

— **SMALLHOLDERS STEP-BY-STEP SERIES** —



CASSAVA PRODUCTION AS AN ENTERPRISE

TRAINING PAMPHLET

DEVELOPED BY THE

***S* SMALLHOLDERS FOUNDATION**

"for small farmers to overcome poverty "

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FORWARD

Nigeria has great potential to become an agricultural powerhouse. 70% of our great landmass is suitable for agriculture, yet only 30% of the land is currently used for cultivation. Nigeria's diverse climate, from the tropical areas in the South to arid zones in the North, allow the cultivation of virtually all agricultural products grown in the tropical and semitropical regions of the world. There is thus abundant opportunity for growth and expansion.

The agricultural sector contributes 70% of labor force, 80% of consumed food, but only 40% of gross domestic product (GDP). 90% of agricultural production is produced by smallholders with the average farm size in the South reaching about 0.5ha and in the North 4ha. Subsistence smallholder farming thus continues to dominate the sector.

Cassava production as an enterprise is one of the numerous approaches which will successfully transform Nigeria's subsistence agriculture.

This training pamphlet which is part of our "easy to read and understand" Smallholders Step-by-Step Series is to:

- Equip farmers with "quick-win" skills to cultivate high quality cassava,
- Equip farmers with "quick-win" financial knowledge to generate profit from cassava farms,
- Encourage non-farmers to establish viable cassava farms easily.

I will like to acknowledge the immense contribution of Mr. Chukwudi Precious, Programs Officer of The Smallholders Foundation. Chukwudi's focus is on re-engaging smallholder farmers to gradually move up the ladder from subsistence agriculture to a more commercial agriculture.

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Cassava is a perennial shrub that reaches the size of a small tree say 0.5-1 m. The stems vary in colour from pale to dirty brown containing marks of numerous nodes formed by scars left by fallen leaves. The leaves are fan-shaped with 5 to 9 lobes and it is dark green in colour.

Cassava tree when fully matured can give about 2-7 tubers during harvest. The height of the tubers per plant varies from 27.7cm long and 4.5cm -7.4 cm in diameter. Cassava tuber contains 20-50% of starch. In good conditions a single tuber might weigh 4kg. It is one of the most crucial staple foods in Nigeria and tropical Africa. Due to its efficient production of cheap energy and its tendency to withstand harsh conditions, variability of climate, resistance to pests, and easy attainable sustainability, it is cultivated by 98% of the smallholder farmers in the southeast region of Nigeria.

Cassava cultivation is about the cheapest because; it requires minimum cost of production. With or without fertilizer, cassava grows and produces tubers, though fertilizer enhances greater yields. The new and improved varieties take a period of between seven and nine months to mature and they are good for high quality cassava flour production, are drought tolerant, crucial in the mitigation of climate change and in enhancing human nutrition. As a result of this cassava has been playing a very vital role in efforts to alleviate and eradicate food security crisis all over the African continent under marginal conditions such as low soil fertility, low farm input use, and poor management.

In the Niger-Delta Region of Nigeria, cassava is an ideal crop which serves as a source of cheap calories from the tuber, quality protein from the leaves, free planting material from the stems and honey from the flowers.

General Advantages of cassava production

- ❖ Cultivation is cheap, requires minimum cost of production and management,
- ❖ Cassava has high value chain,
- ❖ Contains calories of energy supplement as well as small percentage of protein,
- ❖ Young tender cassava leaves are good source of dietary proteins and vitamin K,
- ❖ The roots are the chief source of some important minerals like zinc, magnesium, copper, iron and manganese.
- ❖ It is moderate source of some of the valuable B-complex group of vitamins such as folates, thiamin, pyridoxine, riboflavin, and pantothenic acid.

Steps involved in planting of cassava

Selection of varieties - Pick out cassava varieties that have high resistant to diseases, that are high yielding and has early maturing. For instance some Cassava Mosaic Diseases (CMD) resistant varieties are: TME 419, TMS 98/0505, TMS 98/0581. TMS 98/0510, TME 98/2205

Step 1: Use disease resistant, high yielding and early maturity varieties

Selection and preparation of planting material - Select stems of 10-12 months that are diseases free. We normally recommend stakes within 20-25cm length with 4-5 nodes or more.

Step 2: Cut selected disease free stems with sharp knives into 4-5 nodes.

Land preparation - Prepare ridges or mounds in well-drained deep, loamy soils. Ridges or mounds should be 1m apart in rows especially on lands prone to water logging.



Make sure you give the right spacing to your ridges or mounds.

Step 3: Prepare ridges or mounds 1m apart in rows in line with the farming system

Time of planting - Planting should be done immediately the rain becomes steady after dry season. It depends on the geographical distribution/vegetation of the areas or regions. In the rainforest area planting should be between March and November while in the dried savannah it is between April and August.

Step 4: Plant when the rain becomes steady

Planting of cassava - The optimum plant population for high root yield is 10,000 stands per hectare. Spacing should be 1m X 1m, 50-60 bundles of cassava stems/Ha. During insertion of the stem in the ground the stakes should be placed in with buds the facing up, with 2/3 of the stake buried in the soil at an angle of 45°.



Insert cassava stems in the ground

Step 5: Plant 10,000 stands per hectare at 1m X 1m with 2/3 of stake buried in the soil.

Weeding control: integrated weed control is recommended for efficient weeding of the cassava farm. There are three methods of weeding which we recommend.

