THE RELATIONSHIP BETWEEN LEAF AREA AND YIELD OF THE FIELD BEAN WITH A STATISTICAL STUDY OF METHODS FOR DETERMINING LEAF AREA

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SINCE 1921 considerable emphasis has been given to fertility studies with reference to the field bean, but rather discouraging results have been obtained due to the inconsistency of response to the same analysis of fertilizer both during the same season and from year to year on the same soil type. However, a few remarks as to the growth habit of the bean plant in Michigan might tend to clarify these apparent discrepancies in the results obtained.

The bean-producing area is located in the central-eastern part of the Lower Peninsula, known locally as the Saginaw Valley and Thumb area. The soils in this area are predominately fertile loams and silt loams. Higher yields of beans are secured from this area than from other areas in Michigan although the soil types are very similar. This situation would indicate that factors other than soil fertility materially affect the growth and maturity of the crop.

The length of growing period of the field bean is approximately three months. The beans are planted normally about the first week in June and harvested during the first part of September. As the crop must mature in a relatively short period of time, climatic conditions play a very important part in the development of the plant. The crop is susceptible to late spring and early fall frosts and is extremely sensitive to adverse moisture conditions. At blossoming time humidity and temperature conditions appear to control the number of pods that are set. Under unfavorable temperature and moisture conditions a number of the blossoms are frequently blasted, thus resulting in a material decrease in the yield. It is frequently observed early in the season that plants on fertilized plats make considerably more vegetative growth than do plants on plats receiving no fertilizer. This difference in growth appears gradually to diminish. At the time of blossoming the difference is very small, and at harvest time the yields

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