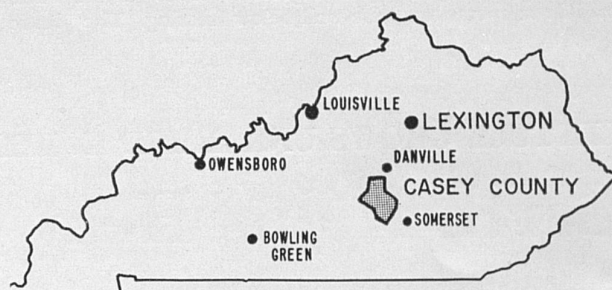
The older men and women were asked: "Do you have any ailment or health condition that bothers you either all the time, or off and on?" If they answered "Yes," they were asked to name their ailments. Seven out of 10 persons (68 percent) reported they were bothered with health ailments. The major ailments named, in descending order, were heart trouble (24 percent), arthritis and rheumatism (16 percent), digestive troubles (6 percent), respiratory ailments (6 percent), urological problems (6 percent), and ailments associated with the skeletal structure (5 percent). One out of 4 persons (26 percent) said he was not bothered with health ailments.

A larger proportion of rural than of urban persons reported health ailments (73 and 62 percent), and a larger proportion of low than of high socio-economic

status persons were bothered with ailments (75 and 60 percent). However, men did not differ from women in the proportions reporting health ailments, and health ailments increased only slightly with advances in age. In the youngest age group (60 to 64), 65 percent reported health ailments, and this proportion increased to 70 percent in the oldest age group (75 and over), a difference of only 5 percentage points.

Health Influenced Outlook

Persons with health ailments held a more pessimistic outlook on life than did those with no ailments. All persons interviewed were asked if they agreed or disagreed with the statement: "In spite of what some people say, the life of the average man or woman is getting worse, not better." Those who agreed with this statement, it is inferred, registered a feeling of pessimism. Almost half (46 percent) of those with



The men and women surveyed lived in Casey county and in the city of Lexington. Casey county is in south-central Kentucky and is relatively isolated from any large urban community.

health ailments and about a quarter (29 percent) of those with no health ailments agreed with the statement.

Older men were more pessimistic about life than were women (45 and 38 percent agreed), rural persons were more pessimistic than urban (48 and 33 percent agreed), and low socio-economic status persons were more pessimistic than high socio-economic status

(Continued on Page 8)

¹ The survey was made jointly by the Department of Rural Sociology, University of Kentucky, and the Farm Population and Rural Life Branch, Economic and Statistical Analysis Division, Economic Research Service, U. S. Department of Agriculture. A more detailed report on health problems of older Kentuckians appears in Progress Report 104, "Health Problems of Older Persons in Rural and Urban Areas of Kentucky," by E. Grant Youmans, published by the Kentucky Agricultural Experiment Station.



Ground heat coming from trenches helped these two lettuce varieties, growing in a plastic greenhouse, to survive when outside temperatures were well below freezing. The plastic

has been pushed back over the supporting wires to show the trench. Note the uprights placed in the trench. Construction features were slightly changed in houses built later.

LETTUCE GROWS UNHARMED IN BELOW-FREEZING WEATHER WHEN Earth Helps Heat Greenhouse

By FRANK B. BORRIES, JR.
Department of Public Information

Old Mother Earth helped heat some U. K. Agricultural Experiment Station plastic greenhouses this past winter.

Here's how it was done: Ground heat was combined with solar heat to keep the temperature of the experimental greenhouses well above the outside temperatures. In one house the heat came from ditches, just inside, running the length of the greenhouse and extending outside for several feet beyond the end of the greenhouse which sloped downward. The ditches were 3 feet deep and 8 inches wide.

Plants in the greenhouse were protected with a

double layer of very thin ($\frac{3}{4}$ mil) clear plastic supported by wires. The outer edges of this plastic extended over the ditches. The part of the ditches beyond the greenhouse was covered with a double layer of clear over black plastic, also supported by wires. The clear plastic was actually an extension of the $\frac{3}{4}$ -mil plastic covering the plants.

