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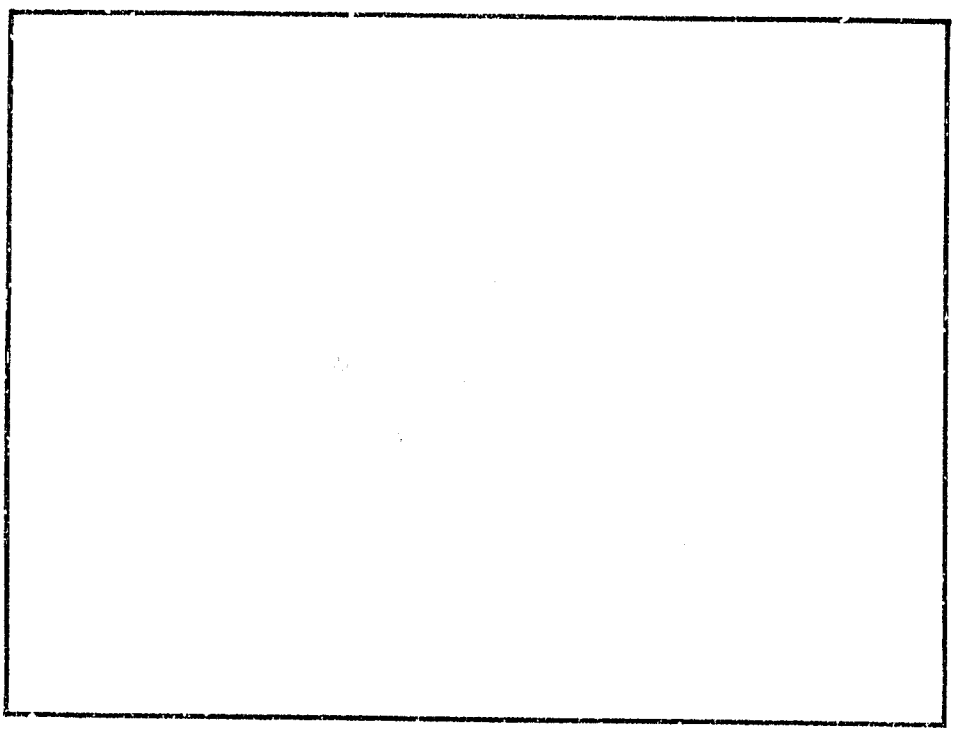

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CROP AND LIVESTOCK MARKETING PATTERNS IN BURKINA-FASO

by

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INTRODUCTION

The objective of this paper is to describe farm-level cereal and livestock marketing patterns in Burkina-Faso. The report covers the one-year period from April 1983 through March 1984. The data were collected from 30 randomly-selected farmers in each of five villages representing different agroclimatic regions.

The report shows the relative importance of cereal and livestock marketing in each village, the monthly distribution of sales, the relative importance of cereals, livestock and poultry by type, the principal motives for sales, and the relationship of cereal prices to quantities sold.

The study is of limited statistical value. While the data were collected in a random samples, the variation among farms in many dimensions of marketing behavior is too great to make meaningful inferences about population parameters. The report is therefore of greatest value as a set of case studies of marketing behavior in five villages. Used in this way, the report will be helpful to others in their efforts to design marketing research in Burkina-Faso. The data account for 15 to 25 percent of the farmers in each village studied.

The research upon which this report is based was conducted by members of the Purdue University Farming Systems Unit (FSU). FSU is primarily concerned with the identification of obstacles to increased food production in Burkina-Faso and the identification of technologies appropriate for farmers' circumstances. Extensive decision-making interviews conducted with

farmers made it clear that an understanding of the farmer's marketing environment would be useful in the design of production technology (FSU Annual Report, 1982).

During these interviews, farmers claimed that they do not consider market price in making production or marketing decisions, that they make cereal sales as urgent needs arise, and that residual grain sales are used to buy small livestock for sale when the food supply is down. On the densely-populated Central Plateau, farmers describe themselves as purely subsistence farmers, concerned only with how they will feed their families during the next year. In more prosperous regions, where shifting cultivation is practiced on more fertile soils, farmers said that they aim to acquire wealth through the accumulation of cattle, often with the intention of using this resource to become merchants.

Most farmers, particularly those on the Central Plateau, indicated that they were hesitant to assume the production risks associated with the use of such commercial inputs as fertilizers. Thus, at current production levels, the farmers' orientations are more toward subsistence than commercial farming. Investments in agriculture are oriented toward extensive, as opposed to intensive farming.

The decision-making interviews provided little in terms of emperical evidence to describe the farmer's actual marketing behavior. But they did indicate that there was a need for marketing research which would aid in the design of production technology. For this reason, FSU began to conduct marketing research.

