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MONTANE RESOURCES EXPLOITATION AND THE EMERGENCE OF GENDER ISSUES IN SANTA ECONOMY OF THE WESTERN BAMBOUTOS HIGHLANDS, CAMEROON

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ABSTRACT: *Highlands have played key roles in the survival history of humankind. They are refuge heavens of valuable resources like fresh water endemic floral and faunal sanctuaries and other ecological imprints. The mountain resource base in most tropical Africa has been mined rather than managed for the benefit of the low-lying areas. The world over an appreciable population derives its sustenance directly from mountain resources and this makes for about one-tenth of the world's poorest.The Western highlands of Cameroon are an archetypical territory of a high population density and an economically very active population. The highlands are characterised by an ecological fragility and a multi-faceted socio-economic dynamism at varied levels of poverty, malnutrition and under employment, yet about 80 percent of the Santa highlands' population depends on its natural resource base of vast fertile land, fresh water and montane refuge forest for their livelihood.*

KEYWORDS: Montane Resources, Gender Issues, Santa Economy, Western Bamboutos, Cameroon

INTRODUCTION

The volcanic landscape on the western slopes of the Bamboutos mountain range slopes to the Santa Highlands is an area where agriculture in the form of crop production and animal rearing thrives with remarkable success. Arabica coffee cultivation was in extensive hectares cultivated at altitudes of about 1700m at the Santa Coffee Estate at Mile 12 in the 1970s and 1980s. In the years before the economic crises of the 1980s, attractive world market prices for the coffee raised individual and community income levels of the farmers and all who were involved in the production chain and management. Coffee production thus served as served as the spring board for rural development and infrastructural upshot in Santa Highland after independence as it was the main crop that brought in revenue. The world market fall in prices and the consequent drop in the revenue from coffee production of the 1980's, ushered in new strategies to ensure food security. Coffee orchards that stretched from Mile 12 and beyond to the borders with the West Region were abandoned and some destroyed by their proprietors just as was the case in Akum, Alatening, Baligham, Mbei and Awing.

This gave way to a new agrarian system to develop in the form of mixed farming system within compounds. The urgent need for alternative sources of family income for sustainability and above all for completion of family investment projects that were triggered by the good income years of coffee ushered in the raising of ruminants such as goats and sheep. Poultry activities passed from passive subsistence to an active commercial activity. The indigenes started getting involved in the acquisition, ownership and rearing of cattle thereby reversing an economic production perception of cattle rearing as the exclusive preserve of the Aku fulani population that had been triggering into the hill top pastures since the 1940s. High profitability and all year round revenue from this new-found mix in crop and

animal farming had major changes on the cropping system. Remarkably enough also, the females raised a desire to earn more income and improve on their household living standards and so despite their inferior decision making-power their crop production became increasingly market oriented as Irish potatoes and vegetable quickly snatched the role of coffee.

There is therefore no distinct single line agrarian activity that may be characteristic of highland areas that could be dominantly crop cultivation if rich and fertile or for stock rearing if soils are infertile. The soils of this middle belt constitute part of the deeply weathered volcanic basalts that not only enhance soil fertility but the area offers an equable climate for a perfect pasture growth. This puts in place a perfect milieu for a competitive and complementary agrarian system and activities of the stakeholders. This has also produced a harmonious interwoven mesh of activities and operations that has branded Santa as *The agrarian bread winner* of the North West region.

This article probes into this to demonstrate the close nit in the use of the mountain resources of this area. Crop and livestock production in the Santa Highlands of the North West Region of Cameroon is a means by which the local population obtains their livelihood. The study area is about 532.67 square kilometres between longitude 9°58' and 10°18' East and latitude 5°42'and 5°53' North commonly called "*The Gateway into the North West Region*."