According to Horticulturist E. M. Emmert, ground heat from the ditches flowed up under the plastic covering the plants. Lettuce plants in this greenhouse did not freeze when the outside temperature went to 10 degrees below zero. This means that the difference between the outside and inside temperature was at least 42 degrees.

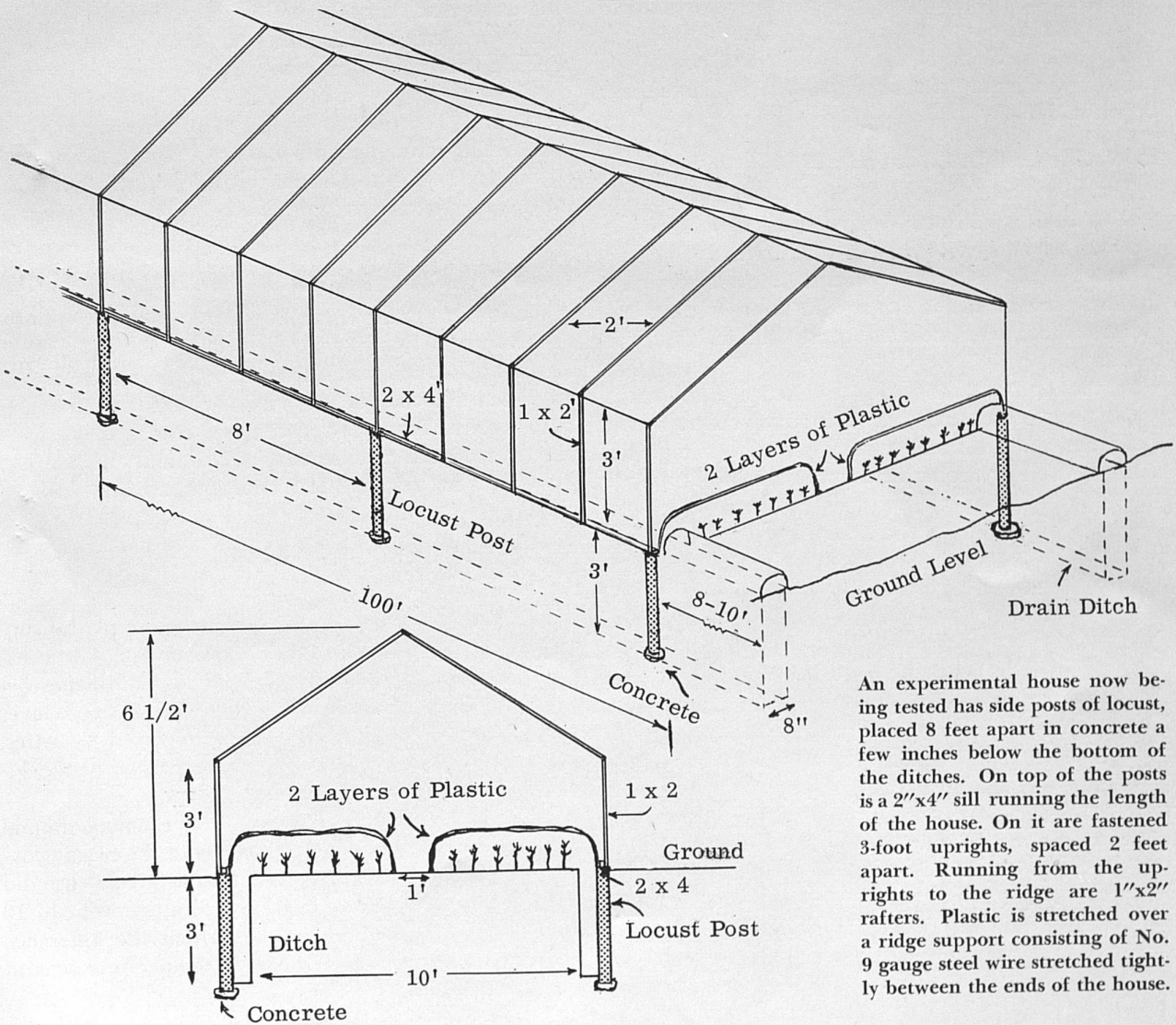
When the sun shone on the part of the ditches outside the house, the ground absorbed heat under the plastic cover. Then later the heat flowed upward out of the trenches into the plastic protecting the growing crops.

