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Ergonomics: A Categorical Imperative Needs In Smallholder Farmers In Nigeria. A Pilot Study

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I. INTRODUCTION

Nigeria, with almost 70% of its population living in absolute poverty (i.e less than N161/US\$ per day), is one of the poorest countries in the world. A poverty alleviation project¹ has been set up to address poverty primarily by aiming to increase food self-sufficiency of rural families. It is estimated that only about half of the families achieve this and the situation is exacerbated by the families' desperate scarcity of resources. There is negligible use of fertilizer, agricultural tools (except hoes) or draught animal power, thereby making human labour particularly critical for agricultural production. Shortage of credit and lack of access to markets prevent families from obtaining food items to supplement their own production and whatever nature provides in the environment.

For most in Nigeria survival depends on establishing and harvesting their staple crops and, if the opportunity arises, generating income, from agricultural, domestic or other activities to cover the purchase of supplementary food and any other essential items. Nigeria is reasonably well endowed with the biophysical resources for crop production (although the quality of the soil varies considerably) so the key component in the survival strategy is human labour. It is essential to know how people spend their time and energy so that opportunities to raise production or expand income-generating activities can be identified. A participatory survey, followed by focus group meetings, collected this information.

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II. PARTICIPATORY SURVEY

A total of 197 households in three Districts were surveyed. There are differences between these Districts, particularly regarding the type of farming system, topography and infrastructure. Ndoki is upland whilst Idoma and Otukpo are coastal lowland, with Idoma having the best infrastructure. Households were selected to represent the different status of household heads (e. g married man, widow etc) at four levels of wealth/poverty (very poor, poor, medium, rich), according to the findings of the wealth ranking exercise previously undertaken within the project. It was not possible to include equal numbers for each ranking as they were not necessarily distributed appropriately in the communities (e. g in some communities there were no rich widows). The survey elicited, through semi-structured interviews, information on tasks, tools and equipment, together with associated problems, for the three main areas of household enterprise- agricultural, extra-agricultural (i. e beyond crop production) and domestic and domestic activities. For each household, four database tables were compiled, one for each of the three areas given above and one containing any constraints reported concerning manual labour. The three areas of activity included many different tasks-16 agricultural, 8 domestic and 63 extra-agricultural, but these could be reduced to 11, 8 and 20 respectively by combining those that were very similar and by disregarding those (mainly extra-agricultural) that were pursued by less than five households (e. g tailoring).

It was possible to create an inventory of the household ownership of tools and how they are used. This helped identify shortages and inadequacies, which could be subsequently confirmed at focus group meetings, and which might indicate opportunities for interventions to raise between production constraints, problems experienced and tool ownership.

III. RESULTS AND DISCUSSION

The most frequently cited constraint on agricultural production for all households in the sample was weeding (29%), followed by cultivation (22%); the least frequent was planting slightly different pattern emerges, as shown in Fig 1. From fig 1 it can be seen that for the very poor cultivating, rather than weeding is the most frequently cited constraint. For the rich,

weeding is by far the most commonly cited constraint, followed by harvesting, which does not appear to present any constraint to widows or the very poor. It would, therefore, seem that poorer families face their greatest difficulties in preparing their land for cropping, access to labour and better tools and equipment. So would be less constrained by land preparation and would be likely to crop larger areas. Constraints then arise at weeding and harvest times in managing these large areas.

Ownership of agricultural tools and equipment in the participating household was limited. Eleven types were identified but, for most of these, ownership was not widespread. For the hoes (n=255) and sacks (n=220) averaged more than one per household. The household use of tools and equipment for agricultural tasks is summarized in Table 1. As can be seen from Table 1, the three items used most were the large hoe, the small hoe and the large cutlass.

