
A cursory look at Farmer-Managed Irrigation Systems in Nigeria

Introduction

Along a 20-km stretch on the Ilorin-Ibadan highway from Idiemi in Asa Local Government Area (LGA) of Kwara State to Gambari in Ogbomoso LGA of Oyo State, one can observe dots of earthen pots scattered over green fields of vegetables. These fields, numbering about eight, within the stretch and with sizes varying between 0.1 ha and 1 ha, represent small-scale efforts at irrigation with the operators being women. Three of these fields at Lasoju, Owode and Gbede, were observed in a

rapid-appraisal fashion and the characteristics identified there are briefly discussed in this paper.

Looking from afar, especially from a moving vehicle, the observer is tempted to classify the irrigation technique as belonging to the not so familiar 'pots technology' by reason of the number of pots scattered all over the place. Pot irrigation as irrigation technology, is simply called 'buried pots' by Brever and Netzband (1980). In this method, a pot made of clay is buried in specially prepared soil up to its neck. The pot is then filled up with

water which seeps out through the pores to moisten the root zone of crops seeded about 3 cm round the pot (Brever and Netzbund 1980). Pot irrigation is most suited to small garden productions or small nurseries, and is considered suitable for arid and semiarid climatic conditions.

The pots in the irrigated fields along Ilorin-Ibadan highway are not used for irrigation in the sense of pot irrigation as just described. They, however, constitute an important infrastructure of the irrigation system. Essentially, the pots serve as reservoirs for storing irrigation water. They also provide a means of carrying out primary washing of harvested vegetables before marketing. Apart from these physical functions, the pots stand as a medium of demonstrating the high sense of cooperation which exist among the women farmers. While explaining the use of the pots, the women on the scheme at Gbede in Oyo State pointed out that when a farmer does not show up to irrigate her field, her crops would be irrigated by neighboring farmers from the absent farmer's reservoir.

Organization of Resources

Besides representing women's efforts at irrigation, these fields are a sample of Farmer-Managed Irrigation Systems in the southern part of Nigeria. A variety of characteristics to be expected in a cross-section study of farmer-managed systems in Nigeria is revealed from a cursory inspection of the fields. Some of these are briefly discussed below. Farmers of the Temidire and Owode schemes in Asa Local Government area of Kwara State are organized into an *Egbe Elefo* (a village society). As organized groups, the farmers operate joint ownership of shallow open wells and a water-sharing mechanism. A farmer is entitled to six measures of water per irrigation session. A measure is about 25 liters and there are two irrigation sessions (morning and evening) in a day.

This is, however, not a permanent arrangement. The water allocation principle varies with the season and is determined by the quantity of available water. The present water-sharing arrangement may, in fact, change as the dry season progresses with increasingly smaller well yield. Thus the size of plot a farmer can operate is restricted by water. In terms of organization, the situation with the farmers in Gbede (Oyo State) is quite different. Farmers here are not organized, at least not in the conventional way in which those at Temidire and

Owode are. For example, water is acquired on an individual or a family basis. With the expansion in irrigated area and number of farmers, however, the need has been recognized to develop water sources in groups of 3 to 5 farmers. Though not organized under any name, a definite bond is easily recognized among the Gbede farmers. They claim to a sense of cooperation and mutual assistance that would normally indicate a strong association. For instance, when a farmer's well dries up, she is assured of the generosity of other well-owners to share water with her.

Organizationally, two broad groups of farmer-managed systems are thus identified among the women farmers: those operating under some organized structure and those without a conventional organization. As stated earlier, vegetable farmers at Lasoju and Owode are organized. Two such groups were briefly observed in a rapid appraisal form of study. Each group had its executive committee comprising the chairperson, vice chairperson, secretary and the treasurer. The committee is responsible for land acquisition, resource mobilization and formulation of a cost-sharing mechanism, especially for water source development. As at the time of the study, the group at Lasoju with about 200 members claimed an area of about 0.48 ha and had collectively begun the digging of five shallow open wells for the 1992/93 dry-season production. One of the major group decisions of Owode Egbe Elefo was to sink a deep well with concrete ring lining. This was, however, yet to be carried out as the Association would like to generate some funds internally before approaching the government for assistance.

Access to credit facilities was reported to have been impossible for farmers at the three schemes visited, i.e., Lasoju, Owode and Gbede. In fact, lack of credit ranks second to limited water supply in limiting the size of individual landholding. External assistance has been limited to the procurement of fertilizer. In Lasoju and Owode, the farmers' organizations would usually identify a facilitator who would both hasten as well as ensure the success of the process of procuring fertilizer on a certain commission. The situation is similar at Gbede in spite of the non-existence of an elaborate organization. Here, procurement of fertilizer provides one of the motivating factors for collective decision and action. Farmers also agree on the need to protect a well situated in the field but which is meant for the supply of water to the village. They, therefore, do not draw water from the well to irrigate their crops.