In addition to saving on heating bills for the plastic greenhouse, Emmert found that the ditches drained

(Continued on Page 8)



In one of the experimental plastic greenhouses this past winter heat came from ditches that extended from inside the house down a slight slope outside the house. The ditches outside the house were covered with a double layer of clear over black plastic supported by wire wickets. The poultry mesh shown in the picture was used to keep animals from falling into the outside trenches.



An experimental house now being tested has side posts of locust, placed 8 feet apart in concrete a few inches below the bottom of the ditches. On top of the posts is a 2"x4" sill running the length of the house. On it are fastened 3-foot uprights, spaced 2 feet apart. Running from the uprights to the ridge are 1"x2" rafters. Plastic is stretched over a ridge support consisting of No. 9 gauge steel wire stretched tightly between the ends of the house.

Systemic Insecticides Provide New Method to Control Mimosa Webworm

Statewide pest believed to have come to Kentucky in 1950; soil treatments proven effective

By J. G. RODRIGUEZ
Department of Entomology and Botany

Systemic insecticides used as soil treatments for the control of mimosa webworm were effective and more easily applied than other means of control.

This was shown in results of experimental work conducted last year by the Kentucky Agricultural Experiment Station. Work to devise means of controlling the mimosa webworm (*Homaduala albizziae* Clarke) was begun in 1957.

In Washington, D. C., Area in 1940

The pest, first reported in the Washington, D. C., area in 1940, is believed to have reached Kentucky in 1950. It is now statewide in distribution. In some areas it attacks native honey locust in forest nurseries; in this state most of the damage has been on the ornamental mimosa and moraine locust used in landscape plantings.

Larvae of the webworm skeletonize the foliage which turns brown and dies. The larvae makes strong webs, and the dead foliage remains webbed together until removed by strong winds or hard rain. In central

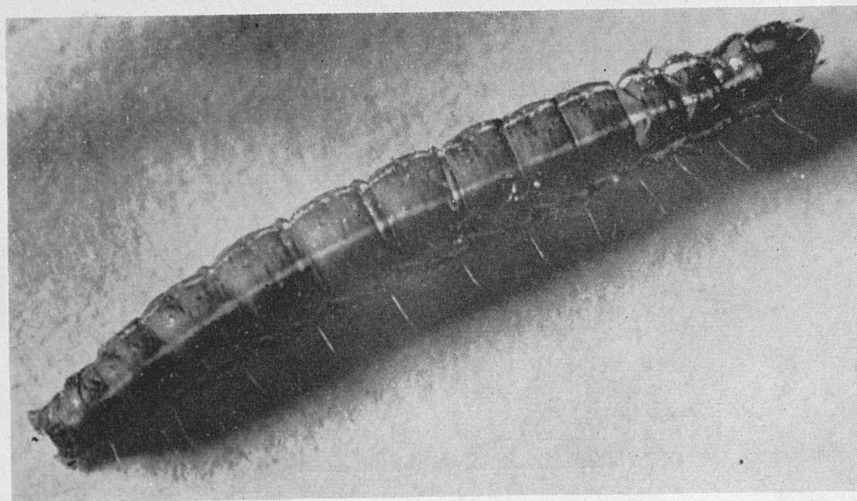
Kentucky the first signs of injury may be seen by early June, and the damage progresses rapidly through the summer months. Often trees will escape injury from the first two generations only to be injured severely in late August or in September by the third generation.

