

# BRIEFS

## Short reports on current agricultural research

### Impact loads for forming

#### HAY WAFERS

Hay wafers can be made against an anvil by using a single hammer blow. This process can be very rapid and yet use only low forces in accelerating the hammer.

The process is less efficient and the wafers are less dense and less durable than when static loads are used. Wafer density and durability can be improved by using a heavier slower moving hammer or by making a longer wafer—both of which cause the pressure to be applied for a longer time.—*William Chancellor, Dept. of Agricultural Engineering, Davis.*

### Soil carbon dioxide and

#### BLACK SPOT IN POTATOES

Susceptibility to black spot in potatoes, caused by bruising during and after harvest, may be related to soil environment during growth of plants.

Studies at Davis indicate a possible relationship between black spot and the carbon dioxide content of the atmosphere around the tubers. In storage experiments with newly harvested White Rose potatoes, 1% carbon dioxide doubled the amount of black spot but changing the oxygen concentration had no effect. These results imply that black spot susceptibility may be affected by overirrigation, soil compaction and surface crusting—conditions which increase the carbon dioxide in the soil.

Studies with radioactive carbon are expected to increase understanding of the relation of carbon dioxide to black spot.—*F. D. Howard, Dept. of Vegetable Crops, Davis.*

### Irrigation distribution of

#### WATER SOLUBLE ADDITIVES

Fertilizers, herbicides, or insecticides added to irrigation water are dispersed through the soil in a particular way dependent on the path and velocity of the moving water.

In saturated soil, water containing an additive in solution displaces water in the pores between soil granules at a rate which depends on the flow velocities within the pores and on pore distribution in the soil. If the additive remains in solution, it will appear in the soil, at

any given depth, well in advance of the expected time had no mixing occurred between the irrigating water and the soil water.

Experiments are being made on both saturated and unsaturated soils in which additives undergoing exchange, adsorption and other chemical and physical processes are involved.—*James W. Biggar, Dept. of Irrigation, Davis.*

### Survey of

#### SOIL-INHABITING INSECTS

Almost 1,000 samples of agricultural and nonagricultural soils and organic matter, some from every county in California and from bordering states, have been collected for a continuing survey of soil-inhabiting organisms.

Many of the insects collected in the survey are of little known, primitive groups, primarily of value in studies of the evolution of insects as a class. The difference between the evolution of the insect class and evolution of insect species is considerable.

Some specimens collected represent large families of organisms previously little known in California. More than 150 species of a beetle family, with only 75 described species in 1950, have been identified in the study.

Collections studied to date have been mainly from nonagricultural, mountainous locations. However, knowledge of the species and their distributions will be of increasing value as the agricultural and recreational uses of the areas are developed.—*Robert O. Schuster, Dept. of Entomology, Davis.*

### Measurements of

#### WATER TRANSFER IN SOIL

To make possible more accurate predictions of soil moisture movement, special apparatus, including small tensiometers, has been constructed for determination of flow parameters in the high moisture range. The tensiometers are being used also in an experiment designed to measure soil moisture tension gradients in the vicinity of growing roots.

Additional studies, involving the simultaneous measurement of water flow and salt movement, are being made to learn the basic mechanics of the relationships of water transfer in soil.—*D. R. Nielsen, Dept. of Irrigation, Davis.*

### Aphid control on

#### CARNATIONS

The green peach aphid is a serious pest of carnations, and it is difficult to control on this crop. A new systemic insecticide, Dimethoate, promises to be more effective than any available chemical that can be used under greenhouse conditions. Dimethoate is an organic phosphate that is relatively nontoxic to mammals.

Experimental work conducted at Redwood City during the past two years has included granular, dust, and liquid formulations of Dimethoate. The liquid applied in the irrigation water with the aid of a proportioner has given the most consistent results. Excellent control of the aphid has been obtained with a rate of 5–6 pounds of the technical material per acre, without any plant injury being evident. Dimethoate is not yet commercially available.—*A. Earl Pritchard, Dept. of Entomology, Berkeley.*

### Malo-lactic

#### FERMENTATION OF WINES

Many table wines and most of the red table wines produced in California undergo a second fermentation that converts one of the grape acids, malic acid, into lactic acid and carbon dioxide. After the malo-lactic fermentation a wine has less acidity and the flavor has changed to one of greater complexity.

In Europe, where viticultural conditions are different and the climate is cooler, wine makers have long considered the malo-lactic fermentation essential to the production of a great wine. In the cooler European climate, grapes tend to have high acidity, which must be reduced by a malo-lactic fermentation. On the other hand, the warmer California climate tends to cause lower acidity in wines and the undesirable loss in acidity in malo-lactic fermentation should be weighed against the desirable flavor changes.

Research is in progress to determine how malo-lactic fermentation can best be controlled by using pure cultures and which culture of the large variety of lactic acid bacteria causing malo-lactic fermentation gives the most desirable results.—*John L. Ingraham, Dept. of Viticulture and Enology, Davis.*