

Variation of Cowpea Production and Usage in Rural Households: A Comparison between Northern and Southern Burkina Faso

Sakiko SHIRATORI^{1*}, Eveline M. F. W. SAWADOGO-COMPAORE² and Hsiaoping CHIEN¹

¹ Japan International Research Center for Agricultural Sciences, Tsukuba, Japan

² National Institute of Environmental and Agricultural Research, Ouagadougou, Burkina Faso

Abstract

Cowpea, also known as black-eyed pea, is one of the most promising foods for nutritional improvement for many African countries. Cowpea—including its seeds, young pods, and leaves—supplies essential nutrients, such as high-quality protein. It is also of vital importance to the livelihood of many people in West Africa as a cash crop. In August 2018, we conducted a survey on 206 households in rural villages in Yako and Po, located in northern and southern Burkina Faso, respectively. We compared the cowpea production at the family plot and women's plot levels, and the usages of cowpea seeds, leaves and pods between these two climatically and culturally different regions. Cowpea production in family plots is quite popular in both regions, suggesting that cowpea should no longer be considered just a “women's crop.” Different varieties of crops are sold in the south, whereas cowpea is a major cash crop in the north. Regarding cowpea usage, all households in the north consume not only cowpea seeds but also the young pods and leaves, whereas some households in the south only consume the seeds. No households in the north use cowpea as a baby food, despite its nutritious content when properly prepared. These findings suggest the need to promote further utilization of cowpea in different forms in order to maximize its potential.

Discipline: Social Science

Additional key words: regional difference, women's role

Introduction

“It's hard to imagine a more perfect crop, especially for Africa, than cowpea,” says Christian Fatokun (IITA 2010). Cowpea has played a very important role in Africa on many regards. First, cowpea originates in Africa and is a very popular crop on the continent. It is the most planted native legume in sub-Saharan Africa (NRC 2006) and the second most produced grain legume after groundnuts in Africa (FAO 2016).¹ Second, cowpea plays a specific role in soil conservation and fertility, comprising a part of multiple cropping systems. Third, cowpea is a cash crop for

farmers in West Africa (Langyintuo et al. 2003). Fourth, cowpea contributes to food security as a “hungry-season crop” that matures earlier than other crops, and can be used before other staple foods become available (Gómez & Mejía 2004). Fifth, cowpea provides high-quality proteins and a wide variety of vitamins and minerals at relatively low cost, which is advantageous for low-income households (Timko & Singh 2008). Finally, cowpea can be used multifunctionally and is thus beneficial where land is becoming increasingly scarce (Singh et al. 2003).

Despite its importance, cowpea has long received little attention in research as compared with other cash crops, such as soybean (Dube & Fanadzo 2013, Timko & Singh 2008). In the past, cowpea was regarded as an “orphan crop” (Naylor et al. 2004), a “lost crop of Africa” (Dube & Fanadzo 2013), or a “women's crop”

¹ Approximately 7.0 million tons of dried cowpeas are produced worldwide, among which nearly 6.7 million tons are produced in Africa (FAO 2016).

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*Corresponding author: e-mail Shiratori.Sakiko@affrc.go.jp

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(Murdock et al. 2013). As cowpea production has increased in quality and quantity, cowpea has transitioned from being an exclusively “women’s crop” grown on small plots of land to a market-driven cash crop grown on a large scale predominantly by men.

There is a need for further research on this crop. Previous research on cowpea was mainly undertaken from a genetic or agronomic perspective (Hall 2012, Dube & Fanadzo 2013, Naylor et al. 2004). Several studies have been conducted from a socioeconomic perspective such as on marketing or distribution (Langyintuo et al. 2003), but with limited research on cowpea consumption in rural areas. Moreover, research on cowpea demand and utilization has mainly been conducted in Nigeria (Kormawa et al. 2000), the world’s largest producer of cowpea, and with few studies in other countries.