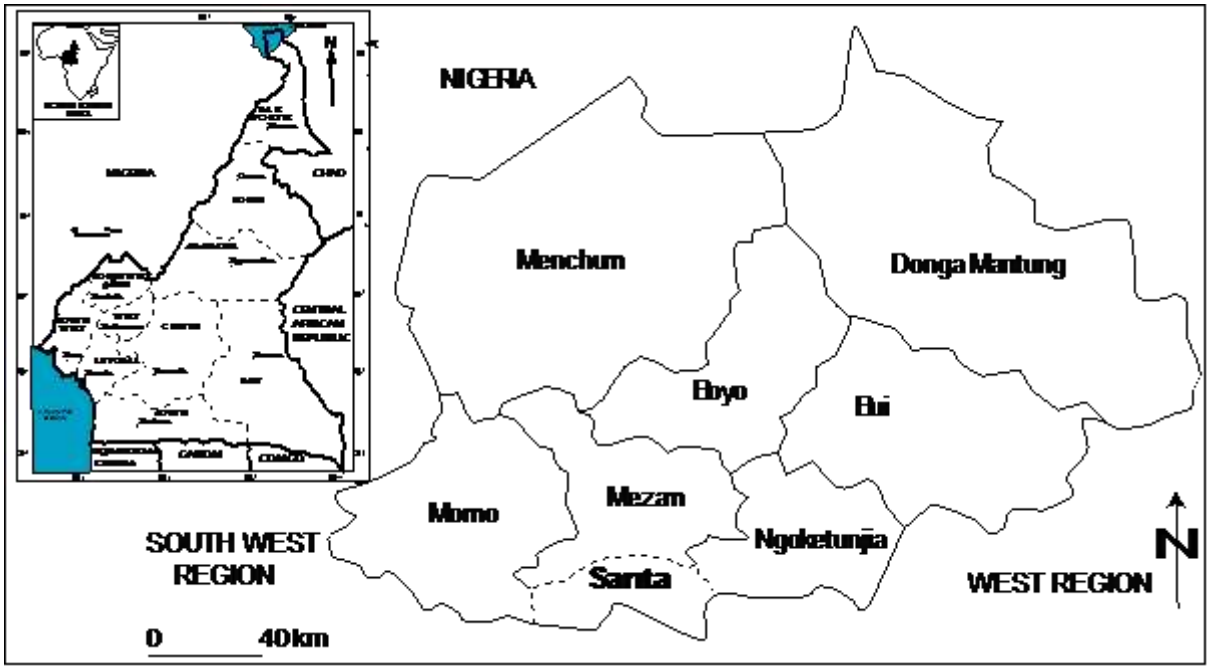


Figure 1: Location of Santa Highlands of the North West Region of Cameroon

Most of the farm produce is evacuated through the National Road No 6 to the rest of the country. The problem raised in this work is whether mixed farming is a response to improve food security and development in this agrarian production basin of the Western highland of Cameroon? In the Santa Highlands, elites have embarked on farming activities and this has attracted many villagers to farming activities as they consider rural areas as places of economic importance. Can the development of the Santa Highland through crop and animal farming systems be attributed to the exploitation of mountain resources?

METHODOLOGY

Primary data was collected through field observation, interviews with stakeholders through an exploratory semi-directed method, use of focus group discussions at village/quarter level with the participants involved in integrated crop and animal farming. This was further enhanced economic and agro-production data collected from the Sub-Divisional Delegations of Agriculture and Rural Development in the Santa highland. Some 120 questionnaires were administered in a random systematic manner to obtain information concerning natural resources and farming trends in this integrated crop and animal production basin.

RESULTS AND DISCUSSION

The montane traits of a highland mixed farming system

The agricultural diversity and its links with the rural livelihoods within the prevailing ecological and economic setting has witnessed a transition from coffee production as the (only cash crop in the late 1980s) to that of mixed cultivation in the population communities of Awing, Akum, Njong, Pinyin, Santa and Mbei. Food crop production was previously reserved for females and children as the males were involved in the cultivation of coffee. This trend is witnessing new forms of cultivation and gender involvement.

Santa portrays great ecological variations and consequently climatic variations that influence the agricultural patterns. Two seasons mark the area, being the rainy and dry season. The annual rainfall is between 2000-3000 mm mostly from March to September and the dry season is from October to February. In August torrential rainfall results from the strong Monsoon winds from Southern Cameroon and conversely strong dry northeasterly winds blow from the North from November to January. Springs dry up as stream discharge drops and the vegetation dries up triggering the start of transhumance. The altitudinal range is from 1000 to 2600 m giving a highland mean annual temperature of 19^{o}C that is favourable for animal rearing, crop and vegetable cultivation qualifying this region as the agricultural cornucopia of the region. This fluctuation raises an important gender issue. The females who depend largely on rain-fed agriculture are the most affected and fall to the wimps and caprices of the male famers who own and manage the irrigation facilities.

The montane forest of the region has been severely degraded living patches of grass along the slopes and narrow valleys.