Cultural method of weed control - Plant early before weeds emerges. Plant varieties with potential for early canopy closure, this reduces weed infestation.

Mechanical method of weed control - Weed with hoes about 3 times depending on agro-ecology and type of weed.

Chemical method of weed control - Pre-emergence herbicide like Primextra to keep the farm weeds free for 4-8 weeks. 5 liters of primextra/Ha is recommended. Consult any extension agent or spray man/woman for guidance.

Step 6: Use integrated weed control

Fertilizer application - The rate of fertilizer should be 400-600kg/Ha (8-12 bags) of NPK 15:15:15 or NPK 20:10:10 is recommended after weeding that is 4-6 weeks after planting. Application should be based on soil fertility level.

Step 6: Apply 8-12bags of NPK 15:15:15 or 20:10:10 per hectare

Harvesting - Dig out cassava tuber, carefully avoid wounding the tuber because it is affected by disease and fungi infection when bruised, avoid damaging of stems. Cassava stems are supplementary income. In a well-established production field a total of 500 or more bundles of stem can be harvested.



Dig cassava tubers carefully to avoid bruising

Step 7: Dig the tuber carefully avoid bruising the tuber and damaging the stem

Definitions of terms

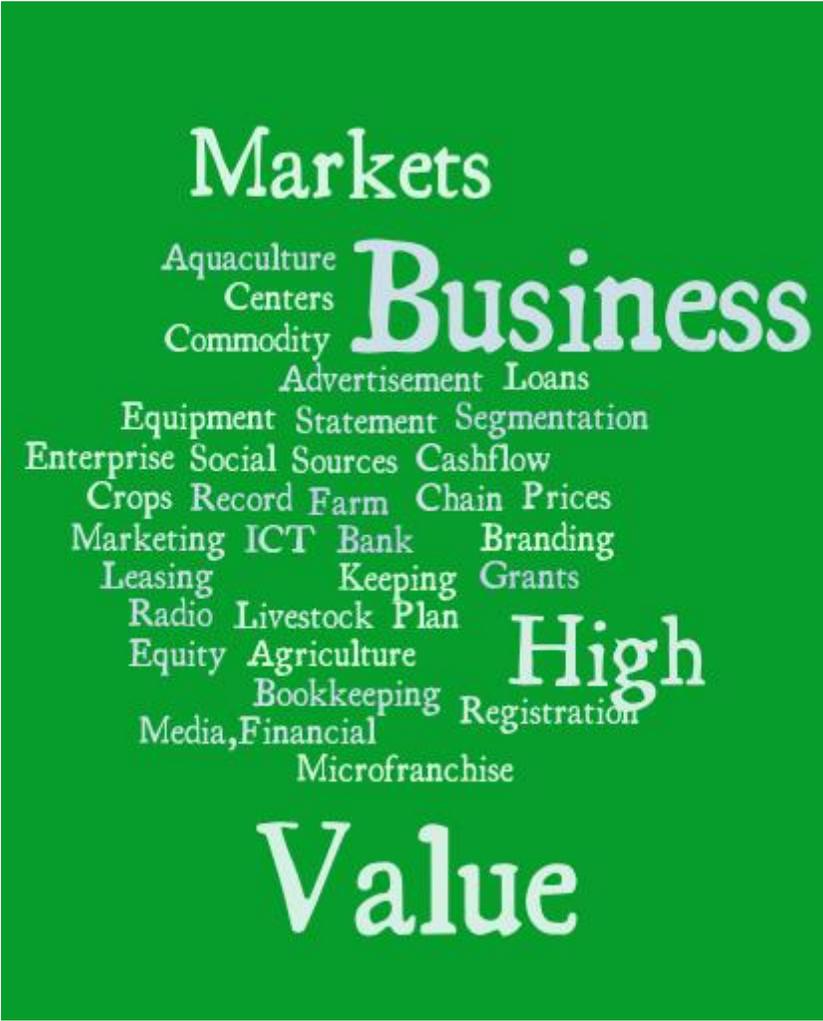
- ❖ CMD- cassava mosaic diseases
- ❖ Improved cassava tubers - TME 419, TMS 98/0505, TMS 98/0581, TMS 98/0510, TMS 98/2205
- ❖ Integrated weed control - Comprises of the cultural, mechanical and chemical methods of weed control.

Tentative Cost to establish 1 hectare of Cassava Enterprise

ITEMS	OUTPUT	UNIT	UNIT PRICE (₱)	VALUE (₱)
Cost				
Cassava stem	65	Bundles	450	29,250
Land rent	1	Hectare	4500	4,500
Land clearing	24	Mdays	1200	28,800
Land preparation	30	Do-	900	27,000
Planting	20	Do-	900	18,000
Weeding (2 times)	40	Do-	900	36,000
fertilizers	8	Bags	3800	30,400
Fertilizer application	20	Mdays	900	18,000
Harvesting	20	Mdays	900	18,000
Total Cost				209,950
Income				
Cassava roots	30,000	Kg	7	210,000
Cassava stems	450	Bundles	450	202,500
Total Income				412,500
Profit				202,550

REFERENCES

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- 2. IFAD/FGN/NDDC CBNRMP (2012):** A practical guide to improved package of practices for increased productivity of Cassava in the Niger-Delta.
- 3. NFRA & FAO (2008):** Farm Management Advisory Services – Upstream and Downstream modular Enterprises Advisory Handbook.



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