In this study, we focus on rural households in Burkina Faso. Burkina Faso is a country where 44% of the population live below the global poverty line (of \$1.90 per day) and 72% live in rural areas (World Bank 2014, 2017). Burkina Faso produced 600,000 tons of cowpea, making it the world’s third largest producer after Nigeria and Niger, with its production level showing a trend of growth (FAO 2016).

There are climatic differences within Burkina Faso, particularly by longitude, and there are three climatic zones from north to south: Sahelian, Sudan-Sahelian, and Sudanian. Since cowpea requires less rainfall than most crops (Mortimore et al. 1997), cowpea production is concentrated in zones where rainfall is relatively limited,² mainly in the northern and central parts of the country. In addition to the climate, there are regional differences in culture and customs among the various ethnic groups, language groups, religions, and geographic locations.

In Burkina Faso, it is common for women to have their own plots other than family plots. A family plot is managed by the head of the household who is responsible for the whole family’s food consumption and earnings, whereas a women’s plot is managed by women who can decide what to grow. Past studies have shown that the control of assets by women has positive impacts on food security, child nutrition, education, and the well-being of women (Quisumbing 2003).

The nutritional content of cowpea seeds is mainly characterized by remarkably high protein, low fat, and

high mineral and vitamin contents (Timko & Singh 2008). The leaves and young green pods of cowpea are also very good sources of nutrition, including proteins (Nielsen et al. 1997, Timko & Singh 2008, Dube & Fanadzo 2013).³ Aside from cowpea consumption by humans, the whole cowpea crop can be used for feeding livestock as all the components of cowpea are rich in nutrients and fiber (Singh et al. 2003). And thus the sale of cowpea as animal feed during the dry season can provide income for farmers. Consequently, cowpea is used as food for humans and livestock, and provides a source of revenue as well.

Cowpea seeds can be used as weaning food for babies. Adding cowpea flour to cereal-based weaning foods can provide additional micronutrients (Gonçalves et al. 2016). For example, in Nigeria, co-fermented cowpea and other foods such as cassava are commonly used for infants (Singh & Singh 1992). However, as the cowpea husk reportedly results in stomach problems, mothers are often reluctant to feed cowpea to their babies for fear of causing diarrhea or indigestion (Ndubaku et al. 1989, Dovlo et al. 1976). Not all cowpea preparations are suitable for infants, but when the husks are properly removed, cowpea constitutes a tasty, highly digestible food for infants (Dovlo et al. 1976).

We conducted a household interview survey in August 2018 with the members of households living in rural villages in Yako and Po located in northern and southern Burkina Faso, respectively. Using these data, this study compared the two climatically and culturally different regions with the following focuses. The first focus was to identify the importance and value of cowpea in the crop production of households, in connection with the consideration of women’s role through women’s plots. The second focus was to explore cowpea usage, not only of its seeds but also of its young pods and leaves, which were largely overlooked in previous studies.

Methods

This study is based on an interview survey that we conducted on rural households in the two communities of Yako and Po located in northern and southern Burkina Faso, respectively. Yako is a town located about 109 km

² Cowpea performs well in agroecological zones where the rainfall range is between 500 and 1,200 mm/year (Dugie et al. 2009). The annual rainfall levels in Yako and Po are 600 mm-700 mm and 900 mm-1,000 mm, respectively.

³ Since cowpea leaves are produced earlier and in much greater weight per plant than seeds, their protein productivity is reportedly higher than that of seeds (Nielsen et al. 1997). However, harvesting leaves could result in poor seed yield and quality; therefore, proper cultivation is necessary (Dube & Fanadzo 2013).

northwest of Ouagadougou, the capital of Burkina Faso. Po is a city located 148 km south of Ouagadougou. Three rural villages in Yako (Gobila, Gollo, and Taonsgho) and three rural villages in Po (Pinyiri, Torem, and Adongo) were selected for this study.