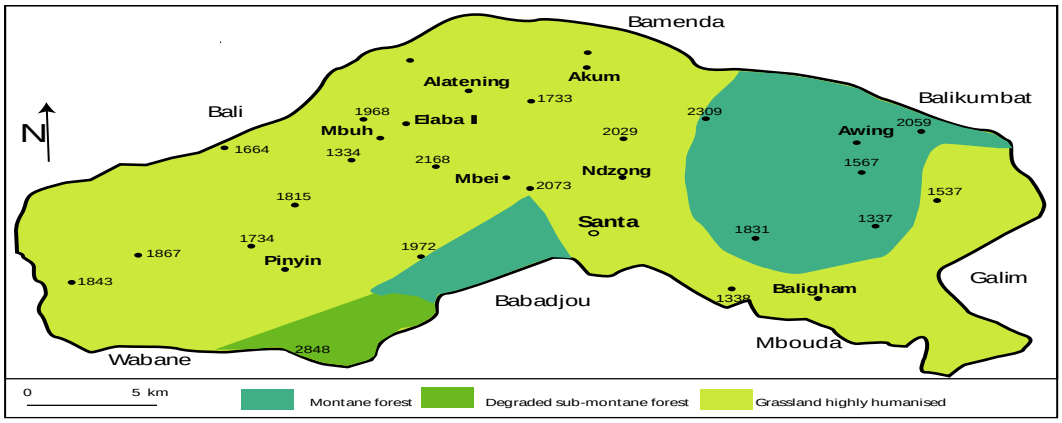


Figure 2: Degradation of the Santa highland montane forest for agricultural activities

The Fulani cattle rearers exploit the mountain tops and slopes for grazing like on the Azope and Mafoumusong hills though bush fires intentionally set by graziers and inadvertently by slash and burn cropping system have degraded the rangelands. Even great stretches of the Bafut-Ngemba Forest Reserve to which Santa belongs has cleared to make way for the cultivation of cash crops like cabbages, Irish potatoes, carrots and vegetable spices. Females as primary energy consumers in the accomplishment of regalian domestic and cultural duties of cooking, smoking and drying of crops can be accused as the primary destroyers of the forest but they often depend only on the dead branches, so the males who engine-saw down the forest trees are indeed the primary inducers of deforestation.

Santa is characterised by three soil types which are the penevoluted ferralitic soils in low lying parts of Baligham, Santa and Ndzong; modified orthic soils in highland areas of Akum, Baba, Mbu and Awing and then the aliatic and penevolated ferralitic red soils are in the intermediate relief areas of Mbei and Pinyin.