Several researchers have studied the marketing behavior of farmers in Burkina-Faso. Sherman examined the entire cereal marketing chain beginning with farmers in Manga and following the marketing channels to local,

regional and national markets. Delgado also conducted work on livestock marketing in Tenkoudougou. The Michigan State University team (Wilcock and Ouedraogo) examined farm-level marketing practices in the Eastern ORD. ICRISAT economic research led by Peter Matlow has monitored marketing practices of farmers for five years (Bonkian). Economists from the center for research on Economic Development (CRED) are currently studying marketing from the farm level to regional and national markets in the northwest.

What differentiates the Purdue FSU studies from the others is that, while focusing largely at the farm level, its research covers a wider range of farmer circumstances than do the other studies. This permits the researchers to examine differences in marketing practices as one moves from very poor to relatively prosperous villages.

Beginning in April of 1983, cereal and livestock transactions were monitored on a monthly basis for 30 randomly selected farmers in each of five different villages of Burkina-Faso. The villages (Figure 1) were chosen because they represented distinct agroclimatic environments and a wide range of relative prosperity.

Three of the villages are located on the densely populated Central Plateau. Bangasse, 110km north of Ouagadougou, is the poorest of the villages and receives average annual rainfall in the 400 to 500 mm range. Nedogo, 30 km northwest of the capital, receives from 700 to 800 mm of rainfall and Poedogo, 125 km to the south, is in the 800 to 900 mm rainfall zone. While more prosperous than Bangasse, Nedogo and Poedogo have less agricultural potential than do the other villages since their land too is rarely fallowed and principal cereals are grown on marginal land.

One other vilage is Diapangou, 240 km east of Ouagadougou. Diapangou is in a land-abundant zone and receives from 700 to 800 mm of rainfall.