Before the interview survey, we conducted a census survey in January 2018 on all households in these six villages to establish a complete list of households. The total number of households was 625. Among these households, a stratified random sampling method was used to select target households. The households were stratified into whether wealthier or poorer groups according to the composite score constructed by the census,⁴ and then target households were randomly selected from each stratum in proportion to the number of households.

In August 2018, we interviewed 220 households to collect information on their demographic background, dietary habits, production, cowpea usage, etc. We explained our survey's content and obtained informed consent from all households before the survey. Interviewers visited target households to conduct face-to-face interviews, carrying a tablet terminal on which the structured questionnaire was implemented.⁵ Because several households did not provide valid answers, the total number of households analyzed in this study became 206.

We saw the differences in household demographics, production and selling of crops, and cowpea usage between the two regions. Crop production and selling were compared separately at the family plot and women's plot levels. Regarding cowpea usage, we summarized the usage of cowpea a) seeds, b) young pods, and c) leaves by purpose, and checked the regional difference. To determine whether any non-random associations existed between the region (Yako or Po) and

the distribution of categorical variables, we performed Fisher's exact test of independence.⁶

Results

1. Household demographics

Table 1 presents the descriptive statistics showing the number and percentage of households. The affluence shows that the households in Po are more likely to be categorized as "wealthier." It became apparent that the living standards in Po and Yako are dissimilar, which could be associated with the geographical positions of these two locations. Since Po is more blessed with rainfall than Yako, farmers in Po can produce various crops in larger amounts than those in Yako. In addition, Po shares a border with Ghana, thereby making trading easier.

The ethnicity of all household heads in Yako is Mossi, whereas that of three-quarters of the household heads in Po is Gouroussi. The religion of the household heads shows a higher ratio of Christians in Yako than in Po, and a higher ratio of Muslims in Po than in Yako. Household heads are older in Yako (mean: 51.6, S.D. 16.9) than in Po (mean: 46.9, S.D. 15.7). Most of the household heads are male, and most have never attended school, especially in Yako.

The average number of household members (household size) in Yako is larger (mean: 9.5, S.D. 6.3) than that in Po (mean: 8.1, S.D. 6.1). The female ratio is calculated as the number of females divided by the household size. The female ratio in Yako is 53.2% (S.D. 16.7) and that in Po is 49.9% (S.D. 16.6). The ratio of children aged < 5 years is calculated in a similar way, with the number of children under five years old being divided by the household size. This ratio is 19.8% (S.D. 13.0) in Yako and 19.3% (S.D. 15.4) in Po.

Field size is the total size of the cropping fields cultivated in 2017 by each household.⁷ The mean field size is 1.8 ha (S.D. 1.3) in Yako and 5.0 ha (S.D. 4.0) in Po (median field size: 1.5 ha and 4.0 ha, respectively). The households in Po tend to have larger fields. The variable of women's plot indicates whether households had a women's plot besides the family plot in 2017.⁸ Women's plots are more common in Po as three-quarters of households in Po have one, compared to Yako where only less than half of the households have a women's plot.

⁴ Composite score is a summation of a) land size (1: > 2.5 ha, 0: < 2.5 ha), b) animal possession (1: > three kinds; 0: < three kinds), c) item possession (1: have at least one item from motorbike, TV, internet access, and gas cooker; 0: don't have any), d) hunger (1: no hungry month in the last 12 months; 0: felt hungry in the last 12 months), and e) housing (1: looking ok/rich; 0: looking poor). If the composite score is more than 3, categorized as "wealthier."

⁵ The software used was "Survey Solutions" developed by the World Bank.

⁶ The two most common tests for determining whether measurements from different groups are independent are chi-squared test and Fisher's exact test. Chi-squared test is relatively easy to calculate, but highly sensitive to sample sizes and not precise for a small sample size. Conversely, Fisher's exact test is accurate regardless of sample size.

