

## ABSTRACTS

**Coloured Insecticides for Aphids.** *Scientific American* 1937. Mr. Moore concluded from his experiments that the aphids were attracted to the plants sprayed with bordeaux mixture because of increased intensity of light reflected from the sprayed surfaces. Spraying black coloured mixtures was found to be effective in reducing the infestation.

V. R.

**Frost Resisting South American Potatoes.** *Science* vol. 85. No. 2196. The All Union Institute of Plant Cultivation of U. S. S. R. was able to collect by sending a number of scientific research expeditions to South America, a large number cultivated and wild varieties of potatoes unknown to European countries, and a few of these new varieties were found to be resistant to *phytophthora*—the most dreaded disease of potatoes. One expedition was successful in spotting out a remarkable wild variety 'acaule' resisting frost of 17°F. The Institute has crossed these with local varieties and isolated from the progenies cultures breeding true to high yield and resistance to disease and cold. As a result, the problem of sowing the potato crop in the U. S. S. R. has now been considered as solved.

V. R.

## EXTRACTS

**The Phenomenon of Plant Growth.** From a series of experiments Dr. Johnston of the Smithsonian Institution, and Dr. Burkholder of Connecticut College have studied the complementary roles of light and darkness on plant growth. According to them, nightly sleep or something very like it, is as necessary to plants as to animals. It was found that strong sunlight was destructive to the *auxins*, which are the growth-promoting substances in plants, while in an equal period of darkness, the growth-promoting power was greater. The inactivation of the *auxins* varied with the length and intensity of illumination, and the species of the plant. The phenomenon of growth is most rapid in darkness. It may be concluded that light is required for the synthesis of the *auxins* in the growing tip of the plant, but, once formed, they are most effective as growth's activator in darkness. *Science*, March 19, 1937.

**Loans for purposes of irrigation work.** The following are the conditions under which loans are given in Rhodesia by the Government for the construction of soil conservation works.

(a) Interest at the rate of  $4\frac{1}{2}$  per cent. per annum, and, if desired, the interest charges can be funded with the loan for the initial three year period during which no repayments are necessary, and the whole sum thereafter repaid in annual instalments up to a maximum period of 17 years.

(b) The loan to be secured by notice to the Registrar of Deeds for registration against the title deeds of the property concerned, or on the personal security of two sureties, who must be holders of immovable property in Southern Rhodesia.

(c) One-fifth on the loan can be paid out as soon as the applicant is ready to start the works, and the balance is paid on the certificate of an engineer of the Irrigation Division that the works have been satisfactorily completed and are valued at the amount covered by the loan.

In addition to the above financial provision an arrangement has been made with the Premier Portland Cement Company (Rhodesia), Limited, whereby

supplies of cement at reduced rates are available to farmers for use in water conservation works as under:—

1. Farmers who obtain a loan from Irrigation Loan Funds or from the Land Bank for the purpose of constructing water conservation works can obtain the cement required for the construction of these works on a Government requisition at a reduced price of 2s. 7d. nett per bag (94 lbs.) f. o. r. Cement Siding. The requisition for the supply of cement will be issued by the Irrigation Engineer responsible for the inspection and supervision of the works proposed. (*The Rhodesia Agricultural Journal* Vol. XXXIV No. 2 February 1937 Pages 85 and 86).

## Gleanings.

**Soil Erosion.** Compiled by W. C. Lester-Smith, B.A., Dip. Rur. Econ. (Oxon), A. I. C. T. A. (Trinidad). *Tropical Agriculturist, Ceylon*, Vol. 88, No. 2.

Soil erosion is a process which goes on in all places at all times and at rates which vary according to local conditions. \* \* \* \* \* The distribution of rain, its daily intensity and the frequency of short-period downpours of extreme severity, are of most importance. \* \* \* \* \* It has been established from observations made in widely different parts of the world that practically all the rainfall of a day's heavy rain usually falls within 10, or even within 7, consecutive hours, while a disproportionately large fraction of that amount falls within 1, 2 or 4 hours.

The results of processes of soil erosion are of the kinds which may be referred to as internal and external.

The internal results are restricted to the land which is being eroded. The surface soil, which contains the greater part of the nutrient matter and the whole of the organic food of plants is bodily removed, and with it are lost, not only the actual salts which serve to nourish the plant, but also the micro-organisms which bring these salts into this condition is thus seriously reduced and its physical properties, such as water-retaining capacity, are altered by the destruction of its tilth.

The soil, depleted of its most valuable ingredients by erosion, ceases to be able to support the crops grown on it, with result that even the protection which these crops normally give is largely lost. Erosion now reaches its second stage. The remaining top soil is washed away bodily; from the channels formed by the water as it rushes down the slopes, subsoil is scoured away and gullies and ravines develop.

The external results of erosion are many; they take various forms and are of a serious nature. One result of the removal of a forest cover is interference with the flow of streams. Water is removed rapidly from unprotected land instead of being temporarily detained. The flow of streams arising in such land becomes irregular, being decreased during fair weather and becoming torrential during monsoon weather. Irrigation channels and rivers become choked by silt carried down from the eroded land, and irrigation works are often destroyed by the rush of water during heavy weather. Agricultural areas below the eroded land, such as paddy fields, may be ruined by the deposition of large quantities of sand silt.

**The control of soil erosion.** Soil erosion is caused primarily by the free movement of matter on the surface of the ground. \* \* \* \* \* It is not generally realised that doubling the velocity of water increases its transporting power sixty-four times.

To reduce soil erosion to a minimum it is necessary to:—

1. Protect the soil from the direct erosive action of rain water falling on it.
2. Obtain the maximum absorption of the rain water where it falls.