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Tensiometers for Following Soil Moisture Conditions in the Field (Abstract)

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TENSIOMETERS FOR FOLLOWING SOIL MOISTURE
CONDITIONS IN THE FIELD (ABSTRACT)

ROY A. BAIR

Fifty instruments were installed at various soil depths and distances from field grown maize plants in order to follow daily moisture changes without disturbing the growing plants. Tensiometer readings were used to study the rate of root penetration, comparative moisture use at different depths, rate of rainfall infiltration in the soil, and to calculate the depth of the water table. The zone of active water absorption progressed downward as much as two inches a day. Within the root zone the rate of moisture absorption was highest near the stalk. Soil moisture classed as equally available by mechanical methods is, in fact, less accessible when situated farther from the base of the plant, even though roots completely ramify the area. Roots seemed to ignore reserves at 24 inches after rainfall had supplied moisture at 12 inches. Two rains of more than one and one-half inches failed to penetrate to the 24 inch soil point. When the soil was sufficiently moist to operate tensiometers, the weekly dry weight increase of 480 maize plants followed closely Lehenbauer's physiological temperature indices.

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A SIMPLE METHOD FOR THE GERMINATION OF
POLLEN OF MAIZE AND POTATO (ABSTRACT)

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In connection with studies of the effect of ecological factors on pollination and yield of maize, a reliable method for rapidly evaluating the viability of pollen has been developed. With both maize and potato pollen as high as 90 percent germination has been secured within 30 minutes after inoculation on a nutrient solution containing only agar, cane sugar and water. The growth of the tubes begins within ten minutes, is sufficiently rapid to be plainly visible under the microscope, and may continue until a tube length fifty times the diameter of the pollen grains is reached. Protoplasmic streaming is strikingly rapid. Preliminary