

REPUBLIQUE DU CAMEROUN  
Paix – Travail – Patrie

MINISTERE DE L'AGRICULTURE  
ET DU DEVELOPPEMENT RURAL

SECRETARIAT GENERAL

DIRECTION DES ORGANISATIONS  
PROFESSIONNELLES AGRICOLES ET  
DE L'APPUI AUX EXPLOITATIONS AGRICOLES

SOUS-DIRECTION DE LA VULGARISATION  
AGRICOLE



REPUBLIC OF CAMEROON  
Peace-Work-Fatherland

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DEPARTMENT OF PROFESSIONAL  
AGRICULTURAL ORGANISATIONS  
AND SUPPORT TO FARM ENTERPRISES

SUB-DEPARTMENT OF AGRICULTURAL  
EXTENSION

# Data Sheet for Rainfed Sorghum Production and Post-Production



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## **OBJECTIVE**

The aim of this fact sheet is to increase the productivity and production of rainfed sorghum in order to mitigate the effects of the food crisis by providing producers with an updated collection of good agricultural practices. This collection takes into account measures to limit the vulnerability of production systems to climatic risks. It is a support and reference tool for extension workers / rural advisers as part of their efforts to build producers' capacities.

### **I. GENERAL INFORMATION**

Sorghum is an important cereal crop that continues to grow in importance in the greater North of Cameroon, particularly rainfed sorghum (such as S-35 or Zouaye).

In general, one can notice that the planting material is being conserved and enriched, although in some places certain varieties are in the majority. Taste quality, market value, suitability for processing and culinary uses vary according to the type of sorghum, and also influence the choice of variety. Sorghum is very rich in iron, calcium and phosphorus. Sorghum is used for human and animal consumption. It is made into alcoholic beverages, and its stalks are used as fencing material and firewood.

Grown in the Far-North, North and part of Adamawa, this crop has a growing cycle of 85 to 90 days. It requires very little water; it is a drought-resistant plant that can make do with 400 mm of rainfall a year. It requires very little fertiliser and plays a major role in preserving biodiversity.

### **II. TECHNICAL ITINERARY**

#### **II.1. Soil selection**

For sorghum cultivation, it is recommended to choose sandy-loam, sandy-clay or silt-clay soils that are well drained, loose and not infested by Striga, with cotton, groundnut, cow peas, soy beans and crotalaria as previous crops.

#### **II.2. Soil preparation**

##### **Option 1:**

Clear, cut small shrubs and clear the plot, plough with a plough (donkey or cow) or with a tractor after a heavy rain.

##### **Option 2:**

Cut small shrubs on the plot, use herbicides for chemical weed control, plough the plot with a plough (donkey or cow) or with a tractor at least 7 days after the herbicide treatment and after a heavy rain.

**NB. If the soil is fairly loose after the first rains, avoid ploughing and consider direct seeding for each of the 2 options.**

#### **Choice of varieties:**

There are several varieties, the most commonly used include S35, Zouaye, CS54, Damougari, etc.

#### **II.3. Quantity and treatment of seeds**

For sowing, 16 to 20 kg of seed are needed per hectare. These seeds must first be treated with an Imidacloprid-based insecticide-fungicide for protection against soil insects and damping-off.

#### **II.4. Sowing period and method**

Preferably sow in mid-June-July after the rains have returned.

Sow in rows, with 5 to 7 grains per planting unit, respecting a spacing of 80 cm between rows and 30 cm between planting units. This is followed by removal of plants to retain 02 to 03 plants per planting unit. Re-sowing is carried out 7 to 10 days after sowing, only for empty planting units.

#### **II.5. Post-Sowing Operations**

**Plant removal** is performed two weeks after sprouting, following a good rainfall, to maintain 2 to 3 plants per planting unit. For greater efficiency, plant removal can be combined with the first weeding."

#### **Organic manure:**

If possible, apply organic manure (cow dung, manure, compost, household waste, etc.) on the land at a rate of 5 - 6 tonnes per hectare. This dose of organic manure improves the physico-chemical properties of the soil over 5 years, and fertilisation should be repeated at this frequency. It should be applied in April-May when the weather is still warm enough to help eliminate any germs.

#### **Mineral fertiliser**

For optimal vegetative growth, as well as improved flowering and fruiting, , complete mineral fertilisation (150 kg NPK and 100 kg Urea) should be applied in 2 stages:

**Bottom manure:** 100 kg NPK and 50 kg Urea per hectare no later than 2 weeks after sowing.

**Cover manure:** 100 kg of Urea per hectare, 25 to 30 days after sowing.

**NB. The recommended formulas are NPK (14-24-14 or 20-10-10), Urea (46% N).**

Very often, for greater efficiency, the 1<sup>st</sup> and 2<sup>nd</sup> applications are made immediately after the 1<sup>st</sup> and 2<sup>nd</sup> weeding.

**Weeding:** When the soil is properly prepared, two weedings are sufficient to control weeds. The first weeding takes place 2 to 2.5 weeks after sowing, and the second weeding occurs 35 to 40 days after sowing."