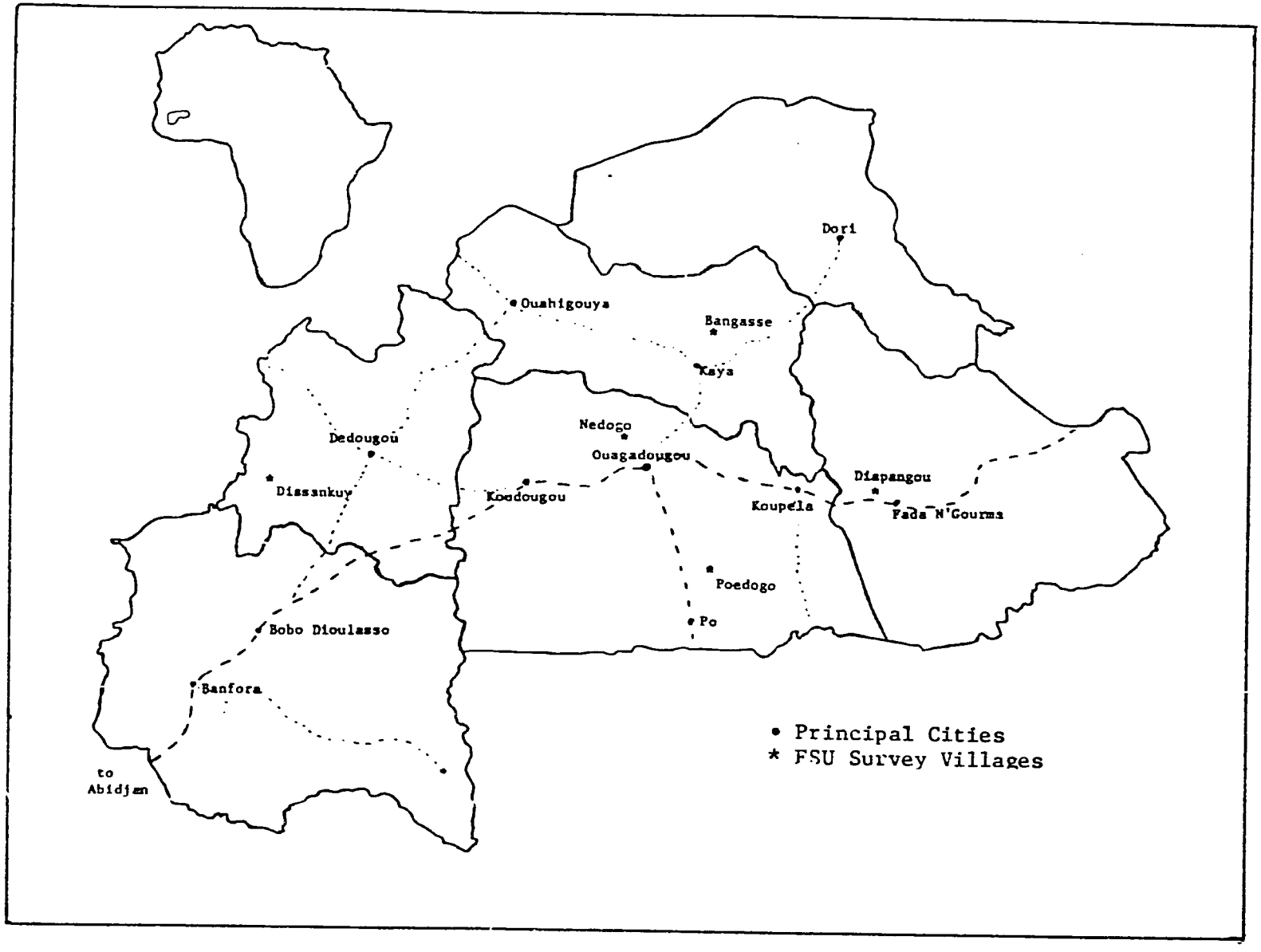

Figure 1: Map of Burkina Faso

Shifting cultivation is practiced on a 5 to 6 year rotation. About half of the farmers in the sample view themselves as commercial in the sense that they claim to consider market price in their cropping and marketing plans. Dissankuy, directly west of the Capital and only 20 km from the Malian border, has historically been the most prosperous of the five villages. About 25 percent of the land is planted in cash crops (mainly cotton) and cereals are generally exported from this region. Cash crops (mainly peanuts) account for less than 10 percent of the cropped area in the other four villages. For most farmers, particularly those on the Central Plateau, peanuts are grown only to pay taxes since they are ready for sale at an appropriate time. The cropping patterns for each village are presented in Table 1.

The Relative Importance of Cereal and Livestock Marketing

During decision-making interviews conducted in 1982, farmers indicated that they purchase livestock with revenues from the sale of grain in a relatively good year. In poor years, the same livestock is sold to purchase cereal for consumption. During the period studied, Bangasse had an exceptionally poor harvest of all cereals beginning with failure of the maize crop in August. Dissankuy, typically the most prosperous of the villages had a worse than average harvest. The other three villages had average to slightly below average seasons.

The data in Table 2 show the effects of these circumstances on cereal and livestock trading. In Bangasse, cereal sales are about one-eighth the volume of cereal purchases. There is a net deficit in cereal sales of more than 730,000 F CFA. With respect to livestock, the opposite was true. Nearly ten times as much livestock was sold as was purchased. Net sales of

Table 1. Area Cultivated and Cropping Patterns Per Farm in Five Villages, Burkina-Faso, 1983.

	------Central Plateau[a]			Frontier Regions[b]	
	Bangasse (north)	Nedogo (central)	Poedogo (south)	Diapangou (east)	Dissankuy (west)
Total Area Cultivated(ha.)	6.55	6.67	3.77	7.12	5.51
Cropping Proportions(%)					
Millet	46.8	56.7	34.3	20.4	13.8
White Sorghum	39.9	21.2	13.8	3.5	48.3
Red Sorghum	--	10.1	38.8	--	--
Associations[c]	--	--	--	61.7	--
Maize	1.9	2.1	1.5	4.0	6.7
Rice	--	0.3	3.9	0.1	1.2
Peanuts	11.0	8.2	7.1	9.0	6.0
Bambara Nuts	--	1.3	--	0.2	2.5
Cotton	0.4	--	--	--	16.0
Soybeans	--	--	0.5	0.3	--
Cowpeas(sole crop)	--	--	--	0.3	--
Other(okra, roselle)	--	0.1	0.1	0.5	5.5
Total Cereal Crops	88.6	90.4	92.3	89.7	70.0
Total Cash Crops	11.4	9.5	7.6	9.8	24.5
Total Other	--	0.1	0.1	0.5	5.5

(a) The Central Plateau covers an area as much as 250 km wide extending from near the Ghanaian border in the South to the Sahel in the North. (b) The frontier regions refer to areas off the Central Plateau where soils are more productive and population pressures less severe. (c) The millet/sorghum association in Diapangou includes from 75 to 90% millet. The remainder is white sorghum.

Table 2: Purchases and Sales of Cereals and Livestock (F CFA) in Five Villages of Burkina-Faso, April 1983-March 1984.

	Bangasse	Diapangou	Dissankuy	Nedogo	Poedogo
Cereal Purchases	880,600	969,830	434,470	79,080	1,345,420
Cereal Sales	150,000	2,134,875	854,600	1,286,955	1,199,400
Net Cereal Sales	-730,600	1,165,045	420,130	1,207,875	-145,840
Livestock Purchases	111,550	2,409,700	52,600	95,025	689,925
Livestock Sales	1,011,625	1,715,050	563,100	530,600	369,705
Net Livestock Sales	900,075	-687,050	510,500	434,575	-320,220
Net Sales: Cereal and Livestock	169,775	477,995	930,630	1,643,450	-466,060

livestock and poultry (900,975 F CFA) exceeded the net deficit in cereal sales. It is evident that the farmers of Bangasse were liquidating their livestock and poultry to purchase cereals.

