AGRICULTURE

Pesticide Use Studied

COORDINATED research between biologists and engineers is needed for the most effective use of pesticides, a U.S. Department of Agriculture engineer reported.

Dr. Walter M. Carleton of the Agricultural Research Service told a symposium on agricultural chemicals held at Beltsville, Md., that more efficient equipment for applying chemicals is needed, but engineers are hampered in developing such equipment by a lack of basic knowledge about the behavior of materials during and after application .

He said improved equipment to deposit chemicals in predetermined locations would increase the effectiveness of pesticides and reduce substantially the amount needed for optimum control. This, in turn, would reduce the cost to the farmer and reduce drift and residue hazards to man, animals, beneficial insects and crops.

Research has shown, Dr. Carleton said, that if equipment were available to apply pesticides to the proper location on tobacco, for example, optimum control of pests could be obtained with only one-fifth the recommended dosage.

The symposium also heard of the continuing livestock problem of industrial contamination of feed from Dr. Aubrey M. Lee, also of USDA's Agricultural Research Service.

While at this time no industrial contamination of livestock feed is known to be causing loss of livestock over wide areas, Dr. Lee pointed out, more must be learned about industrial processes, gases, wastes and additives in order to prevent their incorporation into feed.

Possible contamination of feed comes from industrial vapors and fumes that add fluorine, lead, arsenic and possibly other elements into the air. Industrial poisons, including carcinogens, get into feed, not only from air pollution, but also from lubricants used on agricultural machinery such as pelleting machines, Dr. Lee said.

Science News Letter, May 7, 1960

Tell How Plants React

WHAT HAPPENS to plants when treated with chemical growth regulators was reported by Dr. John W. Mitchell of the U.S. Department of Agriculture.

Such growth regulators are used in minute quantities—sometimes less than one teaspoon per acre—but can still induce growth responses in plants, Dr. Mitchell said.

He told a symposium on agricultural chemicals held at Beltsville, Md., that the fate of growth regulators in plants depends on many factors, such as temperature, humidity, the age and type of plant, and the type and quantity of chemical.

Plant-growth regulators, he said, must be absorbed by plants to be effective. How fast they are absorbed and translocated, or moved through the plant, can be changed by altering the structure of the chemical.

Dr. Mitchell and associates are also trying to determine what happens to therapeutants in plants. Used to cure plant diseases, therapeutants are of two kinds: those made chemically and those formed by organisms such as molds. Among such plant disease remedies are streptomycin, terramycin and other antibiotics.

It has been found that these therapeutants are readily absorbed by roots, stems, leaves and fruits of plants. Some change chemically while on the leaf and others change within the plant.

Science News Letter, May 7, 1960

MILITARY SCIENCE

Army, Marines Getting New Fuel-Cell Power

A PORTABLE fuel-cell power plant will be delivered to the U.S. Army Signal Corps and the U.S. Marine Corps soon. The power plant will have no major moving parts but will produce 200 watts of direct current at 24 volts.

It can be carried by a soldier on his back to power portable radar systems that can detect enemy movements through darkness and fog.

The new power unit, developed by General Electric Company, will weigh 30 pounds and will be about the size of a suitcase. Inside it will be 30 fuel cells.

Each cell works on oxygen from the air and hydrogen gas produced as the cell's fuel, a metal hydride, decomposes. The unit produces electricity as the fuel is consumed. The power unit never needs recharging. It needs just 72 pounds of fuel to do the work that otherwise would require half a ton of freshly charged batteries.

The Army Signal Corps in Washington, D.C., reports that an experimental model is due for delivery in May and developmental models in October. Nine units are to be delivered by December.

Fuel cells have been built experimentally before. But the new unit will be the first to be mass produced and made available to the military as a regulation unit.

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MILITARY POWER PACK—This model of General Electric's fuel cell power pack can be carried by hand or on a standard pack board. It was developed for the Marine Corps and the Army Signal Corps.

SEISMOLOGY

Small Quakes Often Worst

SO-CALLED "small" earthquakes, like the two that destroyed the town of Lar in Iran killing hundreds of people, can be much more devastating than great ones. Many great ones go almost unnoticed by the world if they hit in deserted spots, the U. S. Coast and Geodetic Survey reported.

While the world was awaiting news of the Iranian damage, the Coast and Geodetic Survey reported a much larger earthquake occurred in the South Pacific about 10 hours earlier. However, this quake is not believed to have caused great damage since no such reports are known to have been received.

The Iranian earthquakes struck on Sunday, April 24, four hours apart, and rescue workers and the Iranian Red Cross, called the Red Lion and Sun, were still recovering bodies about a week later. Farhad Sepahboudi of the Iranian embassy said that Lar is mainly an agricultural center.

The U.S. Coast and Geodetic Survey reported that the earthquakes had only registered slightly in Washington, D.C., and that they were probably near the surface.

Most earthquakes originate about 30 to 40 miles down although in a few spots, such as certain parts of South America and along the Sea of Japan and the Fiji Islands, quakes occur as far down as 500 miles.

Two major earthquake areas of the world are: the Circum-Pacific belt, including coastal areas around the Pacific Ocean; and the Tethus, or Alpine, Belt that ends at Agadir where a major earthquake occurred last February. This belt extends through Europe to Turkey and India and joins the Circum-Pacific Belt in Indonesia.

Earthquakes are caused by stresses in the earth's crust. This stress, of two blocks of rock formation rubbing against each other, is called shearing. No volcanic action can occur at the quake site because the rubbing blocks leave no room for molten materials to rise, if any are present. Volcanoes, often associated with earthquakes, lie on the landward side of the shallow earthquake zone.

Science News Letter, May 7, 1960