

Adaptations of bees for

POLLINATING DESERT PLANTS

Interrelationships of desert plants and their pollinators are being studied with flowers of the evening-primrose family in undisturbed areas of the Mojave Desert. Each species of primrose in a locality is pollinated by closely related species of bees. Some bees pollinate the flowers only at dawn, others only at sunset.

The bees belong to a northern group and the plants are of tropical origin. Their association developed in recent geologic time as the plants and the pollinators became adapted to the arid conditions of the southwest.—*E. G. Linsley and J. W. MacSwain, Dept. of Entomology, Berkeley.*

ROOF OVERHANG

for farm buildings

Research carried out during the past few years has shown how the proper roof overhang or projection can protect large south windows from the extremes of summer solar heat. The same windows, protected in the summer, will receive much needed solar heat in winter, when the sun is low, adding greatly to the warmth and comfort inside.

Benefits from proper roof overhangs are most apparent in residences with large picture windows facing south, but also obtained in many poultry houses, hog houses, and dairy barns.

A simple formula has been developed indicating the approximate amount in inches of overhang or projection required to fully shade the south windows during the entire summer period. If the vertical height of the window, from sill to eave, is 50" and the latitude of the building is 40°, the necessary projection of the overhang out from the wall can be approximated at 42" by taking 3% of 40° to get 1.20° and subtracting 0.35° for the remainder of 0.85° which is then multiplied by 50—the window height in inches—to find the overhang projection of 42.5". The formula applies to all latitudes in California as well as most of the United States.—*L. W. Neubauer, Dept. of Agricultural Engineering, Davis.*

Vehicle ruts indicate amount of

SOIL COMPACTION

X rays of agricultural soils in a large container can show what happens when a load similar to a crawler tractor track causes a rut on the soil surface.

Tests with unsaturated soils show that 70% to 100% of the rut volume is absorbed in the soil by reducing the amount of pore space between soil particles, causing the soil to become more dense.

When the rut is shallow compared to its width most of the reduction of pore space is close to the surface and most of the energy required in making the rut goes into compacting the soil.

When the rut is narrow compared to its depth the pore space is affected at greater depths in the soil and a lot of the energy required in making the rut goes into shearing the soil. With some soils this shearing effect can cause a large reduction of the soil's resistance to compaction.—*William Chancellor and Roy Schmidt, Dept. of Agricultural Engineering, Davis.*

LONG-GRAIN RICE

for California

The loss of many foreign markets for California short-grain rice has increased efforts to develop a long-grain rice variety to meet the specific demands of growers, millers, and processors on the West Coast.

One of the major problems in the development of a long-grain rice variety for California has been the difficulty of isolating superior lines that mature early and have a high percent seed-set. Most of the better long-grain types from the southern United States mature later than the short-grain varieties grown in California. However, the use of controlled-climate chambers has enabled plant breeders to make crosses between rice varieties that differ widely in response to day-length.

The general adaptability of new long-grain varieties developed for California has been evaluated in field plots for three years in Kern County. One new variety has proved superior to the other long-grain varieties in the ability to emerge through the water after sowing, in gen-

eral vigor, and in yield. However, laboratory tests indicate that the cooking and processing behavior of the variety would be unacceptable in commercial channels. Therefore, long-grain rice varieties known to possess superior cooking and processing qualities will be used in the plant breeding program to improve the otherwise superior new variety.—*Joseph R. Thysell, Biggs Rice Experiment Field Station, Davis.*

Habits of bark-inhabiting

PEACH TWIG BORER

The peach twig borer passes the winter as a small larva living in a cell called a hibernaculum in the bark of its host tree. These overwintering larvae leave the bark in February and March, and move into the developing foliage. Later in the spring, however, very small larvae again are found living in cells in the bark. Samples of bark obtained from almond trees at weekly intervals during the 1960 growing season indicate a trend in the movement of these later bark-inhabiting larvae during the months when stone fruits are likely to become infested.

No larvae were found in the bark in April. During May, when the so-called May brood of larvae entered the foliage, some of this brood also entered the bark. The number of twig borers in the bark increased steadily during May. The number of bark-inhabiting larvae diminished slightly in June, but in July a very significant reduction occurred. Eight times as many larvae were found in samples taken in late May as from comparable samples taken in late July. In August and September a second increase in the number of larvae occurred. Samples taken in August and September yielded about twice as many larvae as the May samples, and more than ten times as many larvae as taken in late July. These twig borers will remain in hibernacula through the winter.

These observations suggest that worms which enter the bark during May and June leave the bark during July. If this trend is shown to be generally applicable to both almond and peach, it may prove to be of considerable importance to the grower.—*Douglas W. Price, Dept. of Entomology, Davis.*