⁷ The total field includes women's plots.

⁸ Normally, the women's plots are smaller than family plots. The average size of total women's plots in our sample households is 0.7 ha (0.4 ha in Yako and 0.9 ha in Po) in 2018.

Table 1. Descriptive statistics of the households by commune

		Yako		Po		Total	
		# of HHs (% in Yako)		# of HHs (% in Po)		# of HHs (% in total)	
Total		118	-	88	-	206	-
Village	Gobila	15	(12.7)	-	-	15	(7.3)
	Gollo	50	(42.4)	-	-	50	(24.3)
	Taonghoh	53	(44.9)	-	-	53	(25.7)
	Pinyiri	-	-	23	(26.1)	23	(11.2)
	Torem	-	-	38	(43.2)	38	(18.4)
	Adongo	-	-	27	(30.7)	27	(13.1)
Affluence*	Wealthier	40	(33.9)	61	(69.3)	101	(49.0)
	Poorer	78	(66.1)	27	(30.7)	105	(51.0)
Ethnicity of head	Gouroussi	0	(0.0)	67	(76.1)	67	(32.5)
	Mossi	118	(100.0)	16	(18.2)	134	(65.0)
	Other	0	(0.0)	5	(5.7)	5	(2.4)
Religion of head (n = 86 in Po)	Animist	14	(11.9)	12	(14.0)	26	(12.7)
	Christian	74	(62.7)	31	(36.0)	105	(51.5)
	Muslim	30	(25.4)	43	(50.0)	73	(35.8)
Age of head (n = 115 in Yako, n = 86 in Po)	< 30	3	(2.6)	13	(15.1)	16	(8.0)
	30-39	21	(18.3)	17	(19.8)	38	(18.9)
	40-49	39	(33.9)	16	(18.6)	55	(27.4)
	50-59	21	(18.3)	20	(23.3)	41	(20.4)
	60 and over	31	(27.0)	20	(23.3)	51	(25.4)
Gender of head	Male	99	(83.9)	83	(94.3)	182	(88.3)
	Female	19	(16.1)	5	(5.7)	24	(11.7)
Education of head (n = 101 in Yako, n = 72 in Po)	Never attended school	84	(83.2)	50	(69.4)	134	(77.5)
	Attended school	17	(16.8)	22	(30.6)	39	(22.5)
Household size	1-5	20	(16.9)	40	(45.5)	60	(29.1)
	6-10	63	(53.4)	27	(30.7)	90	(43.7)
	11+	35	(29.7)	21	(23.9)	56	(27.2)
Female ratio (n = 117 in Yako, n = 86 in Po)	less than 50%	33	(28.2)	31	(36.0)	64	(31.5)
	50%	32	(27.4)	13	(15.1)	45	(22.2)
	more than 50%	52	(44.4)	42	(48.8)	94	(46.3)
Children under 5 ratio (n = 117 in Yako, n = 86 in Po)	0%	20	(17.1)	24	(27.9)	44	(21.7)
	0% < ratio ≤ 20%	46	(39.3)	23	(26.7)	69	(34.0)
	20% < ratio ≤ 33%	29	(24.8)	19	(22.1)	48	(23.6)
	over 33%	22	(18.8)	20	(23.3)	42	(20.7)
Field size	< 1 ha	22	(18.6)	4	(4.5)	26	(12.6)
	1 ha ≤ field size < 2 ha	42	(35.6)	6	(6.8)	48	(23.4)
	2 ha ≤ field size < 3 ha	28	(23.7)	12	(13.6)	40	(19.4)
	3 ha ≤ field size < 5 ha	20	(16.9)	27	(30.7)	47	(22.8)
	5 ha and over	6	(5.1)	39	(44.3)	45	(21.9)
Women's plots	Yes	56	(47.5)	66	(75.0)	122	(59.2)
	No	62	(52.5)	22	(25.0)	84	(40.8)

*See footnote 4 for the definition of affluence.