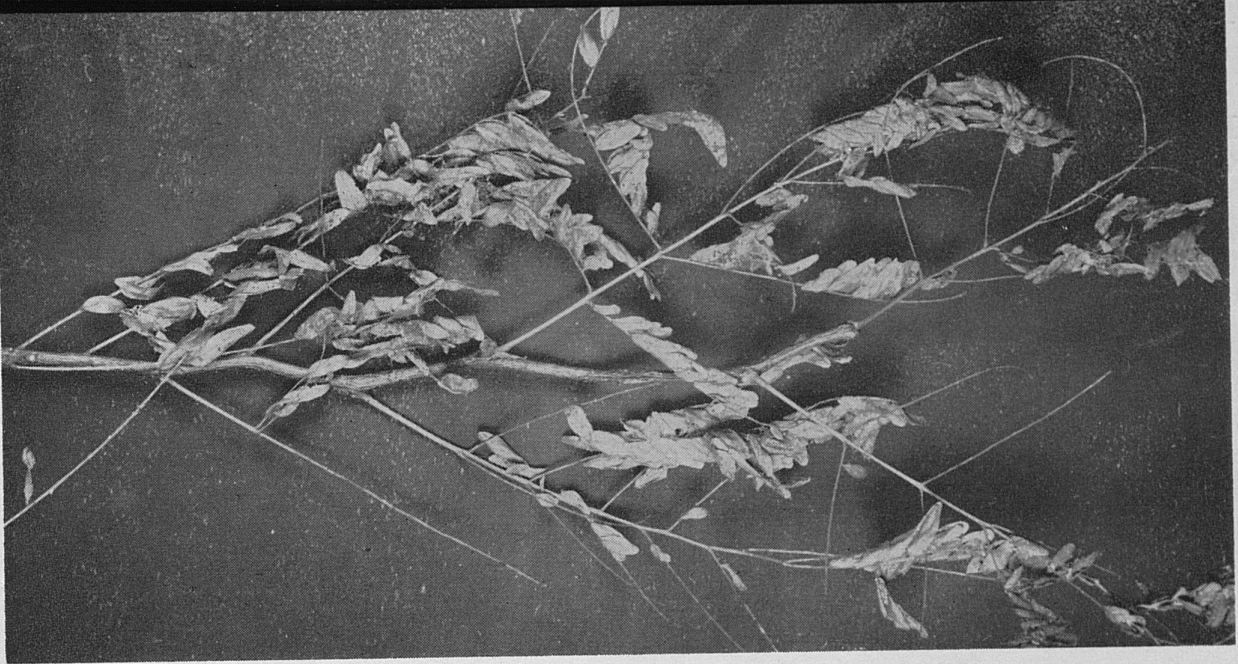
Experimental work to control the webworm in central Kentucky was started in 1957 when large sections of residential areas with moraine locust plantings were attacked by the pest and DDT used as a spray treatment was not satisfactory as a means of control. In August of that year 60 moraine locust trees in a residential section in Lexington were sprayed once with dieldrin, malathion, or toxaphene emulsion concentrates in a test to control the second generation of webworm. Toxaphene was the most effective, as determined by larvae counts 6 days after spraying, but by September it was difficult to distinguish the treated from the untreated trees due to the emerging third generation.

Three Techniques Studied

Work to study the feasibility of obtaining control of the webworm by systemic insecticides in one early-season application was started in 1959 in a local nursery. Three techniques, using phorate and demeton, were tested. Trunk applications of concentrates, applied directly or put in holes drilled into the trunk, gave variable results. Soil injections applied under

This enlarged photo shows characteristics of the mimosa webworm. Normally it is about a half-inch in length. The worms are pale gray to dark brown, with five white stripes along the body. They react by quick jumping or flipping movements when disturbed. They spin a relatively large amount of silk.





This moraine locust leaf shows how larvae of the mimosa webworm skeletonize leaf tissue and produce webs.

pressure, using 20 gallons of spray mixture in four to six probes within 3 feet of the tree trunk were effective with phorate when the dosage was 80 grams of actual toxicant for a 3-inch tree. Foliar applications of demeton or phorate were effective also, but one application was not sufficient to keep the trees free from infestation for the entire season.

In 1960 the same cooperating nursery provided another block of moraine locust trees for test work. These trees, about 3 inches in diameter, had a limb-spread of about 8 feet and were growing on a Kentucky bluegrass turf.

Twelve treatments, including an untreated check, each replicated five times, on three per replicate, comprised the experiment which dealt mostly with application of granular Di-Syston and phorate.

Applications Made May 19

In one series Di-Syston or phorate was broadcast around each tree in a circle 10 feet in diameter. The applications were worked into the soil with a garden-type tractor cultivator. In another series emulsion concentrates of phorate were mixed with water in a sprinkling can and applied around the trunk of each tree in a circular area 10 feet in diameter. Both series of treatments were made May 19, after which the treated area around each tree was watered with a garden hose until the ground became soft. Heavy rains occurred later, 12 inches falling in 4 weeks following application.