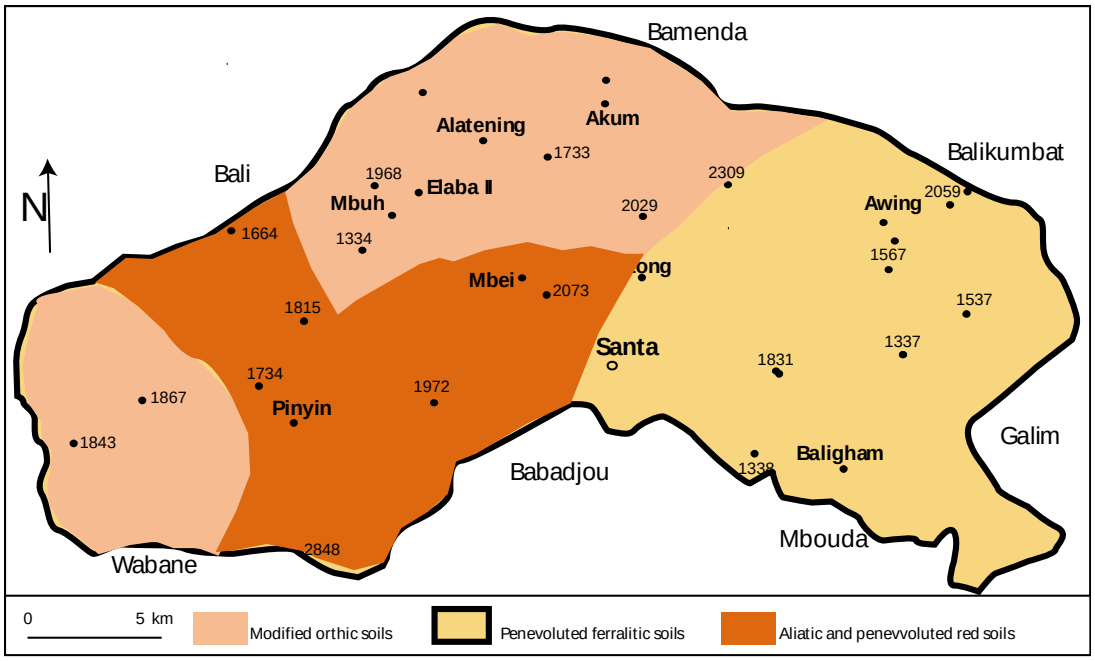


Figure 3: The major soil types of the Santa Highland agriculture

The hilly and mountainous topography has caused much of these soils be eroded into valleys as fertile colluvium where cabbages, carrots, Irish potatoes and spices are cultivated. Such valleys are often the exclusive havens of the males while the females are relegated to less fertile marginal lands where they deploy the *ankara* farming system (burying and burning dry grass in ridges to enrich the soil) that quickly depletes the soil of its physical and chemical characteristics. Santa Highlands on the North West of the Bamboutos Ranges reaches its peak in Mount Lefo in Awing (2209 m) presenting an area of irregular relief configuration of highlands and valleys typical of a volcanic terrain. The females have thus resorted to buy cow dung in the dry season for use in the rainy season.

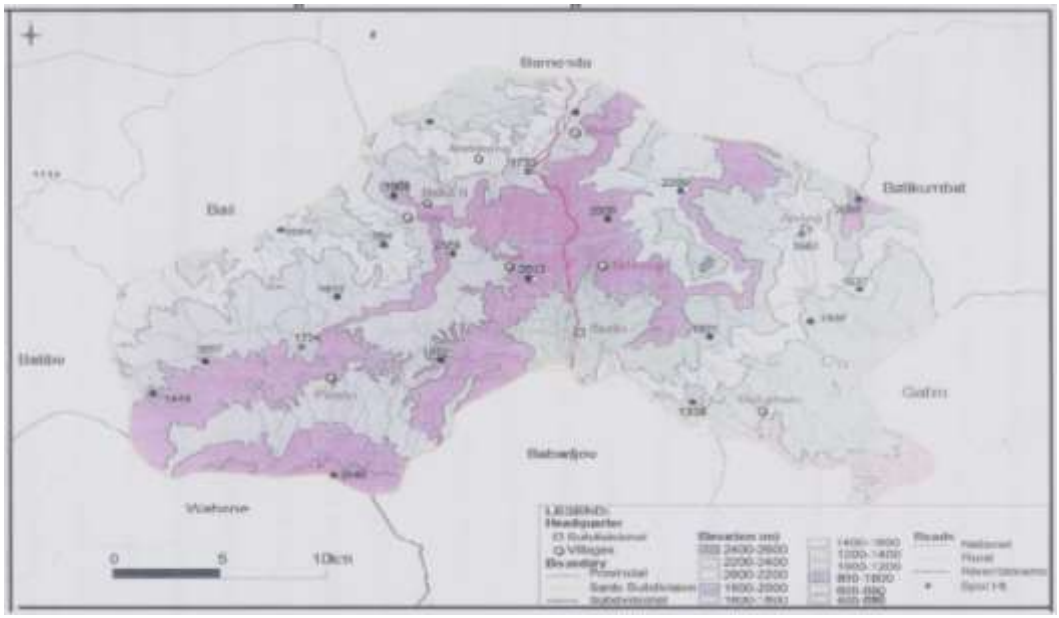


Figure 4: Atlitudinal zonations and drainage network of the Santa highland

These farming systems were widespread and diverse on hill landscapes of moderate altitude and moderate to steep slope. In some areas where soils are shallow and susceptible to erosion as a result of high population densities, some soil and water management practices are attempted to mitigate crop failures. However, most farming production in the Santa highland occurs under rainfed conditions, though some are irrigated from local streams. Most of these streams are intermittent with a dendritic pattern and these include the Mifi, Matazen, Mbufon, Saptsi, Melung, Makemtikong, Achialum, Nephew, Milieus, Njom and Mewungne. These streams offer water for all forms of irrigation ensuring market gardening even in the heart of the dry season as well as enabling many villages harness community pipe-borne water supply projects (Table 1). This is however hampered by the males who have resorted to planting eucalyptus trees on the Lake Awing catchment area such that the outflow of water from the taps in the dry season is becoming more and more irregular.

