TECHNOLOGY

Infrared Aids Agriculture

An infrared scanner, a product of military technology, is proving useful as a means for seeing and mapping crop disease, pestilence and probable fires hidden to the naked eye.

➤ MILITARY TECHNOLOGY is producing some unexpected "fallout," the purposes of which could not be more peaceful.

The "fallout" consists of a number of sensitive instruments with broad application to agriculture and geology.

One instrument, the infrared scanner, is still classified by the Department of Defense. However, its utility in revealing such major facts as next year's total food world production has been proved in a number of studies reported at the American Association for the Advancement of Science meeting in Berkeley, Calif.

Aerial photography includes the thermal and ultraviolet spectrums, as well as the infrared and visual. With these techniques, scientists are now able to see and map crop disease, pestilence and probable fire locations hidden to the naked eye, reported Dr. Robert Colwell of the University of California at Berkeley.

One of the most damaging wheat diseases —black stem rust—can be seen better at 10,000 feet with infrared photography than from 10 feet on the ground, said Dr. Colwell. The rust shows up as dark shadows on a dark background. With early diagnosis of the disease, better suppressive measures can be taken, he reported.

The instruments are so sensitive that they will disclose what kind of crop was planted one and two years ago. For instance, Minnesota photographs of two fields of corn came out one dark and one light. Upon investigation Dr. C. E. Olson Jr. of the University of Michigan found that the dark appearing field had been planted in alfalfa for three years previously. Alfalfa produces nitrogen and moisture that were sensed by the infrared scanner, he said.

Experiments which seemed even more delicate have been conducted by the University of Wisconsin reported Dr. John L. Place of the Office of Naval Research in Washington, D.C.

Scanners are being used to measure the amount of dust in southern Asia. The theory holds that man has gradually destroyed vegetation in southern Asia, giving rise to excessive dust. If this is the case, it could be affecting the monsoon rains in this area, said Dr. Place.

Dust reduces the amount of sunlight and heat reaching the earth. Monsoon rains are sucked into India and southeast Asia by the tremendous heat of the countries. Dr. Place explained that dust with its cooling action could be disrupting the monsoons.

Scientists at the symposium on "Remote Sensing of Environment" agreed that these new photographic instruments allow a rapid means of surveying large areas and give an idea of total food production.

One of the primary missions of the upcoming Apollo Moon program will be to survey the earth, not the moon, with these instruments.

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Allied Chemical Corporation

FIGHT WEEDS WITH FIRE—Flame cultivation, an increasingly used method for killing weeds by firing them with a big, mobilized blowtorch, is demonstrated on experimental plots by Allied Chemical Corporation. The corn stalks are sturdy enough to withstand the heat but the weeds which are not are killed.

Camels From New World

➤ THE LONG-LEGGED, humped camels traversing the Arabian and Sahara Deserts actually originated in North America, not Asia or Africa.

Furthermore, these early "ships of the desert" used to avoid sand or dry environments, and preferred fertile lands, reported Dr. S. David Webb of the University of Florida, Gainesville.

Early fossil records show that camels existed in the New World 40 million years ago, whereas they first appeared in the Old World only three million years ago, Dr. Webb told the American Association for the Advancement of Science.

After evolving in North America, they crossed the Bering Bridge to Asia before the Ice Age blocked off the northern land with glaciers.

The early camels apparently were not particularly well adapted to arid environments, since they lived in grasslands, said Dr. Webb. Later, when climate changes occurred during the ice ages, they quickly adapted to living in deserts and the treeless steppes of Asia.

At that time they developed their extraordinary ability to use their body fluids other than blood and to withstand extremely high body temperatures without losing precious fluids by sweating.

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Too-Long Pregnancy Bad

➤ THE HAZARDS of premature birth have been so stressed that the dangers of a too-long pregnancy are often overlooked.

In one study of 20,000 pregnancies that lasted three weeks or more past the expected date, the death rates of infants before and soon after birth were twice what would be expected after a normal, nine-month pregnancy, reported Dr. Michael A. Zwerdling of the University of California, Berkeley, to the American Association for the Advancement of Science meeting.

Very large babies might be expected more frequently in prolonged pregnancies, Dr. Zwerdling said, and these children might be injured during the delivery process because of their size.

"Actually, our findings indicate that babies over nine pounds have the lowest mortality rates," Dr. Zwerdling explained, "and that the greatest risk in prolonged pregnancy is among those with very low birth weights, less than five and a half pounds."

Death rates continued higher than normal in these long-term-pregnancy babies for at least the first two years of life.

A group of 600 women with prolonged pregnancies were especially observed at Dr. Zwerdling's clinic, along with the infants they bore. The babies were studied for several years with regard to congenital malformations, growth and illness experience.

Preliminary results suggest that 30 of every 1,000 prolonged-pregnancy children have severe malformations, compared to 20 per 1,000 in the normal group.

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