2. Production and selling

Table 2 summarizes the number and proportion of households that *produced* and *sold* crops from their family plots in 2017. While the proportion of *sold* crops is based on all households, including those that did not produce the crop, *sold in produced* crops is calculated relative to the households that produced the crop. Note that these comparisons are not based on the amount, but on the dichotomous answer.

Many crops, mainly cereals and beans, are cultivated in family plots. The percentage of households that *produced* the crop is significantly higher for sorghum, Bambara nut, and cowpea in Yako (north) and for maize, rice, soybean, groundnut, sesame, and cotton in Po (south). Soybean and cotton are only produced in Po. Overall, cowpea is the second most popular crop to be *produced* after sorghum and is especially popular in Yako.

Farmers cultivate crops either for their food consumption, for selling in the market (cash crops), or both. Households in Po are more likely to *sell* crops produced in family plots. Soybean and cotton (only produced in Po) are major cash crops. The percentage of households that *sold* the crop is significantly higher for maize, sorghum, rice, soybean, groundnut, sesame, and cotton in Po than that in Yako. Cowpea is the main cash crop for households in Yako, and the proportion of *sold* crop is higher than that in Po.

Table 3 summarizes the number and proportion of households that *produced* and *sold* crops from women's plots in 2017. As not all households have a women's plot, the total number of households in Table 3 is smaller than that in Table 2 ($n = 56$ for Yako, $n = 66$ for Po, $n = 122$ in total). Only the households that have a women's plot were used as a denominator.

Cereals are not major crops in women's plots, unlike in family plots. Groundnut is the most popular crop grown in women's plots, especially in Po. The percentages of households that *produced* crops in women's plots are significantly higher for rice, soybean, groundnut, and sesame in Po, and most of the crops are *sold*. The percentage of households that *produced* cowpea in women's plots is significantly higher in Yako.

3. Cowpea usage

Cowpea could be used for many purposes as mentioned earlier. We asked the households regarding the components of cowpea that are utilized and for what purpose. Figure 1 shows the percentages of the households using cowpea a) seeds, b) young pods, and c) leaves. An asterisk indicates that the proportions are

significantly different between the regions at the 5% level by Fisher's exact test.

All households use cowpea seeds for food consumption (Fig. 1. a). About half of the households sell cowpea seeds on the market as a cash crop. Significant regional differences were observed in the use of cowpeas as baby food and as animal feed.⁹ Regarding the usage of cowpea young pods (Fig. 1. b), almost all households in Yako answered that they consume young pods. Although the percentage of its consumption is significantly lower in Po than that in Yako, more than half of the households in Po also consume young pods. Households in Po have greater variety in the usage of cowpea young pods, such as selling in the market and as animal feed. Figure 1. c shows that almost all households also use cowpea leaves and that consumption as food is the main usage of the leaves. Animal feed is also a very common use of cowpea leaves. Leaves can also be sold, especially in Po.

Discussion and conclusion

Cowpea—including its seeds, young pods, and leaves—plays an essential role in improving nutrition in Africa. In this study, we analyzed the variation in cowpea production and usage in rural households between northern (Yako) and southern (Po) Burkina Faso. The members of the households are generally not wealthy or very well educated, as evidenced by the fact that most of the household heads never attended school. They differ in a range of features, such as ethnicity, religion, wealth, and field size, along with climatic differences.

Cowpea seeds are cultivated for both home consumption and as a cash crop. Regarding production in the family plot, cowpea is the second most popular crop after sorghum. In terms of climate, cowpea's relative importance should be greater in Yako; nonetheless, more than three-quarters of households in Po also produced cowpea in family plots. This suggests that a) cowpea production in family plots is popular not only in the north but also in the south, and that b) cowpea should no longer be considered just a "women's crop."

