BRIEFS

Short reports on current agricultural research

FOREST SAWFLIES

in California

Sawfly larvae defoliate coniferous trees, causing considerable damage. Since little is known about the species of sawfly in the western United States, studies are under way in California to determine the species present, their life cycles, and their damaging effects, both real and potential.

To date, at least five, and possibly six species, some of which may be new, have been collected in 19 counties, mostly in the northern and central forested regions. In the Shasta brushfield plantations, where a damage-evaluation study is in progress, the main trees attacked are ponderosa pine, which have suffered considerable damage from time to time.

Life cycles of the California sawflies appear to be similar. All species found to date produce one brood per year, with one possible exception. A species attacking Monterey pine in the Bay Area may produce two. The adults emerge from cocoons in fall and lay their eggs in small niches cut into the needles on the tree. Larvae hatch in late spring or early summer, and complete development in four to eight weeks. At that time—usually by July—they drop to the ground and spin papery cocoons in the duff or loose soil under the trees. A pupa forms in the cocoon, and the adult emerges in late August or September to begin another cycle.

Sampling studies of the cocoons in the ground show that their location—that is, the dispersal of the prepupal larvae—is markedly affected by shade and, to a lesser extent, by litter. In open-grown stands, cocoons are concentrated beneath the crowns; where shade from brush is present, they are distributed a considerable distance from the tree.—*R. W. Stark, Dept. of Entomology, Berkeley.*

Cause and control of

MOSQUITO HATCHING

Studies of the stimulus for egg hatching are basic to the development of new techniques for controlling certain mosquitoes of intermittently flooded lands.

Recently completed work indicates that hatching occurs when dissolved oxygen is removed from the water flooding sites where mosquito eggs have been laid. Studies with flooded soil samples show that the dissolved oxygen begins to decrease immediately after flooding, although several hours are required for complete removal. In investigating the physiological aspects of hatching, emphasis is placed on the manner in which the stimulus affects the mosquito embryo and on the responses of the embryo which lead to its escape from the egg shell.

Control could be achieved if hatching were either prevented or else brought about at a time when environmental conditions were unsuitable for development of the mosquito larvae.—*Charles L. Judson, Bureau of Vector Control, California Department of Public Health, and Dept. of Entomology, Davis.*

Study of

PYRIDINE NUCLEOTIDES

The B vitamin niacin is the functional part of the pyridine nucleotide coenzymes in their oxidation-reduction reactions. The reduced niacin portion of these coenzymes can undergo further chemical and biochemical reactions. The chemical instability of these compounds has required a study of special methods for their fractionation and purification. The enzymes catalyzing the modification of the reduced pyridine nucleotides are being isolated and characterized. The studies are an attempt to evaluate the biological import of these events. *S. Chaykin, Dept. of Biochemistry and Biophysics, Davis.*

Research on the

AGING OF WINE

The chemical changes in wines which occur with time and under different conditions of storage or processing are being studied to determine what reactions are involved and which components change most importantly. One immediate problem is that removal of components which give astringency and harshness to young wine has been accompanied so far by other undesirable flavor or color changes.

The research is being planned to yield information of permanent value over and above the possible benefits of quick-aging treatments. Chemical changes in stored wines may have much in common with shelf-life and storage problems in other foods and beverages.—*V. L. Singleton, Dept. of Viticulture and Enology, Davis.*

Hydraulic roughness of

IRRIGATED VEGETATION

The flow of water in farm irrigation systems is influenced to a large degree by the nature and shape of the soil surface. In irrigated pastures, the flow is further influenced by vegetation—its density, distribution, and stage of growth —and by depth of flow in relation to height of the vegetation.

To analyze some of these influences, a preliminary study, in which artificial plants were used in a hydraulic flume, was conducted. The results showed that some of the commonly accepted hydraulic equations are not applicable to the shallow flow that occurs in irrigated borders, and that adequate designs of these irrigation systems are very difficult to make. A further study is therefore being conducted by means of a 50′ long, tilting flume in which living sod will be placed. The sod will consist of different plant species and mixtures of species at various stages of growth and density. Rate of flow at various depths will be measured to determine the effect of the plant on resistance to water flow. With development of an index by which the vegetation can be described, the results can be applied directly to field problems. These data will be of value not only for the design of systems for irrigated pasture and alfalfa but also for grassed waterways, sod chutes, irrigated rice, and road ditches, and for evaluating overland flow through pasture or rangelands.—*J. R. Davis, Dept. of Irrigation, Davis.*

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The interconversion of acetate into more complicated molecules in wheat germ extracts is under investigation in the Department of Biochemistry, Davis, to identify the enzymes responsible for the formation of certain compounds in wheat germ tissue.