The same table indicates that net cereal sales were positive in three of the other four villages. The exception was in Poedogo where a relatively small deficit (145,840 F CFA) was exceeded by 320,000 CFA in net purchases of livestock and poultry. In the other villages, sales of cereals were at least twice as great as purchases and in Diapangou, there was a net increase of nearly 700,000 CFA in the value of livestock on hand.

The net sales of crops and livestock are positive in all of the villages except Poedogo. This does not, however, indicate that all these villages can subsist at this rate. The sale of livestock represents the depletion of a store of wealth and it is only through this process that the farmers of Bangasse managed to subsist during this period. On the other hand, net purchases of livestock in Poedogo and Diapangou reflect additions to wealth and therefore an increase in food security for the future.

Temporal Distribution of Sales

The temporal pattern in the sale of crops and livestock is shown in Table 3. The greatest volume of cereal sales takes place immediately after harvest. These reflect sales for the celebration of harvest and sales to merchants from regional markets who come to the villages to accumulate grain for storage and later sale. Sales gradually decrease in succeeding months, reaching their lowest levels in September, October and November. An exception occurs when, as in Nedogo, farmers posessing large stocks and confident of a harve. . sell some of their stock to purchase animals and poultry.

Table 3: Sales (F CFA) of Cereals and Livestock by Month, Five Villages in Burkina-Faso, April 1983 to March 1984.

	Bangasse	Diapangou	Dissankuy	Nedogo	Poedogo
Cereals:					
April 1983	10,500	316,000	76,500	338,000	152,000
May	4,425	231,000	60,650	154,000	214,000
June	0	123,000	32,000	87,300	137,000
July	2,900	138,000	98,000	73,200	28,505
August	6,500	29,000	82,000	52,750	237,000
September	0	0	34,000	94,600	33,250
October	0	160,000	13,500	28,555	53,115
November	33,250	31,875	0	56,500	53,675
December	22,450	339,000	38,950	69,050	67,300
January 1984	51,675	366,000	113,000	162,000	129,000
Feb/March	18,600			171,000	94,555
Total Cereals	150,300	2,134,875	854,600	1,286,955	1,199,400
Livestock:					
April 1983	36,475	130,000	123,000	92,050	42,605
May	115,000	136,000	99,400	22,575	54,625
June	37,550	258,000	17,100	30,800	89,775
July	27,650	145,000	135,000	63,300	21,025
August	30,100	156,000	73,100	16,925	30,750
September	64,150	0	0	78,000	0
October	115,000	0	0	700	51,800
November	149,000	246,000	11,500	16,650	19,165
December	74,350	15,475	14,000	47,100	59,960
January 1984	94,350	437,000	90,000	114,000	
Feb/Mar	268,000	191,575		48,500	
Total Livestock	1,011,625	1,715,050	563,100	530,600	369,705

The temporal pattern of livestock sales is less apparent although livestock sales also reach bottom during the harvest period. A pattern for livestock and poultry sales is only apparent in Bangasse where sales rise markedly after harvest because there was a shortage of grain.

The Corposition of Cereal and Livestock Sales

The compositions of cereal and livestock sales are presented in Table 4. The relative importance of cereal sales by type is largely determined by the production characteristics of each village. Red sorghum is planted only in Nedogo and Poedogo. It accounts for nearly 20 percent of cereal sales in Nedogo and for over 63 percent of sales in Poedogo where much is sold for the purchase of white sorghum and millet. White sorghum is the principal cereal sold in Dissankuy, accounting for well over 80 percent of the value of cereals marketed. Millet is the major cereal marketed in Nedogo (over 50 percent of sales) and Diapangou where millet makes up 75 to 90 percent of a millet/white sorghum association accounting for well over half of all cereal sales. Rice has the greatest relative importance in Bangasse (about 85 percent). In Bangasse, irrigated rice is sold in typical years to purchase millet.

Cattle and calves are the greatest single source of livestock and poultry sales revenue in four of the five villages. Cattle and calf sales account for more than half of all livestock and poultry sales in Bangasse, Diapangou and Dissankuy, and for more than 25 percent of sales in Nedogo. In Poedogo, the relative importance of cattle and calves is well under 10 percent. There, goats are the principal source of livestock sales revenue, accounting for about one fourth of all crop and livestock sales. The sale of sheep and goats ranks second in the remaining villages, accounting for

Table 4: Composition of Sales (F CFA) for Five Villages in Burkina-Faso April 1983 through March 1984