⁹ We asked all households about their usage of each cowpea part. Regional differences on using cowpea seeds for baby food remain significant when we select households with children under two years old (26%). Similarly, regional differences on using cowpea seeds and pods as animal feed remain significant when we select households that have animals (95%).

Table 2. Number and proportion of households that produced and sold the crop from their family plots in 2017

	Yako				Po				Total				<i>p</i> -value in Fisher's exact test (Yako & Po)		
	Produced	Sold	Sold in	Produced	Produced	Sold	Sold in	Produced	Produced	Sold	Sold in	Produced	Sold	Produced	Sold
	(% in Yako)	(% in Yako)	produced (%)		(% in Po)	(% in Po)	(% in Po)		produced (%)	(% in total)	(% in total)		(% in total)		produced (%)
Maize	29 (24.6)	0 (0.0)	0.0	84 (95.5)	19 (21.6)	22.6	113 (54.9)	19 (9.2)	0.000 *	0.000 *	16.8	0.000 *	0.000 *	0.003 *	
Millet	36 (30.5)	0 (0.0)	0.0	28 (31.8)	1 (1.1)	3.6	64 (31.1)	1 (0.5)	0.880	0.427	1.6	0.880	0.427	0.438	
Sorghum	116 (98.3)	5 (4.2)	4.3	68 (77.3)	28 (31.8)	41.2	184 (89.3)	33 (16.0)	0.000 *	0.000 *	17.9	0.000 *	0.000 *	0.000 *	
Rice	1 (0.8)	0 (0.0)	0.0	30 (34.1)	4 (4.5)	13.3	31 (15.0)	4 (1.9)	0.000 *	0.032 *	12.9	0.000 *	0.032 *	1.000	
Bambara nut	28 (23.7)	0 (0.0)	0.0	10 (11.4)	1 (1.1)	10.0	38 (18.4)	1 (0.5)	0.029 *	0.427	2.6	0.029 *	0.427	0.282	
Cowpea	114 (96.6)	47 (39.8)	41.2	69 (78.4)	14 (15.9)	20.3	183 (88.8)	61 (29.6)	0.000 *	0.000 *	33.3	0.000 *	0.000 *	0.006 *	
Soybean	0 (0.0)	0 (0.0)	-	73 (83.0)	69 (78.4)	94.5	73 (35.4)	69 (33.5)	0.000 *	0.000 *	94.5	0.000 *	0.000 *	-	
Groundnut	64 (54.2)	10 (8.5)	15.6	64 (72.7)	27 (30.7)	42.2	128 (62.1)	37 (18.0)	0.009 *	0.000 *	28.9	0.009 *	0.000 *	0.002 *	
Sesame	11 (9.3)	2 (1.7)	18.2	28 (31.8)	12 (13.6)	42.9	39 (18.9)	14 (6.8)	0.000 *	0.001 *	35.9	0.000 *	0.001 *	0.270	
Okra	5 (4.2)	0 (0.0)	0.0	0 (0.0)	0 (0.0)	-	5 (2.4)	0 (0.0)	0.073	-	0.0	0.073	-	-	
Cotton	0 (0.0)	0 (0.0)	-	17 (19.3)	13 (14.8)	76.5	17 (8.3)	13 (6.3)	0.000 *	0.000 *	76.5	0.000 *	0.000 *	-	

Note: n=118 for Yako, n=88 for Po, and n=206 in total

* The percentage differs significantly between Yako and Po by Fisher's exact test at the 5% level.

