EFFECT OF IRRIGATION WITH SEWAGE EFFLUENT ON THE YIELDS AND ESTABLISHMENT OF NAPIER GRASS AND JAPANESE CANE

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Due to higher temperatures during the course of the year and to the type of soil developed under these climatic conditions, the establishment of a perennial forage crop in Florida presents a different problem from that in northern portions of the United States. The limiting factor for the establishment of a perennial forage crop under Florida conditions appears to be the distribution of rainfall as related to nitrogen utilization. An experiment using sewage effluent for irrigation purposes afforded an opportunity to study the establishment of such forage crops under Florida conditions.

In February 1922, a cooperative agreement was entered upon between the Florida Agricultural Experiment Station and the Division of Agricultural Engineering, Bureau of Public Roads, U. S. Dept. of Agriculture, for the purpose of studying the use of sewage effluent for the fertilization of forage crops. For this purpose, eight plats of Japanese cane (Saccharum officinarum) and eight plats of Napier grass (Pennisetum purpureum) were established in February 1922. Each plat consisted of six rows, 6 feet apart on a gradual sloping area of Norfolk fine sandy soil (deep phase). Four of eight plats in each case were used for irrigation purposes, the remaining four plats receiving no irrigation.

The sewage effluent used for irrigation was obtained from the septic tanks employed at the time for sewage disposal at the University of Florida. The receiving tank for the effluent was placed outside the plats at their lower level. The effluent was pumped to the higher border of the plats through a pipe line and a valve system installed for distribution. The valves were so arranged that the effluent flowed by gravity down the four middles of the six rows of Japanese cane or Napier grass in each irrigated plat. Each irrigated plat received a 24-hour flow of this effluent every eight days from early spring until late fall or until the harvest of the crops, except during the vacation periods of the University. In 1924 and 1925, a three-row plat of un-