	Bangasse	Diapangou	Dissankuy	Nedogo	Poedogo
Cereals:					
Red Sorghum				230,600	713,000
White Sorghum	10,700	219,000	744,000	298,000	9,600
Millet	10,975		47,250	625,000	
Association*		1,240,000			
Rice	127,000	129,000	0	61,075	421,000
Cowpeas		191,000	3,000	17,350	56,350
Maize	1,500	275,000	22,400		
Other	125	80,875	37,950	49,530	
Total Cereals	150,300	2,134,875	854,600	1,286,955	1,199,950
Livestock:					
Goats	263,000	300,000	97,900	91,200	107,000
Sheep	129,000	166,000	66,150	60,950	35,400
Donkeys	1,750	98,700		27,900	82,000
Cattle	523,000	899,000	238,000	160,000	35,000
Calves	37,000	93,000			
Hogs	17,100		90,000	86,500	28,000
Chickens	5,500	128,000	60,725	49,725	48,230
Guinea Hens	18,100	28,900	8,000	52,200	47,850
Other	17,175	1,450	2,325	2,125	66,700
Total Livestock	1,011,625	1,715,050	563,100	530,600	460,180
Total Cereals & Livestock	1,146,125	3,859,550	1,418,525	1,814,400	1,660,130

*Association includes millet and white sorghum planted, harvested and consumed together (75 to 90% is millet).

just under 40 percent of sales in Bangasse and for about 25 percent of sales in Diapangou, Dissankuy and Nedogo.

While the value of cattle and calf sales is greatest in four of the five villages, cattle sales are made by a relatively small number of farmers. For the typical farmer, the sale of sheep and goats is the most important source of livestock sales revenue in all five villages.

The Relative Inportance of Commercial Sales

While the preceeding figures provide a village-level overview, of marketing patterns, they do not reflect the degree of commercial activity or the relative well-being of indivduals in those villages. Table 5 shows the importance of cereal marketings as a percentage of available cereals and the per capita levels of cereal marketings and consumption.

There were net sales deficits for cereals in Bangasse and Poedogo. In the other three villages, sales as a percentage of production and stock depletion ranged from 8 percent in Dissankuy to 14 percent in Diapangou to 22 percent in Nedogo. This wide variation in relative commercial sales of cereals is attributable to several factors. Due to an especially bad year in Bangasse, the cereal sales deficit was expected. The relatively high level of net sales in Nedogo was due to the sale of an unusually high level of cereal stock accumulation. Relatively low net sales in Dissankuy are due to the fact that farmers sold grain early in 1983 and then had to buy back some cereal because their harvest was unusually poor. Sales levels in Diapangou are about as expected. It is not clear why net sales were negative in Poedogo.

These findings underscore the importance of cross-sectional analysis of these data and of the value of longer-term studies of marketing patterns for

Table 5. Cereal Sales, Consumption, Gifts and Trading as a Share of Total Cereal Production for Five Villages in Burkina-Faso, April 1983 to March 1984. (in F CFA)

	Production & Stock Depletion	Net Sales	Consumption	Net Trading and Gifts
aggregate				
Bangasse	2,682,760	-730,600	3,363,920	49,440
Diapangou	8,677,765	1,165,045	6,672,960	839,760
Dissankuy	4,841,930	420,130	4,380,040	41,760
Nedogo	5,324,835	1,207,875	3,756,800	360,160
Poedogo	4,733,840	-145,840	4,309,680	570,000
per active worker				
Bangasse	15,498	-4,221	19,433	286
Diapangou	39,788	5,342	30,596	3,850
Dissankuy	39,655	3,441	35,873	342
Nedogo	33,680	7,640	23,762	2,278
Poedogo	27,071	-834	24,645	3,260
In Kilos per capita				
Bangasse			154.5	
Diapangou			292.7	
Dissankuy			227.3	
Nedogo			146.7	
Poedogo			158.4	
Average for Five Villages			195.9	

cereals. The high variation in relative levels of cereal marketings indicates that year to year variation in marketing patterns is probably great. This is because the ranks of the villages in these data vary greatl from their historic per capita production levels. Dissankuy, located in th "bread-basket" of Burkina-Faso, would normally be expected to have higher net sales of grain than the other villagaes. Nedogo, traditionally the second poorest of the villages would not typically be expected to market such a high volume of grain. Poedogo would normally be expected to produce a marketable surplus instead of the deficit seen during this period.

The same data are expressed in per active worker terms on the second part of the table. An active worker is defined as a family member from the age of 15 to 55 who participates in at least two farming activities during the planting season.

The last part of the table shows consumption per capita. In part, these data validate the other findings in that they show a per capita cerea consumption rate comparable to those of FAO, the World Bank and the Government of Burkina-Faso which range from 180 to 220 kg per capita.

Motives for Sales of Crops and Livestock

During the decision-making interviews in 1982, farmers indicated that they sold grain only when specific needs arose and that, if they had grain in storage and saw that a good crop was coming, they would sell grain to bu small livestock which would be sold to purchase cereals in future dry periods. To determine whether these marketing practices could be documented and what specific needs motivated sales, farmers were asked to indicate the principal motive for each cereal and livestock sale. Their responses are seen in Tables 6a, 6b, 7a and 7b.

Table 6a. Value of Cereal Sales (F CFA) by Primary Motive, April 1983 to March 1984.