Table 3. Number and proportion of households that produced and sold the crop from their women's plots in 2017

	Yako				Po				Total				<i>p</i> -value in Fisher's exact test (Yako & Po)		
	Produced	Sold	Sold in	Produced	Produced	Sold	Sold in	Produced	Produced	Sold	Sold in	Produced	Sold	Produced	Sold
	(% in Yako)	(% in Yako)	produced (%)		(% in Po)	(% in Po)	(% in Po)		produced (%)	(% in total)	(% in total)		(% in total)		produced (%)
Maize	0 (0.0)	1 (1.8)	-	2 (3.0)	1 (1.5)	50.0	2 (1.6)	2 (1.6)	0.499	1.000	100.0	0.499	1.000	1.000	
Millet	3 (5.4)	0 (0.0)	0.0	0 (0.0)	0 (0.0)	-	3 (2.5)	0 (0.0)	0.094	-	0.0	0.094	-	-	
Sorghum	10 (17.9)	0 (0.0)	0.0	2 (3.0)	3 (4.5)	150.0	12 (9.8)	3 (2.5)	0.012 *	0.249	25.0	0.012 *	0.249	0.003 *	
Rice	0 (0.0)	0 (0.0)	-	15 (22.7)	11 (16.7)	73.3	15 (12.3)	11 (9.0)	0.000 *	0.001 *	73.3	0.000 *	0.001 *	-	
Bambara nut	24 (42.9)	1 (1.8)	4.2	2 (3.0)	1 (1.5)	50.0	26 (21.3)	2 (1.6)	0.000 *	1.000	7.7	0.000 *	1.000	0.151	
Cowpea	27 (48.2)	17 (30.4)	63.0	6 (9.1)	5 (7.6)	83.3	33 (27.0)	22 (18.0)	0.000 *	0.002 *	66.7	0.000 *	0.002 *	0.637	
Soybean	0 (0.0)	0 (0.0)	-	26 (39.4)	25 (37.9)	96.2	26 (21.3)	25 (20.5)	0.000 *	0.000 *	96.2	0.000 *	0.000 *	-	
Groundnut	42 (75.0)	20 (35.7)	47.6	60 (90.9)	50 (75.8)	83.3	102 (83.6)	70 (57.4)	0.026 *	0.000 *	68.6	0.026 *	0.000 *	0.000 *	
Sesame	0 (0.0)	0 (0.0)	-	13 (19.7)	13 (19.7)	100.0	13 (10.7)	13 (10.7)	0.000 *	0.000 *	100.0	0.000 *	0.000 *	-	
Okra	11 (19.6)	0 (0.0)	0.0	4 (6.1)	1 (1.5)	25.0	15 (12.3)	1 (0.8)	0.028 *	1.000	6.7	0.028 *	1.000	0.267	
Cotton	0 (0.0)	0 (0.0)	-	0 (0.0)	0 (0.0)	-	0 (0.0)	0 (0.0)	-	-	-	-	-	-	

Note: n=56 for Yako, n=66 for Po, and n=122 in total

* The percentage differs significantly between Yako and Po by Fisher's exact test at the 5% level.

