

BRIEFS

Short reports on current agricultural research

Decline of

REDWOOD TREES

Soil properties in old Redwood groves are being studied by sampling soils in healthy groves to ascertain the normal ranges of chemical and physical properties that accompany trees in good health. Soils in which trees have died recently or have shown signs of decline in vigor are being sampled also and their properties determined to see if any marked changes in properties have taken place. The research aims at finding some soil indicators of conditions that may result in decline of vigor or death of the trees. Such indicators could serve as warning symptoms and the corrective steps be taken to avert the loss of the old trees.—*Paul J. Zinke, School of Forestry, Berkeley.*

Chemical changes in

PROCESSED FOODS

Chemical tests for evaluating storage changes in processed foods revealed that storage temperature is one of the important factors influencing shelf life of canned tomato products. High storage temperature invariably causes rapid deterioration in quality. A storage temperature of 68°F or lower is desirable for quality retention.

Head space gases—including carbon dioxide, hydrogen, oxygen, and nitrogen—in stored canned foods are being studied by gas chromatographic methods. A sample with high hydrogen content in the head space would indicate rapid dissolving of tin and iron from the can into the food, eventually causing swelling of the can. This method is being used with other chemical tests to study storage stability of the canned cherries and apricots, pear puree, salad oil, and tomato products.—*B. S. Luh, Dept. of Food Science and Technology, Davis.*

Lygus bug damage to

TABLE BEET SEED

Lygus bugs under high population conditions cause a direct seed loss of 30%–35% to table beets grown for seed. This contrasts to a seed loss of from 50%–60% to alfalfa and umbelliferous

seed plants, when only moderate infestations are present.

High bug populations are necessary to give serious economic seed loss to table beet seed plants as the seeds appear to stick tightly and are not easily blasted. Furthermore, the weight or size of seeds does not seem to be materially reduced until large numbers of bugs are present. The most significant effect of the bugs to table beet seeds appears to be reduction of viability to about 60%.—*Elmer C. Carlson, Dept. of Entomology, Davis.*

True plant bugs on

STONE FRUITS

At least 16 species of true plant bugs—Hemiptera—occur together or successively in stone fruit orchards of California. As far as now known, three of these sucking insects—conspire stink bug, leaf-footed plant bug, box elder bug—puncture green almonds to produce a condition called dark kernel spot. Dimpling and pithy flesh of peaches are attributed to stink bugs. Lygus bugs produce pinholes and dime-spots in the skins of the same fruits. One kind of twig die-back of peach is caused by lygus bug bites, ovipunctures, or both. Other species of this general group of insects are under suspicion as being orchard pests, but the symptoms of their feeding or egg punctures have not been definitely distinguished. Complications arise when symptoms of injury produced by several species are confused. For example, Davis entomologists concerned with controlling lygus bug damage to peaches recently found that the minute pirate bug, a species widely regarded as a predator, also damages peach buds by ovipuncture and that this species may produce a large share of the terminal die-back hitherto regarded as lygus bug damage.

Current investigations on the biology and control of plant bugs affecting peaches and almonds have revealed several mixups as to identities of the bugs in relation to kinds of injury. Accordingly, this research at Davis is being extended to include studies of isolation cultures of each of the endemic species on fruits and foliage, to determine similarities of damage.—*Francis M. Summers, Dept. of Entomology, Davis.*

NEMATODES

attacking cotton

The cotton root-knot nematode is the only important nematode pest on cotton in California. Widely distributed in cotton-growing areas, it causes loss of yield mainly in cotton on sandy soils.

Preplanting applications of nematocides have proved satisfactory and economical. Yield increases following control have usually exceeded one-fourth bale of lint cotton per acre, and have been as high as one-half bale in experimental plots.

Cultural methods of control include alfalfa rotations, fallow periods, and regulation of irrigation schedules. Alfalfa rotations are effective in most areas, but their success is sometimes limited by the host plant range of the nematode population. A fallow period during the summer, particularly following grain, reduces soil populations so that a satisfactory crop of cotton can be grown the following year. However, one year of clean fallow has little or no effect upon root-knot nematode populations 2'–4' or more below the surface. Two years of clean fallow reduced the population at all depths, but did not eliminate the nematode at any depth. Significant yield increases have been obtained on some sandy soils by delaying the first irrigation, but this was not true if the soil had received a preplanting fumigation.

Resistance of all breeding lines and varieties of cotton is being investigated. So far, Acala 4-42 has been found only moderately resistant. The families comprising Acala 4-42 vary in resistance, but even in the most resistant, root-knot nematode may reduce yield by more than one-half bale per acre. If a high degree of resistance is found in any of the lines and varieties under study, they will be used as a source of resistance for Acala 4-42.—*M. W. Allen, Dept. of Plant Nematology, Davis.*

Trees required in life cycle of certain

ROOT APHIDS

Aphids of the genus *Pemphigus* are of particular interest to farmers and to entomologists because the aphids possess complicated life cycles—alternation of