	Bangasse	Diapangou	Dissankuy	Nedogo	Poedogo
Food Products	15,750	20,300	6,350	39,600	481,325
Cola Nuts, Beer	3,750	64,150	0	65,595	7,300
Clothing	5,300	520,510	31,800	163,520	44,880
Transportation	0	201,250	78,700	140,935	28,075
Radios and Watches	0	131,500	0	16,000	1,100
Feasts	80,825	75,725	176,400	162,400	62,225
Marriages	11,375	89,500	57,000	113,550	15,925
Health Needs	0	9,750	100,400	102,575	22,800
Home Improvement	0	15,500	159,000	16,200	64,050
Education	0	24,000	8,000	2,000	11,250
Ag. Equipment	0	130,750	18,000	75,250	1,500
Seed/Fertilizer	1,800	0	640	1,500	82,150
Traction Animals	0	335,000	42,750	18,200	26,500
Other Animals	0	20,500	0	25,300	15,100
Ag. Labor	0	3,000	73,800	0	11,500
Travel	0	0	10,400	48,600	24,225
Taxes	0	0	5,700	129,000	11,500
Other*	30,600	454,825	46,550	139,050	230,650
Total Sales with Specific Motive	149,400	2,096,260	815,490	1,286,200	1,142,885

Table 6b. Relative Importance (percent) of Cereal Sales by Primary Motive.

	Bangasse	Diapangou	Dissankuy	Nedogo	Poedogo
Food Items	10.5	1.0	0.8	3.1	42.1
Colas,Beer	2.5	3.1	0	5.1	0.6
Clothes	3.5	24.8	3.9	12.7	3.9
Transportation	0	9.6	9.6	11.0	2.5
Radios and Watches	0	6.3	0	1.2	0.0
Feasts	54.1	3.6	21.6	12.6	5.4
Marriage Arrang.	7.6	4.3	7.0	8.8	1.4
Health Needs	0	0.5	12.3	8.0	2.0
Home Improvements	0	0.7	19.5	1.3	5.6
Education	0	1.1	1.0	0.2	1.0
Ag. Equipment	0	6.2	2.2	5.9	0.1
Seed/Fertilizer	1.2	0	0.1	0.1	7.2
Traction Animals	0	16.0	5.2	1.4	2.3
Other Animals	0	1.0	0	2.0	1.3
Ag. Labor	0	0.1	9.0	0	1.0
Travel	0	0	1.3	3.8	2.1
Taxes	0	0	0.7	10.0	1.0
Other*	20.6	21.7	5.8	13.0	20.5

Table 7a. Value of Livestock Sales by Primary Motive for Sale, fro April 1983 to March 1984.

	Bangasse	Diapangou	Dissankuy	Nedogo	Poedogo
Food Items	656,125	210,000	138,150	77,500	74,805
Cola Nuts/Beer	26,075	94,225	0	30,375	17,350
Clothes	31,875	45,800	27,500	12,400	24,600
Transportation	66,950	19,500	9,250	21,070	3,950
Radios & Watches	0	342,000	0	0	0
Feasts	46,025	31,950	31,300	27,825	13,925
Marriage Arrang.	70,800	71,350	0	34,150	69,150
Health Needs	8,500	130,150	16,275	3,800	4,900
Home Improvements	8,000	8,000	105,000	7,600	0
Education	0	0	0	6,650	3,125
Ag. Equipment	3,650	42,900	0	31,300	2,250
Seed/Fertilizer	0	4,000	0	0	5,000
Traction Animals	5,500	117,250	118,000	0	49,600
Other Animals	8,500	26,375	23,000	18,500	22,100
Ag. Labor	6,000	8,500	75,250	0	19,400
Travel	0	0	0	13,500	0
Taxes	5,500	3,250	0	25,400	2,075
Other*	19,700	551,525	7,000	290,675	119,850
Total Sales With Specific Motive	963,200	1,706,775	550,725	530,995	432,080

Table 7b. Relative Importance (percent) of Livestock Sales by Pri Motive.

	Bangasse	Diapangou	Dissankuy	Nedogo	Poedog
Food Items	68.1	12.3	25.1	1.5	17.3
Cola Nuts/Beer	2.7	5.5	0	5.7	4.0
Clothes	3.3	2.7	5.0	2.3	5.7
Transportation	7.0	1.1	1.7	4.0	0.9
Radios and Watches	0	20.0	0	0	0
Feasts	4.8	1.9	5.7	5.2	3.2
Marriages	7.4	4.2	0	6.4	16.0
Health Needs	0.9	7.6	3.0	0.7	1.1
Home Improvements	0.8	0.5	19.0	1.4	0
Ag. Equipment	0.4	2.5	0	5.9	0.5
Traction Animals	0.6	6.9	21.4	0	11.5
Other animals	0.9	1.5	4.2	3.5	5.1
Agric. Labor	0.6	0.5	13.7	0	4.5
Travel	0	0	0	2.5	0
Taxes	0.6	0.2	0	4.8	0.5
Other*	1.9	32.6	1.2	56.1	29.7

As the tables indicate, the sale of livestock to purchase grain is reflected only in Bangasse where nearly 70 percent of livestock sales were made to purchase food. If farmers generally used the proceeds from cereal sales to purchase livestock, one would expect major purchases of livestock and poultry in villages having positive net sales of cereals.