The difficulty in getting access to credit facilities may be attributed to the lack of formal recognition of the farmers. The Egbe Elefos are just like other village societies without an official recognition or legal basis for actions. Apart from having great potential to form viable and effective associations, these women irrigators have started to encounter production constraints that can only be addressed effectively by forming themselves into officially recognized organizations having structures with legal backing. One such constraint is irrigation water. The irrigated fields have the same hydrologic characteristics as the Fadamas of the farther north. They are low-lying strips subjected to seasonal flooding and with a shallow groundwater table. The seasonal recharge was more than enough for the farmers to irrigate their vegetables some 30 years ago when, for example, there were just about 10 plots and only 3 open shallow wells at Gbede. Today, the number of farmers has increased to about 50 according to informants within the scheme. This implies greater demand on a limited water supply and this demand is expected to continuously increase. Though the Gbede farmers claimed not to lack water for irrigation, unlike their counterparts at Lasoju and Owode, the rate of expansion of the fields is such that before long, irrigation water will be such a scarce resource that its utilization will require effective organization intervention.

Water Management

Water management, in practice, is restricted to the application of available water on these schemes. The drainage component appears naturally nonexistent because the available supply and irrigation technology do not provide excess water for drainage. As indicated previously, the schemes utilize shallow groundwater which diminishes as the season progresses. Water is definitely recognized by the women on these schemes as a scarce resource which must be used without waste. The available technology is hand-watering and is the most appropriate as far as the present size of individual holding, method of accessing the shallow groundwater and the quantity of water available to the farmers are concerned.

On the schemes visited, no moisture conservation technique was observed. Vegetable beds were left uncovered. Better water management is expected to be achieved with mulching though the fields are situated within the southern guinea vegetation with trees providing good cover to reduce evapo-

ration rate. The effect of mulching will be much more pronounced in the drier zones of the north where evaporation rates are in the order of 6 mm/day in the dry months from January to April.

Production Constraints

Quite typical of most Nigerian farmers, at all the schemes visited, the vegetable growers were quick to identify fertilizer nonavailability as one of their production constraints. First, they complained about the cost in relation to the profit margin of their production. According to the farmers, it is very difficult, if not impossible, to obtain fertilizer at the official price; for this reason, farmers usually resort to employing the services of middle men who are in one way or another close to the government authorities, in order to secure the input. The nature of this intervention is such that timely supply of the input cannot be guaranteed.

While at Lasoju and Owode the farmers gave lack of water for production as another constraint, the farmers at Gbede thought water was a lesser constraint than fertilizer. The reasons for this difference in the relative position of water in the production system are not far-fetched. First, population pressure at Gbede is much less than at either Owode or Lasoju. With only about 50 farmers over an area of about 0.8 ha, the Gbede farmers enjoy a more comfortable supply of groundwater than the 200 Lasoju farmers who have to share the available supply for 0.48 ha. This also explains the luxury of exploiting the water source according to the wishes of individual farmers at Gbede. But even here, as in Owode and Lasoju, farmers advocated for government intervention in the provision of deep wells.

Continuity of Production

The confidence of farmers in the continuity of their schemes seems tied more to tradition than to the dynamics of property relationships. Vegetable production is traditionally a business for women in these areas. Farmers claimed they inherited the business from their parents having been passed down from past generations. But, over time, the vocation has been elevated from the positions of backyard subsistence farming to the level of small-scale commercial ventures, and this has necessitated the move away from the backyard to nearby larger areas. All fields are located at no more than 500 meters from the villages.

A sufficient study of the property relationship was not made but discussion with farmers showed that farmers hold their present fields on trust. Land allocation was by the village chief at Gbede and Lasoju for vegetable production by the village women. In Owode, however, the land was given to Egbe Elefo by the registered owner of the plot. It does appear as if landownership is community-based and right to allocate is vested with the chief in Gbede. The same may not be said of Lasoju since it falls essentially within the same community as Owode where the right of ownership is established officially through the issuance of the certificate of ownership.

The important issue here is the future of these production systems in the face of rising competition for land between agriculture and social/industrial development demands. Without a legal provision for the protection of farmer-managed small systems as those under discussion, the continuity of production cannot be assured and any intervention aimed at improving the performance of these systems cannot be meaningful.

Conclusion

It has been attempted in this note to highlight the characteristics of three farmer-managed small irrigation schemes within a 20-km stretch and in the southern guinea vegetation zone of Nigeria. It is suggested that these characteristics may cut across

the profile of farmer-managed irrigation systems in the country.

On the basis of the organization of productive efforts and resources, two groups of systems have been identified: those in which the farmers are organized under a definite structure and leadership, and those in which the farmers are organized without a definite structure or leadership. It is argued that officially recognized organizations with legal backing are essential if the systems are to be sustained.

Water management needs on these systems seem restricted to moisture conservation and maintenance of high water use efficiency. The systems are characterized by limited water supply and low technology. Size of landholding is small and labor for production is provided almost entirely by the farmer and her family (children).

Considering land as available up to the farmer's capacity to cultivate, the major constraints are identified as water and fertilizer. Apparently, there is an extension need in encouraging the use of organic manure. To enhance access to essential production inputs, farmers' organizations need be formed and duly registered for official recognition. And with expansion in production, there will be no substitute for effective organizational intervention in the use of scarce resources, chief among which is water.

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