Table 1: Distribution of pipe-borne water within Santa

Village	Project Name	Population	Targeted Population	Stand taps	Household connected
Baligham	Baligham Community Water Supply	7459	1437	36	05
	Gahdiwalla	1100	/	23	05
Mbuh	Mbuh Community Water Supply	3294	200	16	00
Awing	Ntaw-Mbenten			14	34
	Mbenjom			09	
	Longkele			19	80
	Mbeme			06	
Alatening		2031		0	0
Baba II	Baba II Water Supply	2500	1000	22	/
Njong	Santa Inter Village Authority	2780	1500	04	10
Mbei	Santa Inter Village Authority	5034	500	15	12
Akum	Akum Central water Supply	7459	13	09	22
	Ntenekwi		/		

	Ntinala & Baleck		/		
	Ntamadam		20	48	
	Nsoh		09	43	02
	Kapcho		14	32	
	Muchou		2	13	
Santa	Santa inter-village Authority	5047	2100	30	66
Pinyin	Downer Pinyin Water Supply	31391	11900	29	26
	Buchi Water Supply				

Source: Santa Rural Council

Considerable variation exists in the intensity of crop and farm production within this system, with highest production intensities found around Mile 12 Akum. In areas of more extensive crop production, many farms operate semi-subsistence production systems with only limited sales of products to meet livelihood needs. Shifting cultivation is practised in some hill and mountain areas, especially in Baligham and Awing. Female farming of marginal less fertile land and near exclusion from dry season irrigation technology offers them logically lesser chances of accumulating income enough to brace up with the males yet females do compete and even take an edge over the males is in the farming of cereals especially corn and beans as short season quick income earning crops (Table 2).

Table 2: Types of crops grown in Santa

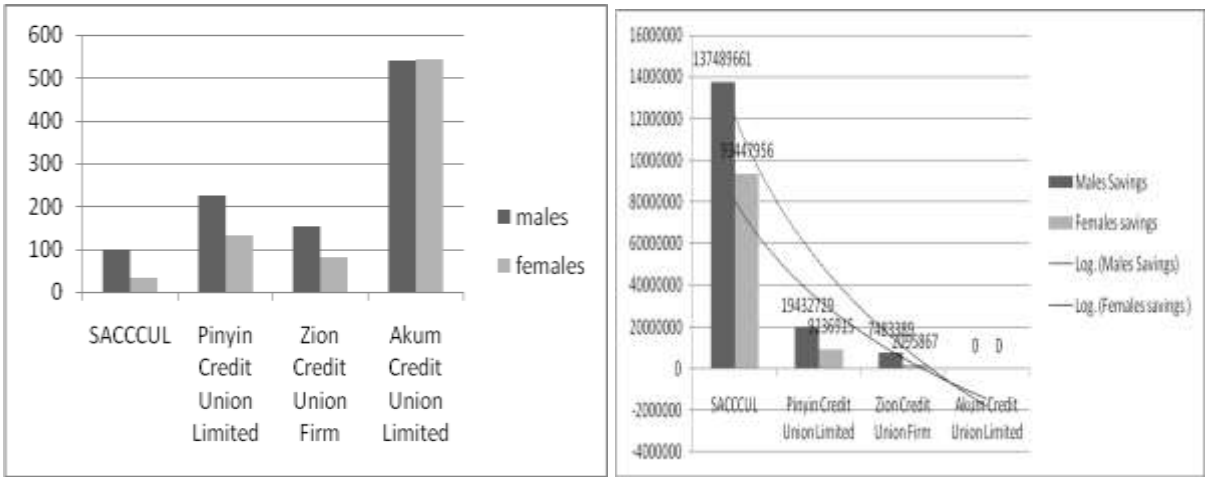
Crop type	Farmers sampled	Percentage of females	Female rank
Irish potatoes	189	88	5
Beans	194	90	4
Corn	215	100	1
Tomatoes	10	5	10
Soya beans	115	53	8
Vegetables	198	92	3
Cocoyams	200	93	2
Pumkins	104	48	9
Groundnuts	154	72	7
Cassava	166	77	6

Tomato farming that is a high income and profit earner is has a low percentage of females because of the tomato requires close attention, irrigation, chemical inputs and time needs they cannot afford. Most youthful males take this as a full time activity and intensively cultivate it on vast expanses of land all year round because they can afford the technical expertise of irrigation, be it rudimentary. Paradoxically the female top ranking in cereal cropping in terms of profitability is the least profitable while their least involvement in tomato cropping places the males in the most profitable. Females, even though carry out mixed cropping for as many as two to eight crops earn lower from farming as compared to the male counterparts in Santa who for the most part do monocropping. The female dominated mixed farming system is nonetheless of a higher leaf area index that would cover the Santa slopes to prevent weed growth and runoff (Ajiobola, 1977). The Santa female mixed agrarian system therefore increases the quantity and variety of food offered by this agrarian basin because it permits more the efficiency of labour and marginal land exploitation at the same time limiting pests

and diseases. The male monocropping system portrays a crop intensification and soils conservation system in Santa that is not environmentally very friendly.