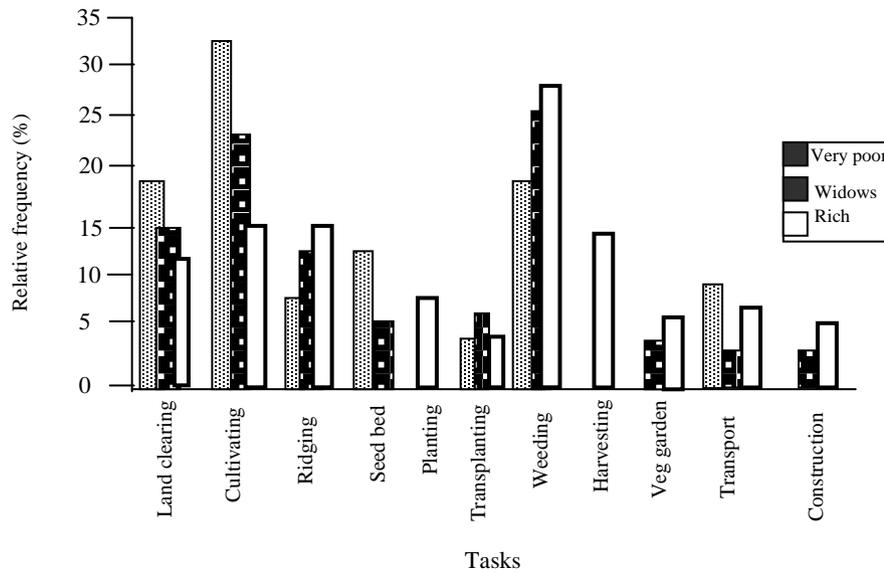


Figure 1 : Incidence of agricultural constraints for selected status

As is shown in Table 2, the households which cultivated and reported cultivation as a constraint had fewer large hoes and more small hoes than the households which did not. A similar finding on hoe size did not apply to households reporting weeding to be a constraint. Table 2 also shows a breakdown of how labour is provided by the households reporting constraints or not with these two tasks. It may be significant that cultivation is done by women alone in a greater proportion of the households reporting cultivation to be a constraint.

The 20 most common extra-agricultural activities and their distribution according to the four wealth rankings are given in Fig 2. These activities are undertaken primarily for income generation and it can be readily seen from fig 2 that families of different wealth ranking take advantage of different opportunities. The rich, for example, are carpenters, administer traditional medicine and sell rice (which they have grown). The very poor sell wood, drinks and charcoal- all of which they can do with a minimum investment in equipment and by using raw materials freely available in the environment. The households in between tend to generate income by growing and selling cash crops, such as tomatoes, and commodities that they can harvest from the environment such as coconuts and the products of hunting and fishing.

IV. CONCLUSIONS

The survey revealed that the constraints on agricultural production and the opportunities for income-generation depend on the wealth ranking of the household. The poorest cite cultivation as their main constraint, and their efforts to generate income are restricted by their own limited resources. This survey has enabled interventions to be better targeted to the needs of different households. The importance of the hoe for agricultural production was confirmed at focus group meetings and led to an intervention aimed at increasing the availability of locally fabricated, large hoes of the design preferred by the farmers (with sockets rather than tangs).

Table 1 : The number of household using various items, tools and equipment for agricultural task.

Task	Large hoc	Small hoc	axe	large							
cutlass	Small cutlass	Sickle	Knife	Shell	Sieve	Sack	Containers (general)				
Land clearing	13	4	76	71	-	-	-	-	-	-	-
Cultivating	84	57	-	-	-	-	-	-	-	-	-
Ridging	26	12	4	9	-	-	-	-	-	-	-
Seedbed	17	15	1	5	-	-	-	-	-	-	-
Planting	42	41	-	-	-	-	-	-	-	-	-
Transplanting	4	15	-	22	-	-	11	-	-	-	-
Weeding	61	119	-	-	-	-	-	-	-	-	-
Harvesting	45	69	-	31	6	11	44	57	22	36	52
Transport	-	-	-	-	-	-	-	-	-	-	-
Construction	3	-	21	23	-	-	-	-	-	-	-

Table 2 : Ownership of hoes and sources of labour for households reporting the main agricultural constraints.

