

Farmers' Variety Perception and Selection Criteria in Kitui, Eastern Province of Kenya

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Introduction Since 2008, Bioversity International has been implementing a project in Kitui, Kenya which is aimed at assessing farmers' agrobiodiversity management practices. As part of this research, agrobiodiversity surveys were conducted in 16 villages spread over Kitui Central and Mwingi/South districts of Eastern Province, Kenya, between December 2010 and January 2011 to determine seed diversity at household level, preferred varieties and seed sources, and their seed selection criteria.

Study Area

Intervention activities by Bioversity international and partners included distributing traditional vegetable seeds, conducting community education, establishing demonstration gardens and radio programs.



Figure 1. (Left hand). Kitui area, Eastern Province of Kenya is located about 170 kilometres east of Nairobi.

Figure 2. (Right hand) Sixteen research villages in the study area. Red stars represent non-intervention villages and blue square represent intervention villages.

Agroecological zones

The study area has rich diversity due to topographic and agro-climatic variations. There are two rainy seasons locally called 'Nzwa' and 'Uua'. 'Nzwa' is the long rain season which runs from October to mid December, and 'Uua' is the short rain season starting from March to May. 90% of the annual rainfall falls within these periods. The 16 study villages are located under six different agroecological areas which fall into three major altitude zones - "highland" zone 1200-1500m; "middle altitude zone" 1000-1200m and "lowland zone" 600-1000m.



Picture 1 and 2. High variations of rainfall and temperature were observed within short distances. Maize is growing well in Kangondi village (1370m A.S.L.) on 28th Dec. 2010 (Left hand). Dried up maize at Kanyaa village (1200m A.S.L.) on 14th Jan. 2011 (Right hand). These two villages are separated from each other by a distance of only 9 km.

Methodology Semi-structured questionnaires were administered and field observations carried out from December 2010 to January 2011. Three households per village were randomly selected in each of the 16 villages, giving a total of 48 households for the survey. The investigations sought to understand (i) the total number of crops and crop varieties maintained per household, (ii) seed sources (iii) preferred seed sources and (iv) variety selection criteria used by farmers. Data on preferred seed sources was based on a preference test performed on 6 crops - Maize (*Zea mays*), Sorghum (*Sorghum bicolor*), Cowpea (*Vigna unguiculata*), Cassava (*Manihot esculenta*), Banana (*Musa spp.*), and Bottle gourd (*Lagenaria siceraria*).

The Number of Varieties/Crops

Table 1: The average number of crop species and varieties in Nzwa 2009, Uua 2009 and Nzwa 2010 seasons.

Seasons	Nzwa (Long rain) 2009	Uua (Short rain) 2009	Nzwa (Long rain) 2010
Crops	18.7	9.7	25.5
Varieties	23.2	11.2	31.7

Notes: Questionnaire survey took 225 hours for 48 households; the average of per household was 4.7 hours, and the longest time was 11 hours 48 min. And total numbers of fields were 121 fields and 2.5 fields per household in 2010-11

Seed Source

Table 2: A variety of seed sources by farmers in Kitui

Seed Source	Nzwa (Long rain) 2009	Uua (Short rain) 2009	Nzwa (Long rain) 2010
Own Seed	22.1	38.5	32.1
Wild/Escape/Rege.	2.9	12.3	19.5
Purchasing Seed	38.2	27.6	21.0
Given Seed	31.9	16.3	23.6
Bioversity Seed	0.2	1.8	10.6
Others	4.9	5.3	3.8

Notes: Wild, Escape and Regenerated refer to seeds that the farmer did not plant that season. Escaped: dropped from other farms, mixed with other seed or from previous harvest. Regenerated: plants from last season's crop. These are mainly perennial crops such as Sorghum, Cowpea, Cassava, sweet potato. Bioversity Seed: distributed by Bioversity International as a promotion package for targeted intervention villages.