Santa that has emerged into an irrefutable agrarian basin is now greatly involved dairy farming. It is of first rank in the North West Region for the production of vegetables such as cabbages, carrots, leeks, lettuce, cucumber and Irish potato crops over vast areas of land using hand tools and local techniques of irrigation in the Santa Highland in the villages of Akum, Ndzong, Pinyin and Santa. An integrated intensive and high input agro structure named Rock Farm was established since the 1980s in Santa. This commercial agriculture has encouraged farmers to embark on mixed farming as they receive farm inputs at reduced rates from the "Rock Farm" and stakeholders involved in the North West province such as MEDINO, GP-DERUDEP and INADES formation. Another institution operation in the gender variation of the Santa production area is the Community Education and Action Centre This structure is providing the female folk with seedlings through their networks that have operation offices in over ten villages which are further sub-divided into liaison networks that work directly with the female farmers.

The males open up large farms and at the same time they rear livestock through the help of some elites and some non-governmental organisations like Heifer Project International and Helvetas Cameroon in Santa-Akum, Njong, Mbu, Mbei and Baba II. Some of these institutions are in the form of third category micro-finance institutions in the form of credit unions that are owned and managed by the farmers themselves (Fig. 5).



Source: Santa Rural Council, 2003

Figure 5: Financial institutions and membership in Santa

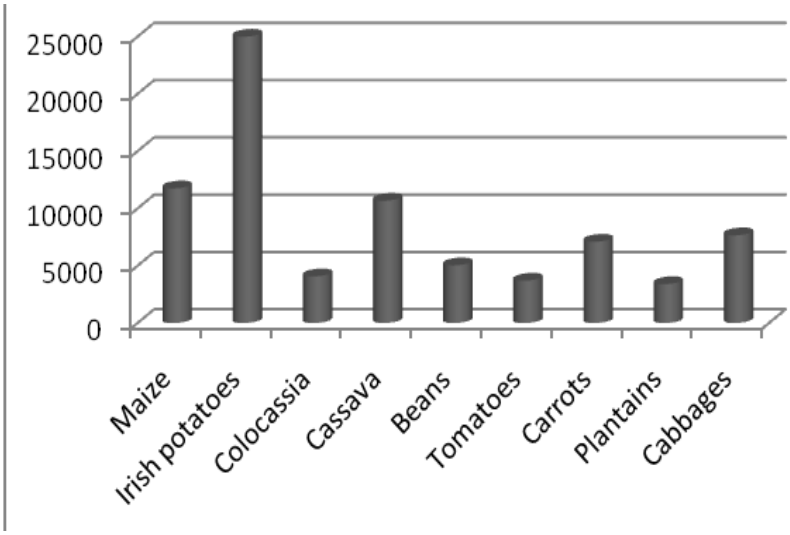
These rural credit structures permit the farmers to have a direct access to saving and funding for their agricultural activities. The financial accumulation does not disfavour any gender even though in terms of membership, the males are often about double the number of females. This is however debateable whether the dominance of male membership does not represent their cultural roles of family heads or deciding husbands whose savings and other banking transactions should be regarded as family rather than personal male roles as could be insinuated from the savings that are far more than the female farmers. This membership however does not reflect the trend in the population growth of Santa. Most of the population consider having savings accounts as reserved for the "rich" and cannot therefore be related to the demographic traits of Santa. Santa in 1976 was 51,594, in 1987 it was 57,477 giving a

density of about 96.86 inhabitants/km^2 in 1976 and 108 inhabitants/km^2 in 1987. Since then, this heterogeneous population (ngembas, moghamos, chambas, bamilekes, bororos and hausas) has grown rapidly (Table 3).

