RESEARCH BRIEFS

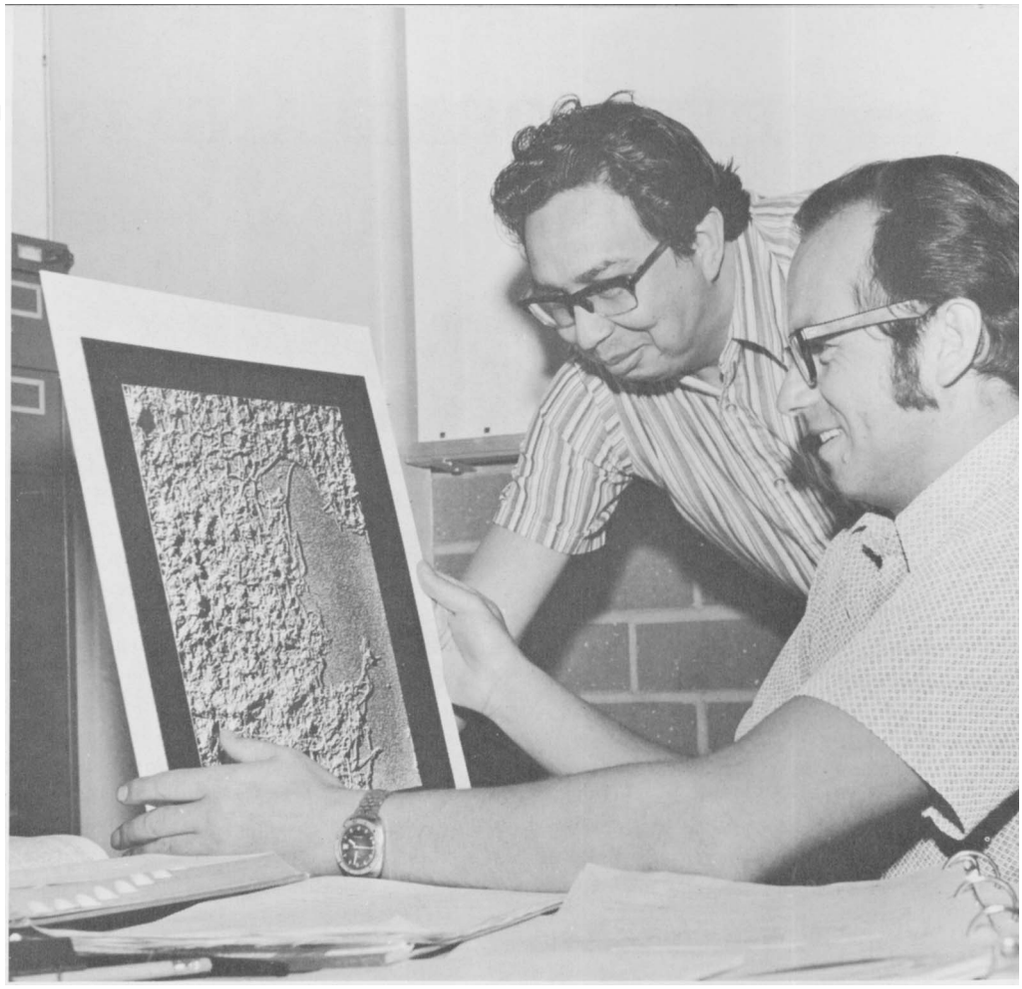
Short Reports on Current Research in Agricultural Sciences

ABSORPTION OF NUTRIENTS

OPTIMUM GROWTH of plants depends on their ability to extract and concentrate essential mineral nutrients from soil. The way in which plants absorb nutrients from soil and transport them to leaves is not clearly understood. This is particularly true for citrus where little is known about the mechanism of nutrient absorption.

With citrus (and other crops), problems involving soil fertility and nutritional deficiencies are usually minimized by fertilization. However, this procedure is not always satisfactory and can be both economically and environmentally expensive. An alternative would be to select rootstock varieties more efficient in mineral absorption, or better adapted to soil conditions unique to irrigated arid lands.

With this in mind, physiological and biochemical studies are being conducted to characterize the mechanism of nutrient absorption in roots of citrus. Preliminary results indicate that citrus absorb nutrients in a way similar to other plants. However, unlike many plants, potassium absorption in citrus is inhibited by calcium. The rate of K^+ absorption by roots from three-week-old seedlings of Trifoliate orange and all citrus species studied (Duncan grapefruit, Paperrind orange, Cleopatra mandarin, and Lisbon lemon) was inhibited by about 80%, if 20 ppm of calcium was included in the absorption solution. Studies to detect differences in absorption efficiency among rootstock varieties are in progress.—*R. T. Leonard and A. Esen, Dept. of Plant Science, U.C. Riverside.*



LIVING CELL WALL SYNTHESIZED

DR. S. BARTNICKI-GARCIA (seated) and Dr. J. Ruiz-Herrera look at a photo enlargement of cell wall microfibrils synthesized by the two scientists. Magnification is 20,000 times, using an electron microscope.

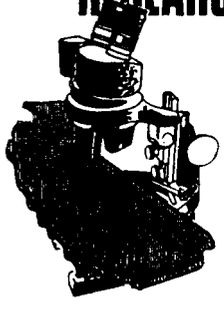
By duplicating in a test tube the formation of a living cell wall, the microbiologists have opened "a new field of experimentation: the possibility of understanding how cellulose and chitin, two of the most important natural substances in the world, are formed," said Dr. D. L. Weathers, chairman of the University of California, Riverside, plant pathology department.

Simply put, the UCR researchers have isolated a soluble enzyme from a fungus and then activated the enzyme to form chitin microfibrils.

Microfibrils (tiny fibers) are the skeletal parts and main ingredient in cell walls of most fungi, algae, and higher plants. They are composed of cellulose in plants and of chitin in fungi.

"Our finding is only for chitin, to date," explained Dr. Bartnicki-Garcia. "However, it may very well apply to the formation of cellulose, because of the similarity in structure of cellulose and chitin."

RESEARCH PREVIEWS



A continuing program of research in many aspects of agriculture is carried on at University campuses, field stations, leased areas, and many temporary plots loaned by cooperating landowners throughout the state. Listed below are some of the projects currently under way, but on which no formal progress reports can yet be made.

Natural toxicants in poultry feed

Avian scientists at U.C. Davis are studying some commonly used feedstuffs in order to identify materials toxic to poultry. Under investigation are the relation of vanadium to cholesterol synthesis, the presence of a growth-depressing material in rice bran, and the way that ammonia-treated cottonseed meal aggravates egg yolk discoloration.

CALIFORNIA AGRICULTURE

Progress Reports of Agricultural Research, published monthly by the University of California Division of Agricultural Sciences.

Jerry Lester ..... *Editor*
Linda Brubaker ..... *Assistant Editor*

Articles published herein may be republished or reprinted provided no advertisement for a commercial product is implied or imprinted. Please credit: University of California Division of Agricultural Sciences

California Agriculture will be sent free upon request addressed to: Editor, *California Agriculture, Agricultural Publications*, University of California, Berkeley, California 94720. Notify same office for change of address.

To simplify the information in *California Agriculture* it is sometimes necessary to use trade names of products or equipment. No endorsement of named products is intended nor is criticism implied of similar products which are not mentioned.

141