Task/constraint reported	Average number of hoes		main source of labour (% of households reporting)				
	Small	Large	Men	Women	m+w	M+w+ch	W+ch
Cultivation/yes	0.84	1.00	3	27	61	3	5
Cultivation/no	0.53	1.39	1	19	66	7	6
Weeding/yes	1.02	0.54	1	20	60	15	2
Weeding/no	0.97	0.54	3	20	57	12	8

ch=children

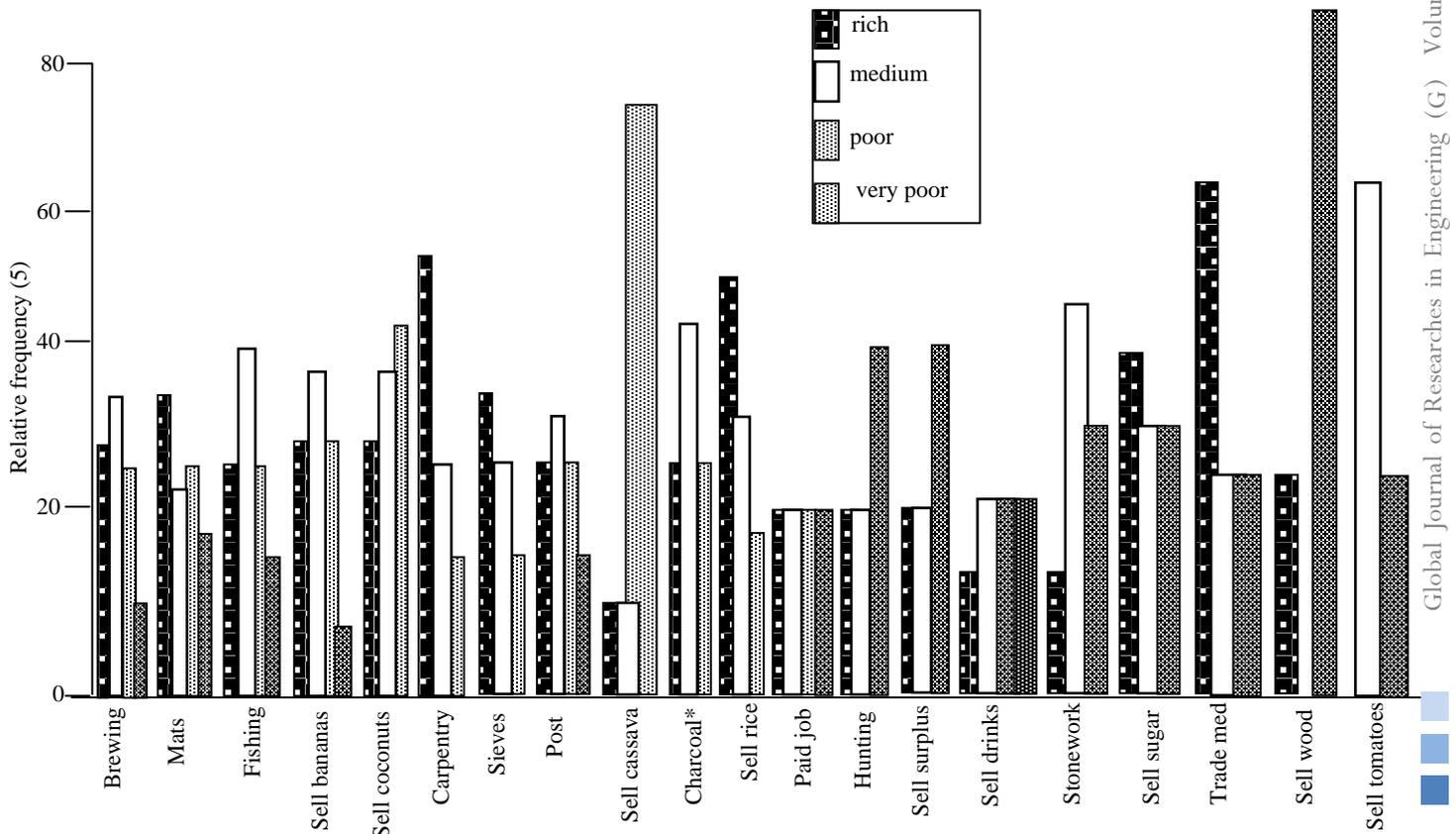


Figure 2 : distribution of extra - agricultural activities according to wealth ranking (* indicates making and selling)