CASSAVA MECHANIZATION PROSPECTS AND FUTURE MARKET POTENTIALS IN NIGERIA

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Abstract

Nigeria is the world's largest cassava producer; its cassava transformation is the most advanced in Africa, The International Institute of Tropical Agriculture (IITA 2005). However, the scope for increasing the use of cassava in Nigeria's industries is, to a large extent, determined by the development of an efficient and well-integrated production and marketing system, to assure a steady supply of cassava products of stable, high quality standards and appropriate price, and of specific properties required by domestic industries and export markets. Thus, public and private investments in research and development required to develop cassava products for industrial uses, if well targeted, could offer good returns and prospects for the future of cassava in Nigeria. This paper aims at presenting an overview of mechanization level in cassava production in Nigeria and measures to take in increasing productivity and processing for value addition.

Key words: Cassava, mechanization, production, technology.

Introduction

Cassava has enormous potential to improve food security and the livelihoods of people in Africa. It is an industrial crop in emerging countries likeBrazil, Indonesia and Thailand. Cassava (*Manihotesculenta*) is one of the most important crops grown in Nigeria, playing a dominant role in the rural economy of the southern agro-ecological zones and is increasingly gaining importance in other parts of NigeriaCAMAP(2013). However, little attention has been given to the cultivation and soil requirement of the crop. This could be attributed to the ease with which the crop grows and because of its position usually as the last crop in the traditional agricultural system before the land is left to fallow (Ande, Adediran, Ayoola, Akinlosotu, 2008). Cassava is cultivated in virtually all agro-ecology zones of Nigeria; but good understanding of soil and management is necessary to maintain sustainable production. However, the trend of production shows steady increase of 2.7 per cent per annum (FAO, 2013), but care must be exercised to maintain a reasonable level of soil fertility and soil structure. Good farming practices and rich/fertile soils using recommended varieties are essential to maintain sustainable production to meet the current high demand for cassava in Nigeria (Ande *et al*., 2008).

In Nigeria, cassava can be processed into different forms of products utilizable by man.The International Institute of Tropical Agriculture (IITA) identified and highlighted the characteristics of the common forms of cassava products available in Nigeria (IITA, 2002). These include gari, fufu, cassava chips, cassava flour, starch, farina, tapioca, cassava bread and pudding. A survey conducted by the Federal Ministry of Health revealed that the frequency of consumption of cassava products is high in some states of the country. High yield in cassava could be attributed to good management practices, use of fertilizer, herbicides and organic manure in some cases, couple with good culturalpractices. High yield is also a function of combination of such other factors as appropriate farming systems and cultural practices (Ande *et al*., 2008). Stressing the influence of the presidential initiative on cassava in, it was observed that the trade promotion policy of the federal government has created a very strong domestic demand and market (Anga, 2005). The

demand placed on cassava was so strong that big-time cassava farmers now earn much more money from the produce locally than they could make if they exported the commodity.

Cassava plays different but important roles in African development depending on the stage of the cassava transformation in a particular country: famine reserve, rural food, cash crop and urban food, industrial raw material, and livestock feed. The first three roles currently account for 95 per cent of Africa's cassava production while the last two account for only 5 per cent(Nweke, 2004).

Cassava is a very important food crop that is capable of providing food security. However, a lot of problems prevent the development and use of modern equipment for its production. Most of the cassava produced still comes from peasant farmers who depend on manual tools for their field operations and these farmers are instrumental to making Nigeria the world's largest producer of the crop. An increase in production of cassava to sustain the world food security needs improved machinery to allow its continuous cultivation and processing (Kolawole, Agbetoye, Ogunlowo, 2010).

Cassava Production Profile in Nigeria

Nigeria grows more cassava than any other country in the world. The production of cassava is concentrated in the hands of numerous smallholder farmers located primarily in the south and central regions of Nigeria. A significant population of cassava growers in Nigeria has made the transition from traditional production systems to the use of high-yielding varieties and mechanization of processing activities (Nweke *et al.,* 2002). According to Berry (2012), Nigeria and the (Democratic republic of congo) possess both large and small scale farms on which cassava is grown by full-time and parttime farmers. In these farming areas, an average of about 45 percent of cassava field were cultivated for commercial purposes, but this varied from 0 to 100 percent (Nweke, 1989). FAO (2012) provides statistics of cassava production in three countries, Nigeria, Cameroun and Togo, for the period 1990 to 2005. The data show that cassava production witnessed increases in the three countries with Nigeria being clearly in the lead. Several factors were believed to have facilitated the rapid spread of cassava cultivation in Nigeria. First, the agronomic and nutritional advantages of cassava over other staple foods, second, the vastly superior storage potential of cassava products. Other desirable qualities that aided the high distribution of cassava in Nigeria include its adaptability to relatively marginal soil and erratic rain-fed conditions. Furthermore, there is the certainty of obtaining some yields even under the most adverse conditions and its flexibility with respect to time of planting and harvesting.

Intervention of AATF in Cassava Mechanization

African Agricultural Technology Foundation (AATF) had made tremendous impact on Cassava mechanization in Nigeria through a project called CAMAP "Cassava Mechanization and Agro Processing Project". Lack of access to appropriate mechanization to support production and processing of cassava is impeding the development of the cassava market in Africa even though the continent is the highest producer of the crop in the world. This technological gap has left farmers with no option but to produce cassava on a low scale mainly for subsistence and for the local markets.