Preference of Seed Source

Table 3: Farmers' preference for most and least preferred seed source (%) = N / Point * 100

Crops	Most preferred		Least preferred	
	Seed Source	Point (%)	Seed Source	Point (%)
Maize (N=65)	AgroVet	54.0 83.1	Market	39.5 60.8
	MoA (Extension)	6.0 9.2	Shop	19.0 29.3
	Other farmers	2.0 3.0	Neighbour	4.0 6.0
Sorghum (N=65)	AgroVet	42.0 64.6	Market	42.5 65.4
	MoA (Extension)	8.0 12.3	Shop	13.0 20.0
	Market	5.5 8.5	No difference	3.0 4.6
Cowpea (N=65)	AgroVet	30.0 46.2	Market	37.5 57.7
	Market	13.0 20.0	Shop	14.5 22.3
	Other farmers	10.0 15.4	AgroVet	9.0 9.2
Cassava (N=65)	Other farmers	28.5 43.8	Market	64.0 98.5
	Neighbour	22.5 34.6	Shop	0.5 0.8
	MoA (Extension)	9.0 13.9	Other farmers	0.5 0.8
Kite (N=52)	Neighbour	24.5 47.1	Market	42.0 80.8
	Other farmers	22.5 43.3	No difference	4.0 7.9
	MoA (Extension)	2.0 3.9	Other farmers	3.5 6.7
Mongu (N=63)	Other farmers	31.0 49.2	Market	55.0 87.3
	Neighbour	24.0 38.1	No difference	3.0 4.1
	MoA (Extension)	4.0 6.4	Other farmers	2.0 3.2
Banana (N=65)	Other farmers	34.0 52.3	Market	63.0 96.9
	Neighbour	23.0 35.4	No difference	2.0 3.8
	MoA (Extension)	3.0 4.6	Shop	1.0 1.5

Notes: AgroVet: A specialized shop, often located in a major town, where agricultural products including pesticides, chemical fertilizers and improved seed varieties of e.g. maize, sorghum, cowpea, tomato, onion and leafy vegetables may be obtained. MoA (Extension) refers to Ministry of Agriculture and its extension workers.

Market refers to a place, often an open space within or near the village where farmers and traders meet on specific days of the week to sell/buy stuff including seeds. Shop refers to a building near or within the village which is stocked with stuff for sale and where farmers may also access seed.

Farmers' criteria and preference

Table 4: Farmers' selection criteria and researcher's perspective for variety preference

Rank	1	2	3	4	5
Maize (N=65)	High yield	Drought Resistance	Early maturity	Hardness of Grain	Insect Resistance
Point (%)	121 (76.9)	93 (69.2)	54 (40.0)	35 (36.9)	33 (29.2)
Sorghum (N=61)	Bird Resistance	Taste	High yield	Drought Resistance	Early maturity
Point (%)	76 (55.7)	56 (45.9)	49 (42.6)	39 (31.1)	27 (23.0)
Cowpea (N=65)	High yield	Taste	Drought Resistance	Long harvest season	Colour
Point (%)	92 (61.5)	71 (55.4)	62 (50.8)	55 (38.5)	22 (13.9)
Cassava (N=65)	Taste	High yield	Easy to cook	Hardness of tuba	Market value
Point (%)	129 (84.6)	68 (46.2)	37 (38.5)	29 (23.1)	27 (24.6)
Mong (N=65)	Taste	Shape	Easy to cook	Surface (smooth)	High yield
Point (%)	143 (87.7)	50 (36.9)	45 (35.4)	36 (32.3)	32 (30.8)
Kite (N=52)	Size	Shape	Use	Hardness of shell	Heaviness
Point (%)	71 (57.7)	69 (65.4)	61 (57.7)	57 (57.7)	15 (13.5)
Banana (N=65)	High yield	Taste	Drought Resistance	Early maturity	Market value
Point (%)	98 (67.7)	97 (70.8)	60 (40.0)	34 (26.2)	33 (32.3)

Notes: Notes: Score refers to total number of points earned from each criterion. First rank: 3points, second 2points, third 1point
(%) = Persons who choose the criteria / N * 100

Tentative Conclusion Data on selection criteria shows that yields may not always be the main driver of selection.

Other factors include preparation of special traditional recipes and cultural uses.

With respect to preferred seed sources, most farmers do not consider the local market as a favorable place to purchase their seed. However, some of the farmers obtain seed from local markets and shops as a last option. Local seed management systems could provide quality seeds contributing to seed security and agrobiodiversity management in Kitui area.

References: Bioversity International 2009. Annual Report "Diverse diets fight malnutrition and more", www.bioversityinternational.org

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