Final ratings made September 22 revealed the effectiveness of the Di-Syston and phorate granules when broadcast or applied by sprinkling can. Control of three generations of webworm was achieved. Dosages of 4 ounces or 8 ounces per 3-inch tree of Di-Syston (actual toxicant), applied broadcast, were equally effective. Eight ounces phorate, applied broadcast, was more effective than the 4-ounce dosage. Dosages of 4 ounces or 8 ounces of phorate emulsion concentrate applied with a sprinkler can, were equally effective.

Abundance of Water Needed

The results indicated the importance of an abundant supply of water to insure an even distribution of the material in the soil and a good uptake by the tree roots. Contributing to the effectiveness of the treatments probably was the unusually heavy rainfall occurring immediately after the time of application and during the following 4 weeks.

Cholinesterase inhibition tests made on foliage collected in late September from trees receiving the broadcast granule treatment showed a very marked residue still remaining from the Di-Syston and phorate application.

Putting the Di-Syston and phorate into six spaced holes, 1½ inches in diameter and a foot deep, within a radius of 4 to 5 feet from the trunk of each tree was not effective. Spray treatments of toxaphene or deme-

(Continued on Page 8)

Health Problems Studied

(Continued from Page 3)

persons (50 and 35 percent agreed). Feelings of pessimism increased very slightly with age (36 percent of those aged 60 to 64 agreed, compared with 42 percent of those aged 75 and over).

Additional data were obtained on health facilities and needs. Over half the men and women (54 percent) said they had consulted a physician during the five years preceding the survey, and less than one-third (31 percent) stated they had been to a hospital in that period of time. A little over one-third (36 percent) reported they were covered by health insurance. The average annual cost for medical services, other than health insurance, was \$42 per person. Only 1 out of 5 older men and women interviewed (19 percent) said they felt they needed health care in addition to what they were presently receiving.

Earth Heat Heats Greenhouse

(Continued from Page 5)

away excess water and also reduced excessive heat build-up inside the house on sunny days.

An earlier type house Emmert devised utilized four narrow but fairly deep ditches covered tightly with a semi-circular plastic hood. These ditches, dug outside the house, were 12 inches wide, 3 feet deep and 50 feet long. The end of the trenches was somewhat lower than the greenhouse, so the ground heat flowed upward to enter the greenhouse.

Inside temperatures in this house were as much as 5 degrees above those of houses not having any ditches. This margin could be very important when the freezing point is reached in late winter or early spring. If the outside temperature were to drop to 8 degrees, inside the house under a layer of plastic stretched a few inches above the ground the temperature would likely be about 28 degrees. But with the ditches put-

ting heat into the lower end of the house, the reading would be 33 degrees. Some crops that might tolerate near-freezing temperatures thus would be saved by the 5-degree margin.

Emmert said that one night this past winter the outside temperature reached 5 degrees. Yet there was no freezing at the upper end of the ditched house (where the heat flowed) and only slight freezing at the lower end.

Emmert makes no claim his experimental heating system will replace gas burners. He feels, however, that the margin of temperature provided by the ground heat system will be helpful when the greenhouse operator has started spring crops or when he is trying to maintain production in the late fall.

Systemic Insecticides

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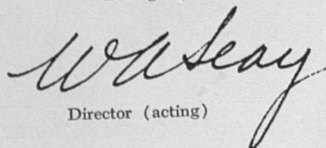
ton alone or combined with use of Di-Syston and phorate granules did not add to the effectiveness of the granules.

Soil injections of phorate mixture, (1 quart emulsion concentrate per 100 gallons), used at the rate of 20-25 gallons per tree will provide a relatively convenient and efficient method of application.

While trunk implantation offers some possibility as a means of introducing systemic insecticides into moraine locust trees, the material is apparently translocated unevenly to the aerial portions of the trees. In addition, there are other definite objections to using a method in which holes are drilled into tree trunks. Such holes weaken the trees and provide a point of entry for disease organisms.

As previously mentioned, placing the material in holes under the limb spread was another method which proved not effective. The reason is undoubtedly one of uneven distribution of the insecticide and limited uptake of the material.

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