

INTRODUCTION

In Europe and North America the potato (Solanum tuberosum) is an important bulky carbohydrate food for industrial populations. Yams (Dioscorea spp.) have potentially a similar importance to the growing urban populations of the wet tropics. Unlike cereals (the alternative carbohydrate foodstuff) yams do not need a markedly dry season for ripening and harvest, and so are well suited to humid areas. They are quite easily stored but have the disadvantage not shared by cereals, of being too bulky and too fragile for easy transportation.

Because of the belief that yams could, in the future, play a large part in feeding industrial populations in the tropics, a programme of research has been undertaken at the Imperial College of Tropical Agriculture. Various aspects of their culture have been investigated; James (1953) studied the growth and development of yams, and devised a method of mechanically preparing the beds, and planting, which reduced manual labour considerably. Work is at present in hand (Falode, private communication) to achieve weed control by spraying, and is showing promise. The possibility of avoiding staking with bamboos by interplanting with maize to support the dense growth of vines has been investigated, and found to be impracticable. Teriba (private communication) has worked on the use of plant growth substances. One hormone which reduces sprouting has been used to lengthen the storage period. Another which breaks the dormancy period has been investigated so that out-of-season crops can be grown with the aid of irrigation. As this work is giving some success it may be possible to supply yams throughout the year. One of the biggest expenses incurred with the yam crop is that of hand harvesting. Warren (1957) published his D.T.A. report on work done to develop a simple tractor-mounted yam harvester. It is from his work that this investigation is a continuation.

The object of this project is, by making structural modifications and by estimating the extent of damage, to make an effective machine, to evolve an efficient system of field organisation, and to assess the resultant saving of labour.

By the time Warren drew his work to a close after several major modifications, he had made a machine which would satisfactorily loosen and partially lift yams. This machine, which was not tested adequately due to lack of time, was made up of several components: the scoop, a pair of discs, and a pair of beams (called "support bars" by Warren).