THE EFFECT OF RAINFALL AND TIME OF PLANTING ON YIELD OF TARO (*COLOCASIA ESCULENTA* (L.) Schott) IN WESTERN SAMOA

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SUMMARY

The best time for planting rainfed taro in Samoa is in the second half of the year. This is explained on the basis of correlations between yield and cumulative rainfall occurring during the months of tuber bulking. Rainfall during the period up to tuber initiation is only weakly correlated with yield. If irrigation is practised, the time of planting is less important.

RESUME

La meilleure période pour planter le taro pluvial en Samoa se situe dans la seconde moitié de l'année. Cette observation est fondée sur les corrélations existant entre le rendement et l'accumulation de la pluie pendant les mois où le tubercule se développe. L'intervention de la pluie jusqu'a la période de d'initation du tubercule n'a qu'une faible corrélation avec le rendement. Si on pratique l'irrigation, la période de planta tion a moins d'importance.

RESUMEN

La mejor época de siembra para malanga de temporal en Samoa, es en la segunda mitad del año. Esto se explica sobre la base de correlaciones entre el rendimiento y la lluvia acumulativa que ocurre durante los meses de abultamiento de tubérculo. La lluvia caída hasta la iniciación del tubérculo, correlaciona sólo débilmente con el rendimiento. Cuando se tiene riego, la época de siembra es menos importante.

INTRODUCTION

Taro is primarily adapted to moist environments, but can be grown under a wide range of agricultural circumstances ranging from paddy culture in swampy lands, upland conditions with irrigation, or as a rain fed crop[6]. In Samoa, most taro is grown as a dry land rain fed crop. As in many Pacific islands where taro forms a staple diet item, planting is carried out every month and fresh taro is available throughout the year. Reynolds[8] has shown responses to irrigation during the dry season. Little is known in detail on the influence on yield of dry spells occurring during different parts of the growth cycle. We have examined the effect of rainfall and time of planting on taro yields in Western Samoa in an attempt to gain some information on this.

MATERIALS AND METHODS

Twelve blocks of taro were planted at Alafua College on a uniform area during the period September 1969 to March 1970. A single block was planted on the 15th day of each month. A block comprised 4 plots measuring 5.5 x 4.6 m on each of which a different spacing was used (91.5 x 1.5 cm, 76 x 76 cm, 76 x 61 cm and 61 x 61 cm): The spacing trial is not analysed in this paper but yield data from the 4 plots at each harvesting date have been combined to give a mean taro yield in kilograms per plot. All the plots were harvested after a growth period of 7 months. For various reasons yield data for only 9 harvests were obtained. We have assessed the relationship between yield data and rainfall occurring at certain growth stages by correlation.

RESULTS

The rainfall pattern over the growth period for each planting date is presented in Table 1 with details of taro yields. Correlation coefficients for taro yield on rainfall for 10 different cumulative combinations of monthly rainfall are presented in Table 2. It is apparent that r values are highest for sets of rainfall occurring in periods of a few months leading up to the second half of the seventh month of growth, hence, this is the critical period for yield depression by drought. Eighty three percent of variation in taro yield is accounted for by rainfall in months 4,5 and 6 ($r = 0.91^{***}$).

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