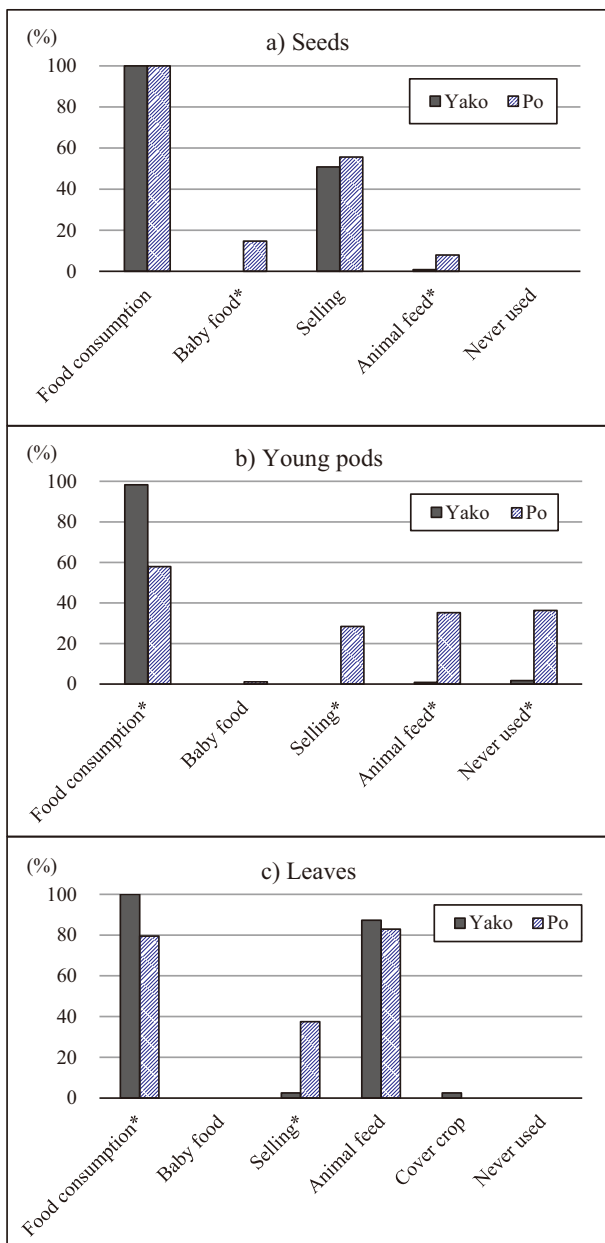


Fig. 1. Percentage of households using cowpea a) seeds, b) young pods, and c) leaves

* The percentage differs significantly between Yako and Po by Fisher's exact test at the 5% level.

Cowpea produced in women's plots is more likely to be a cash crop than cowpea produced in family plots. The primary purpose of the family plot is to cultivate food for the household; therefore, cereals play a central role in family plots, whereas that of women's plots is to complement the family plot's production; therefore, women may grow cash crops to obtain extra income. Cowpea is the second most popular cash crop after groundnut produced in women's plots.

In general, the households in Yako tend to produce

crops *to consume*, whereas the households in Po tend to produce crops *to sell as well as to consume*. Soybean and cotton as cash crops are produced only in Po. All households in both regions are situated in very rural villages, but there are differences in that the households in Po are wealthier and have larger fields. The national road on which the city of Po is located is a main means of connection to Ghana, and thus may provide opportunities for trading. This advantage might be one of the reasons why more varieties of crops are sold in Po than in Yako.

We found that cowpea is used in many ways as the literature showed, and that there are regional differences in its usage as well. Although some households have never used young pods, especially in Po, virtually all the households use the seeds and leaves. Young pods are mainly used for food consumption in Yako. Due to the differences in climate and probably in affluence as well, many farmers in Yako typically struggle to feed their family between August and September, until harvest time. As a result, young pods are used during that period for consumption. In contrast, farmers in Po are less likely to face food shortages before harvest, so young pods are used for other purposes such as for selling and as animal feed in Po. The households in Yako use all the components of cowpea, particularly for consumption, whereas the households in Po use cowpea in several ways.

No households in Yako used cowpea as baby food, whereas some households in Po did so. As mentioned above, cowpea, not only seeds but also leaves and young pods, could provide nutrition to infants when properly prepared. However, mothers may be unaware that cowpeas can be fed to babies and may not be fully aware of cowpea's multi-purpose usage. This could result in the underutilization of cowpea. Therefore, promoting the potential uses of cowpeas to raise awareness about such usage would be advantageous.

In conclusion, cowpea is indeed an important crop for rural farmers in Burkina Faso. Cowpea production is quite popular in both regions, and not only in the north where rainfall is relatively limited. Households in the north use cowpea seeds, young pods, and leaves mainly for their consumption. And while cowpea is important in the south, it is apparently just one of the crops to be grown and sold, given the variety of crops available there. Despite the regional differences in production and utilization, cowpea is a popular, low-cost nutrient source suitable for growing in West Africa. Therefore, promoting its production and further utilization to improve food security and nutrition would certainly prove valuable.

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