In fact, the purchase of livestock and poultry was a relatively unimportant as a motive for cereal sales in those villages. The only sales motive found consistently important in all villages was that of preparing for harvest or holiday feasts. In relative terms, this was most important in Bangasse, the poorest village.

For all villages, the data indicated consistently low purchases of agricultural inputs such as seeds and fertilizers. Investment in agriculture was greatest in agricultural hardware and traction animals. Again, this reflects an inclination toward extension as opposed to intensive agriculture.

There were no such investments in Bangasse, but investment in agricultural equipment was the primary motive for 2.4 percent of cereal sales in Poedogo, 7.3 percent in Nedogo, 7.4 percent in Dissankuy and 22.2 percent in Diapangou. Such investments were equally important as motives for livestock sales, reaching 5.9 percent in Nedogo, 9.4 percent in Diapangou, 12 percent in Poedogo and 21.4 percent in Dissankuy. These figures are understated since much of the sales motives included in the category "other" were frequently found to be "payment of debt" which was most often for the original purchase of traction animals or traction equipment.

Beyond these observations, the data seem to defy generalization. The farmers' claims that they buy livestock with revenues from grain sales and purchase grain with revenue from livestock sales may apply only in an

extreme year such as that experienced by Bangasse. Yet one would expect th farmers of Nedogo, having a relatively good year, to be accumulating livestock to deal with future crop failure.

Market Prices

To examine the relationship between price and quantity sold by farmers monthly prices (Appendix 1) were regressed on the quantity (kg.) of each cereal sold each month. The results of these regressions are presented in Table 8. The Appendix table indicates that prices increase as one moves away from the harvest period and decrease as harvest approaches. Quantitie sold are greatest in the months immediately following harvest. Prices rise in the months following harvest, reflecting reduced local cereal availability. Prices drop abruptly with the new harvest.

On Table 8, the relationship between price and quantity sold is presented for the one-year period from April through March and for the pre-harvest period from April through October. In both cases, the regression results tend to show a negative relationship between price and quantity sold, although the regressions covering the pre-harvest period show a much stronger relationship between price and quantity sold than do the regressions which cover the entire year. Assuming a relatively inelastic demand for food, price at the market level is a function of quantity supplied. In turn, quantity supplied is likely a function of relative prices for different types of grain and livestock and of existing stocks of each. Individual price response behavior must therefore be studied in the context of relative prices and available stocks.

Table 8. Results of Simple Linear Regressions to Describe the Relationship Between Price and Quantities Sold by Farmers in Four Villages, Burkina-Faso, from April 1983 to March 1984 and April to October 1983.

	April through March			April through October		
	Coefficient	R^2	n	Coefficient	R^2	n
Diapangou:						
White Sorghum	-8.59	.045	8	6.93	.009	5
Millet/ Sorghum	-269.32**	.431	11	-339.91**	.533	6
Dissankuy:						
White Sorghum	-24.27	.105	10	-69.87	.266	7
Nedogo:						
Red Sorghum	2.54	.139	11	1.60	.090	7
White Sorghum	-14.15	.143	11	-19.45	.239	7
Millet	-17.90*	.314	10	-44.70**	.753	7
Poedogo:						
Red Sorghum	20.34	.120	11	43.04	.326	7
White Sorghum	-11.21	.045	10	0.44	.000	6
Millet	18.85	.123	9	6.67	.030	5

Conclusions

The Relative Importance of Livestock and Cereal Marketing

During the period under study, livestock and poultry sales accounted for a substantial share of total agricultural sales revenues in all five villages. The importance of livestock and poultry sales was greatest (87%) in Bangasse where there was a crop failure and livestock were liquidated to purchase cereals. Even in Poedogo, where substantial shares of Red Sorghum are regularly sold to purchase cereals preferred for consumption as food, livestock sales still accounted for 23 percent of total agricultural sales revenues. In the other villages, livestock and poultry accounted for 29 to 44 percent of total agricultural revenues.

Seasonality in Marketing Patterns

Livestock marketings do not show a seasonal pattern except that, as with cereals, livestock and poultry are rarely traded during the harvest period. Cereal marketings have definite seasonal charactearistics, being sold most heavily during the period immediately following harvest. The volume of sales gradually diminishes in the months following harvest until the new harvest approaches.

Importance of Crops and Livestock by Type

The relative importance of cereals marketed varies greatly by village. The agronomic characteristics of each village along with the relative use value of the cereals determine which of these are most commonly marketed. Millet sales are predominant in Nedogo and Dissankuy because agroclimatic factors favor the production of millet in those villages. Similarly, sorghums are the major commercial cereals in Dissankuy and Poedogo because

favorable soils and precipitation patterns in those villages make the production of sorghum more advantageous than the production of millet. Red sorghum sales are important in Nedogo and Poedogo because this cereal has a relatively high use value in the production of a local beer.