In Africa, 93% is consumed as food compared to Latin America and Asia where less than half is consumed. This situation is underutilizing the potential that cassava offers the continent, both as a source of food and as an industrial raw material. The goal of the Cassava Mechanization and Agro processingProject (CAMAP) is to enhance cassava production and processing

technologies for sustainable improvements in food security, incomes and livelihoods for farmers, processors, and marketers in the cassava sector. This will be achieved through the upgrading and expanding of traditional planting, harvesting and processing methods. These changes will contribute to the development of competitive cassava commodity value chains resulting in reliable supply of processed products for food and non-food industrial use. To facilitate these goals AATF brought in Mechanical Cassava planter and Harvester and in partnership with National Centre for Agricultural Mechanization (NCAM) Ilorin Kwara state Nigeria. It has been in use since 2012 farming season and upon the success recorded NCAM was at the forefront of National Cassava Mechanization Project and through this project over 1000 hectares of cassava farm had been established across the nation.

With proper utilization of the appropriate mechanization for production the under listed results is expected from the programme.

1. Appropriate prototypes required for planting, harvesting and processing technology Developed and promoted for use by farmers
2. Enhance agricultural business management capacities of 300 entrepreneurs
3. Cassava productivity will be enhanced to double the current yields - from 10 tons to at least 20 tons per hectare - through the creation of demand for quality cassava products
4. Robust cassava value chains and market linkages and capacities will be developed and Strengthened for cassava products
5. Increase incomes from the sale of cassava products
6. Reduce the demand on the labour market and improve quality of lives by decreasing the amount of time required for farming activities, especially by women
7. Strengthen market linkages and market capacities
8. Enhance enterprise development and employment creation. (AATF,CAMAP2013).

Cassava Production Prospects in Nigeria

Cassava has virtually turned to pure gold in Nigeria. Less than five years ago, the country was desperately looking for export market for the farm produce as a result of glut in the local market. But the situation has changed due to the trade promotion policy of the federal government(Ojeagbase, 2005).

Stressing the influence of the presidential initiative on cassava in Nigeria, Anga (2005) observed that the trade promotion policy of the federal government has created a very strong domestic demand and market. A number of new initiates are currently being implemented to increase yields and area to achieve increased cassava production in Nigeria.

One innovative initiative to achieve greater cassava production is being undertaken by the Cassava Growers Association. It is acquiring large parcels of land in each Local Government Authority (LGA). Each parcel is intended to provide 1,000 hactare of continuous land, suitable for commercial cassava cultivation. In addition to current production levels, farmers' groups (or clusters) would be organized in such a way that, using mechanized equipment, high yielding varieties and improving farming practices, yields of 30 tonnes per hectare could be achieved in this new area. There are 547 LGAs said to be participating in the programme (AATF., CAMAP 2013).

If each LGA plants 1, 000 hectare of high yielding cassava this would increase production by 16.5 million tons.Members of the Cassava Growers Association are currently practicing cluster farming. Presently there are about 500 groups carrying out cluster farming with each group having about 30 hectare under cultivation. Members are divided into groups with land side by side. As a

group they can hire a tractor to plough, spray with herbicide to reduce weeding and gain in efficiency. Unfortunately, the success of these clusters was jeopardized because inappropriate tractors were made available.

Another initiative is the encouragement of plant population to the recommended 10 000 stands per hectare. If plants per ha are currently 7 to 8 thousand stands per ha an increase to 10,000 stands per hectare would increase yields to approximately 13 tons per ha or 9 million tons.Many claim that improving cassava production practices can result in increased cassava production. In terms of the regional production model the effect of completing cassava production in one year essentially doubles the yield of cassava which doubles current production. Increasing yields to 15 tons per hectare and harvesting cassava within one year has an even greater impact than agronomic improvement alone because it combines the positive impact of improved agronomic changes with the use of improved cassava varieties (F.A.O 2013). The increase of yield to 20 tons per hectare boosts the expected output of cassava even further. In fact, the outcome is consistent with the target of 150 million tons by 2020.

Table 1: Levels of Cassava Production from 1990 – 2005 (tons)

Year	Nigeria	Cameroun	Togo
1990	19, 043,008	1, 587,872	592, 867
1991	26, 004,000	1, 622,000	510, 528
1992	29, 184,000	1, 636,000	452, 093
1993	30, 128,000	1, 648,000	389, 448
1994	31, 005,000	1, 715,000	531, 526
1995	31, 050,000	1, 848,000	607, 222
1996	32, 050,000	1, 918,000	548, 316
1997	32, 695,000	1, 918,000	595, 792
1998	32, 698,000	1, 965,950	579, 381
1999	32, 070,000	1, 889,191	693, 998
2000	32, 810,000	191, 830	3,000,699
2001	32, 586,000	1, 947,266	651,530
2002	34, 476,000	2, 200,000	729,708
2003	33, 379,000	2, 200,000	729,708
2004	35, 583,000	2, 220,000	729,908
2005	35, 961,000	2, 120,000	432,133

Source: FAO (2012)

Figure 1: 2row mechanical cassava stem planter

Conclusion and Recommendation

The market potential of cassava depends on technological transformation. The development of appropriate mechanization tool is critical for expanding the production and market for cassava now and in future. A better government policy is therefore, recommended to support and encourage research into development of appropriate mechanization tool for cassava production.

And in addition, it will support existing small-holder production systems through an effective input delivery system. The manufacturing of production and processing equipment for cassava operation is an important aspect of mechanization development in Nigeria which has not been tackled. This cassava production and processing equipment will give the country the opportunity to compete at the international market with other countries because this cassava production and processing

equipment are meant to increase cassava yield through the adoption of proper agronomic practices acquired through training; reduce cost of transportation and minimizing losses during production and processing stage of cassava.

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