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Preliminary assessment of the marketing systems for yam in Ghana

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The infrastructure of yam marketing systems in four regions in Ghana has been investigated and the trading practices of the principal agents documented. In two case study areas (Greater Accra and Brong Ahafo Regions) data were collected to assess the volume of yams entering the systems; the extent of post-harvest losses associated with trading in major wholesale and retail markets and the gross margins available to the traders. Preliminary data from Techiman Market, Brong Ahafo are reported. Predominant constraints cited by traders were: transport costs, seasonality of production, poor market infrastructure, lack of credit and damage to and rotting of tubers. Analyses suggest that during the early part of the season significant quality depreciation of yams is associated with pre-harvest infestations, harvesting damage and exposure to intense sunlight in the market place. Such loss of quality can lead to price discounting of 25-40% with absolute losses in the market place being less than 10% during the early season.

Background

Yam (*Dioscorea* spp.) has potential to contribute significantly to food security. However in Ghana, high production costs and post-harvest losses have increased prices to the extent that many consumers are having to turn to cassava as a substitute (TETTEH and SAAKWA, 1991). The majority of research conducted on yams has focused on pre-harvest constraints and only a few studies have considered the improvement of the post-harvest storage system (ANON., 1994a, b; GTZ, 1995; HENCKES *et al.*, 1995). Marketing has largely been ignored.

The need to improve post-harvest storage handling and transportation is emphasized by the results of surveys conducted by both Gesellschaft für Technische Zusammenarbeit (GTZ) and the Natural Resources Institute (NRI). A survey of on-farm losses was conducted in Ghana in 1994 by GTZ (ANAMOH and BACHO, 1994; ANON., 1994a, b). Estimates for on-farm losses for yam and cassava together ranged from 4-25% and constituted a significant financial loss for farmers (estimated at an average of 194 000 Cedis per farmer per season). An additional survey carried out by GTZ in 1995 focusing specifically on yam indicated an average loss of 18% over a typical storage period of 16 weeks (GTZ, 1995). Work undertaken by NRI in conjunction with the Ghanaian National Programmes has shown that large quantities of yams are transported considerable distances from areas of production to urban centres and to ports for export (KLEIH *et al.*, 1994). Observations suggest that considerable losses occur during this process of transport and marketing, but few reliable data exist on the extent of these losses or the nature of the constraints that inhibit the further development of these systems.

This paper represents preliminary findings from a British Department for International Development project entitled "Relieving post-harvest constraints and identifying opportunities for improving the marketing of fresh yam in Ghana". The specific aims of this project are to determine and assess constraints, and investigate appropriate technical solutions and opportunities for the more effective handling and marketing of fresh yam.

Methodology

Participatory Rural and/or Market Appraisal techniques (KLEIH *et al.*, 1997) were used to conduct case studies in four regions of Ghana. Data have been collected to describe the principal types of traders and agents working with fresh yams and the characteristics of the marketing systems for the major fresh yam trading centres located in the towns and environs of Tamale (Northern Region), Accra and Tema (Greater Accra Region), Techiman (Brong Ahafo Region) and most recently various districts in the Volta Region. Simultaneously base-line studies of the socio-economic constraints influencing the trading of yams have been undertaken. Attempts were made to determine consumer preferences and also quantify the economic depreciation associated with particular physiological and microbiological loss in tuber quality.

In Techiman and the Volta Region sampling has been conducted to determine the incidence and severity of the biological deterioration of yam tubers arriving at the main marketing centres. Wherever possible yam tubers have been selected from consignments in the market place and assessed for: quality grade allocated by both farmers and traders, premium and discounted price, length and fresh weight of tubers and the incidence, location and extent of external grazes, bruises and mechanical injury; physiological, heat and rodent damage; insect, nematode and pest damage, and bacteriological and mycological lesions. Data for Techiman market are summarized here.

Preliminary Findings (Techiman Market)

Market Characterisation

At the main yam market in Techiman over 60 itinerant and sedentary yam traders, commission agents and retailers were informally interviewed over a 4 week period. Their trading practices were described and monitored (GRAY *et al.*, 1996). Data collected from such interviews were cross-checked with records of the volume of yam consignments arriving in the market which were held by the local yam traders' association. Some idea of yam exports from the market was made available by studying the records of a local transport union with a mandate to levy taxes on departing yam shipments. A two weekly cycle in the availability of yams supplies was identified. As in surveys conducted at other locations, constraints reported by traders included: transport costs, seasonality of production, poor market infrastructure, lack of credit and loss of quality of tubers caused by rots.

The marketing of yams was shown to be very volatile with supplies arriving from rural districts on Tuesdays and Wednesdays with most retail sales occurring on Thursdays and Fridays. Traders attempted to sell their wares within the week. Significant discounting of 2 5 to 40% occurred if yams were held over for delayed sale. Analysis of the data indicated various discrepancies in the information provided, suggesting that quality information is only likely to be forthcoming if researchers are able to develop a good working relationship with traders over an extended period of time. It is planned that a second survey will be undertaken in Techiman in June/July 1997 to cross-check previous findings and to determine the extent to which season influences the dynamics of yam marketing.

Loss Assessment

Over a three week period, quality assessments of four different species of yams were made of 18 different wholesale and retail consignments available in Techiman Market. Samples were drawn from all grades of material, from that attracting premium prices to those that had been discarded. Significant numbers of premium priced yams were found to have sustained internal damage. The range of symptoms causing loss in value in the market place was somewhat different from that reported for farmers by other researchers. An internal brown spotting of tissues within the tuber was observed frequently, a symptom that may be linked with internal breakdown at a later stage but one which is not referred to in the literature. Other causes of loss not mentioned by other workers are heat damage and holes caused by a "Spear Grass". Insect damage was restricted to that caused by termites. There was minimum rodent damage and although tubers sustained considerable skin damage, bruising was almost non-existent. The incidence of nematode infestations was considerable in certain consignments. Repeated sampling of yam quality will be necessary over several production seasons to be able to determine the true extent of damage and its economic consequences.

Future work

The following work is planned for 1997-1998: (1) continue the socio-economic appraisal of the relationship between produce quality and economic value in Techiman and Accra; (2) monitor significant biological and economic post-harvest losses of yams during the marketing of yams in the Brong Ahafo Region and relate this to genetic, physiological and environmental factors, and (3) commence laboratory

based studies to investigate the genetic, physiological and environmental factors associated with yam perishability.

Acknowledgement

This is an output from a project funded by the Department for International Development of the United Kingdom. However the Department for International Development can accept no responsibility for any of the information provided or views expressed.

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