Table 3: Population traits in the Santa

Village	Population 1987 census	Growth rate	2003 estimate	2008 estimate
Akum	4487	2.8	6789.7	7795
Alatening	1226	2.8	18855.2	2129.8
Awing	14570	2.8	22047.3	25311.7
Baba II	1231	2.8	1862.8	1238.6
Baligham	7344	2.8	1111.3	12758.4
Mbu	1985	2.8	3003.7	3448.4
Njong	1676	2.8	2536.1	2911.6
Santa	3040	2.8	4600.1	5281.2
Mbei	3031	2.8	4586.5	5265.6
Pinyin	18887	2.8	28579.8	32811.4
Total	57477		86974.2	99851.7

This Santa population is about 90% dependent on agriculture whether practicing livestock or crop cultivation. Main crops cultivated are maize, Irish potatoes, colocassia, cassava, beans, tomatoes, carrots, plantain, soya beans, cabbages, fruits and other vegetables in farms and home gardens. Home gardens are used for vegetable production for household consumption and sale of products (Fig. 6).



Source: Sub-Divisional Delegation of Agriculture, Santa

Figure 6: Tonnage of crop production for Santa, 2002

Gardens of sweet pepper, tomatoes and assorted vegetables are increasingly available and the prices fluctuate with seasons falling in the rainy season and rising in the dry season because of greater irrigation requirements that disfavours the females.

Livestock production has also emerged as an important component of the system. Over the years, livestock are used for draught power, meat production, cash income and production of

manure. Livestock growth rates and production are low because they are raised under extensive conditions using poor animal husbandry and animal health practices. Intensive production systems are found in Akum, Santa and Pinyin (Table 4).

Table 4: Livestock production in Santa

Type	Year		
	2001	2002	2003
Cattle	11961	9916	10434
Goats	3312	2649	2708
Sheep	4178	2967	2532
Pigs	27236	13697	18442
Rabbits	78	472	509
Poultry	53051	45720	48703

Source: Sub-Divisional Delegation of Livestock, Fisheries and Animal husbandry, Santa

The livestock sector is developing fast as a milk-processing factory has been established reducing the stress of the female folk of the Muslim community that used to be responsible for extracting and processing milk from cattle locally. There is a cattle market at Mile 12 and slaughter house at Alatening Junction, Mile 12, Matazen market, and Santa main market combined with the use of improved breeds and pasture management is boosting the livestock sector. Non-Governmental Organisations emerged in the agrarian sector like Heifer Project International in the 1990s helps the farmers in the region to increase their productivity by giving purebred cattle to farmers to boost milk production and help them in marketing of their milk thereof to the SOTRAMILK factory. SOTRAMILK was a Dutch company that bought milk for the production of cheese, natural and fruit yoghurt. SOTRAMILK and the introduced Heifer Project International new farming techniques, variety of seedlings, insecticides, pesticides, educating farmers and providing high yielding crops and animals species to farmers who show a mastery in applying directives given to them by these organisations.

Milieu triggered issues of the Santa agrarian system on the montane resources

A key issue of the development of the Santa crop and animal farming system is the increasing population in this highland that is exerting growing pressure on natural resources (soil, water, flora and fauna). Widespread, severe natural resource degradation in many areas has given rise to substantial local costs in the form of lowered yields, landslides and scarcity of water in the dry season. The highest priority of farmers is to produce annual food crops to sustain their families. In a bid to mitigate this challenge and take their families into an improved living standard realm and in order to also benefit from the host of development advantages offered by the Non-Governmental organisations in Santa, many female Common Initiative Groups have emerged (Table 5).

Table 5: Registered women groups in Santa Sub-Division by 2008

Name of group	Village located	Membership	Group age
Women for food Processing	Baligham	18	8
Faith in Action	Mbei	25	2
Struggling Widows	Mbei	40	6
Friends Indeed	Santa Central	10	13
Ebondeu Ntamandam Nilap	Akum	23	8
Santa Akum Women's Group	Santa Akum	/	/
Ngoh Women Farming Group	Alatening	/	/
Queen Mother Farming Group	Akum	/	/
Anyonghe Dynamic I Women	Pinyin	/	/

To these could be added the other informal and formal groups and religious groupings which are not registered. They make for a bottom-up approach to agricultural development and are involved in the production of Irish potatoes, maize and beans so that the proceeds could give members a social, economic, moral and financial strength which would certainly empower the female farmers, alleviate their poverty, involve them in participatory development, give them a sense of self-esteem, prevent their exploitation and any form of agrarian injustice. The female Common Initiative Groups (CIGs) engage in collective hoeing, planting, harvesting, processing and marketing of their farm products. In some of the villages the female CIGs have admitted some males as members for mutual support, positive competition, wider dissemination of ideas, division of labour, greater access to inputs and seedlings, livestock, marketing and savings on transport cost. Some of these female CIGs give out loans to their members and even non-members at low interest rates, making up for the dearth of credit facilities to Santa female farmers who do not often have the collateral requested by the formal microfinance establishments