Cattle sales represent the greatest single source of livestock and poultry sales revenues in all villages but Poedogo. Howev r, these sales are made by less than one third of the farms in each village. Goat and sheep sales are the major source of livestock and poultry sales revenues for the other farms.

Degree of Commercial Farming

The people of Burkina-Faso are fundamentally subsistence farmers. In two of the five villages, there were net purchases of cereals. In the other three villages, net cereal sales ranged from 8 to 22 percent of total cereals consumed, given as gifts and sold. These figures would be expected to vary greatly on an annual basis. For example, in Nedogo, where net sales accounted for the greatest percent of available cereals, farmers greatly reduced accumulated cereal stocks and would not do so in a typical year. By contrast, in Dissankuy, typically a major net cereal exporter, had the lowest positive net cereal sales per capita.

Motives for Sales

There are few clear patterns to the motives for sales among the five villages. The importance of food purchases as a motive for livestock sales is clear in Bangasse where there was a crop failure. Also, the celebration of harvest and other feasts was a relatively important motive for sales in all five villages. Sales for "other" motives, were relatively important in

all villages. Follow-up questions indicated that other motives frequently included the payment of debts for the purchase of animal traction equipment. Therefore such motives as the purchase of agricultural equipment and traction animals is very likely understated.

Price movements

Livestock and poultry prices cannot be meaningfully described with the data collected here. This is because it was not possible to accurately describe the weight and quality of the livestock and poultry traded.

Cereal price movements were as expected. These are at their lowest point after harvest and gradually rise until the period just prior to harvest.

Needed Research

The data presented in this paper provide only an overview of village-level marketing patterns. Further analysis of available data and additional research are needed to better understand the factors affecting the marketing practices of individual farmers in Burkina-Faso and to determine how marketing patterns vary over time.

On-going research (Bukowski) will use the data collected by FSU, in cross-sectional and time series analysis to identify factors explaining farmers' marketing behavior. Cross-sectional analysis may prove useful in explaining much about farmers' marketing behavior, but annual variation among the villages in terms of cereal and livestock marketingsindicate that there may be a need to collect such data on a long-term basis if researchers are to understand how marketing practices vary when farmers have good and bad years. Only the data from Bangasse are consistent with farmers claims

about the role of livestock in the farming system of Burkina-Faso. In that village, livestock and poultry were sold to purchase grain in a bad year. In the other villages which were not under stress, there was little indication that cereals were sold to purchase livestock for sale in bad years.

Appendix Table 1a. Buying and Selling Prices for Millet, by Month, from April 1983 to March 1984.

	Bangasse	Diapangou*		Nedogo	Poedogo
	Buying	Buying	Selling	Selling	Buying
April	71	41	56	75	77
May	84	60	61	97	93
June	87	61	62	108	105
July	97	64	64	101	123
August	95	68	73	121	115
September	96	73	79	102	-
October	72	75	-	100	-
November	80	50	65	112	75
December	89	62	71	120	84
January	97	74	73	-	95
February	99	74	77	150	112
March		85	83		

Appendix Table 1b. Buying and Selling Prices for White Sorghum, by Month, from April 1983 to March 1984.

	Bangasse	Diapangou		Dissankuy		Nedogo	Poedogo	
	Buying	Buy	Sell	Buy	Sell	Selling	Buy	Sell
April	84	47	48	55	54	64	--	67
May	103	62	60	60	56	89	78	83
June	77	--	56	60	59	78	81	81
July	84	--	58	70	70	94	--	87
August	91	--	75	80	80	142	--	98
September	106	--	--	69	54	100	100	110
October	97	67	--	--	85	95	64	65
November	77	--	58	--	73	72	65	74
December	81	71	--	--	--	83	75	78
January	155	77	87	60	58	91	74	77
February	97	--	--	86	119	106	94	98
March		89	92					

Table 1c. Buying and Selling Prices for Red Sorghum, Cowpeas and Rice, by Month, from April 1983 to March 1984.

	-Cowpeas-		---Red Sorghum---			--Rice--	
	Diapangou		Nedogo	Poedogo		Poedogo	
	Buy	Sell	Sell	Buy	Sell	Buy	Sell
April	72	50	82	68	66	157	144
May	83	113	96	79	75	147	103
June	109	116	89	82	81	127	105
July	108	122	98	86	91	---	136
August	108	--	--	98	93	144	106
September	--	--	101	78	88	---	154
October	--	--	103	55	71	103	125
November	50	69	78	60	62	114	109
December	60	78	87	58	70	119	116
January	83	88	80	67	63	125	125
February	83	87	106	94	84	158	141
March	105	118					

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