Increasing population pressure has also caused annual crop cultivation to increase on more fragile landscapes and has resulted in a decreased length of the fallow period in shifting cultivation systems. Furthermore, because farmers are poor they are extremely reluctant to invest in field structures to control soil erosion. Collectively, these factors have an adverse effect on farm production and on natural resources. If the majority of families in the Santa highland remain in semi-subsistence farming there will be an increasing pressure on natural resources stability in the future, unless considerable new opportunities can be opened up for off-farm employment or exit from the system. For example a typical farm household of five members in Akum, cultivates an area of 0.94 ha, with a cropping intensity of 84 percent. The main crops grown and their yields are: maize (21 percent of the total cropped area,), Irish potatoes (16.5 percent of the area) and beans (13.2 percent of the area). Annual farm household production for these three main crops totals is 1.7 t/year. Few external production inputs are used. The household has a pig, some poultry and one goat for fattening.

Increasing pressure on the use of scarce land and water resources, accelerating environmental degradation, and the possibility of climatic change are challenging the sustainability of farming systems in the Western Bamboutos highlands stretching to the Santa highland integrated crop and animal production basin in particular. Two important global priority options are necessary to achieve a sustainable and productive use of these montane natural resources to foster agricultural development.

- Focusing on the sustainability of natural resource use;
- Recapitalising soil fertility;

There is now a heightened awareness, among both the public at large and farmers in general, of the need to conserve and productively manage natural resources. Stakeholders interest in the Santa highland assigns a high priority to the maintenance of natural resources for future generations and to reducing environmental damage.

Declining productivity and farm incomes on degraded lands has raised the need for farmers to improve the management of natural resources. Improved land management has been stimulated by the promotion of practices that not only generate environmental benefits, but also rapidly yield tangible returns. In many situations, integrated crop and animal interplay, offers promising possibilities for increasing labour productivity and the efficiency of input use while simultaneously reducing moisture stress. Mixed farming has been promoted in a number of farming systems, and its performance in the Santa highland has been promising.

CONCLUSION

A holistic approach is essential in integrated crop and animal farming system. Experience shows that such programmes must be strongly community-based, with full participation and involvement in management and use of the natural resources. Soil and water management practices and techniques should be promoted as an important means of stabilising yields, ensuring maintenance of soil productivity and increasing crop and animal production. Technologies that are introduced and promoted must be holistic, and must provide short-term, medium-term and long-term economic benefits. Future programmes of assistance should emphasise improved watershed management, conservation farming and introduction of appropriate technologies.

To enhance the agrarian stability of this production basin, the following strategies that result from these gender issues need to be fostered

- Financial assistance from government structures, non-governmental organisations and other donors
- Making available farm inputs on hire purchase such as seedlings, fertilizer and manure
- Follow-up by field extension workers
- Develop a marketing mechanism that would guarantee price stability and good profitability
- Ensure a fair access to irrigation schemes
- Provide for improved livestock breeds
- Greater cooperation between males and females in all aspects of the agricultural development for equality, social justice and the reduction of gender vulnerability. This would not only weed out the crisis of masculinity but set in strategic gendered partnership
- Review tenure constraints that are inhibiting to the maximisation of the full output of the female folk being a pro-poor agrarian investment strategy with a long run rippling multiplier effect that can frog-leap this agrarian economy into a generalised second-generation production economic system.

Perhaps on the steeper slopes of Santa agro-forestry systems could be introduced and promoted with contour planting of suitable tree species - for production of fruits, timber, fuelwood and non-timber forest products - to act as conservation barriers and provide

additional income generation. As such, future assistance programmes should address the gender inequality and issues of land tenure, land leasing and land markets, which are fundamental in promoting a sturdy agrarian growth of the Santa highland.

Santa highland's integrated crop and animal farming has received less attention and benefits from government research and extension services for many reasons - remoteness, complexity of system and a lack of perception of their importance. However, the system represents an important part of the agriculture sector in this production basin. The strategic priorities for the future should be to strengthen the capacity of Sub-Divisional authorities and the Santa Rural Council to undertake participatory identification of problems, constraints and opportunities for farm development and support government or privatised extension and research services in the Santa highland.

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