### **Protecting sorghum**

The area around the farm should be kept clean to reduce insect and pest attacks. In the event of caterpillar attacks, for example, insecticides can be used. Contact agricultural extension agents for advice.

### **II.6. Harvesting**

Harvesting is done with sickles. Harvest panicles after physiological maturity, characterised by the formation of a black dot at the base/bottom of glumes, when grains break under gentle pressure (by biting with teeth).or when leaves and stems dry out

Dry the harvested panicles on the threshing floor. The recommended moisture content is 8-12%. Delayed harvesting may exposes panicles to damage from birds and bad weather

### **II.7. Threshing**

Threshing can be done manually (by hand) or with a mechanical threshing machine. Threshing and winnowing remove broken grains, waste and foreign matter. Yields for different varieties are between 1.5 and 2 tonnes per hectare

### **II.8. Storage**

It is important to ensure that the beans are completely dry before storage. For storage periods of 3 to 6 months, an insecticide should be used according to the doses and precautions indicated on the packaging. Bag the grains and store them on pallets or floors in a dry, well-ventilated area, away from rodents.

### III - Constraints and risks

#### Constraints:

Difficulties with irrigation and fertilisation limiting the ability to increase yields (Sorghum SS);  
Insufficient availability of seeds for improved, high-yield varieties;

#### Risks:

Soil depletion and infestation of the crop by Striga;  
Poor emergence and delayed growth due to water stress and caterpillar infestations (June);  
High susceptibility to grain-eating birds and mould at maturity (S35);

### IV - Estimated operating account for 1 ha under cultivation (for illustration)

#### BUDGET

Operations	Units	Qty	Unit cost	Total	Year 1
<b>I. INVESTMENT COSTS</b>					
<b>1.2.1 Small equipment</b>					
Sprayer	U	1	40,000	40,000	40,000
Cutlass	U	4	4,500	18,000	18,000
Hoe	U	4	3,500	14,000	14,000
Push trucks	U	1	85,000	85,000	85,000
Triple decameter	U	1	10,000	10,000	10,000
Bucket	U	3	1,500	4,500	4,500
File	U	4	1,000	4,000	4,000
Twine	Roll	1	3,000	3,000	3,000
<b>Sub-total Small equipment</b>				<b>178,500</b>	<b>178,500</b>
<b>TOTAL INVESTMENTS</b>				<b>178,500</b>	<b>178,500</b>
<b>2. OPERATING EXPENSES</b>					
Land rental	ha	1	50,000	50,000	50,000
<b>2.1 Inputs</b>					
Seeds	1 kg sachet	20	500	10,000	10,000
Insecticides (Atrazine)	Sachet	4	1,500	6,000	6,000
Roundup Herbicide	Litre	1	6,500	6,500	6,500
Storage Insecticides (Actellic)	sachet	22	500	11,000	11,000
N-P-K 20-10-10	50 kg bag	2	26,000	52,000	52,000
Urea	50 kg bag	2	22,000	44,000	44,000
Harvest bags	U	25	300	7,500	7,500
<b>Sub-total inputs</b>				<b>187,000</b>	<b>187,000</b>
<b>2.2 Works</b>					
Soil preparation					

Land clearing/cleaning	MD	4	2,500	10,000	10,000
Ploughing	MD	10	2,500	25,000	25,000
Planting and sowing	MD	6	2,500	15,000	15,000
Re-sowing	MD	3	2,500	7,500	7,500
1 <sup>st</sup> weeding (+plant removal)	MD	6	2,500	15,000	15,000
2 <sup>nd</sup> weeding	MD	6	2,500	15,000	15,000
1 <sup>st</sup> application of mineral fertiliser	MD	2	2,500	5,000	5,000
2 <sup>nd</sup> application of mineral fertiliser	MD	2	2,500	5,000	5,000
Insecticide Treatment	MD	2	2,500	5,000	5,000
Herbicide Treatment	MD	2	2,500	5,000	5,000
Threshing and winnowing	MD	10	2,500	25,000	25,000
<b>Sub-total Works</b>				<b>132,500</b>	<b>132,500</b>
<b>2.3 Harvesting and post-harvest operations</b>					
Harvesting the ears	MD	6	2,500	15,000	15,000
Threshing and winnowing	MD	6	2,500	15,000	15,000
Transport and handling	FR	1	25,000	25,000	25,000
Harvesting stalks	MD	4	2,500	10,000	10,000
<b>Sub-total harvesting and post-harvest operations</b>				<b>65,000</b>	<b>65,000</b>
<b>TOTAL OPERATING EXPENSES</b>				<b>384,500</b>	<b>384,500</b>
<b>TOTAL EXPENSES</b>				<b>563,000</b>	<b>563,000</b>

## DEPRECIATION

Designation		Qty	Unit cost	Total Cost	Lifespan	Year	1 Farm. Seas./Year
Sprayer	U	1	40,000	40,000	3	13,333.3333 3	3,333.333333
Cutlass	U	4	4,500	18,000	2	9,000	2,250
Hoe	U	4	3,500	14,000	2	7,000	1,750
Push trucks	U	1	85,000	85,000	5	17,000	4,250
Triple decameter	U	1	10,000	10,000	2	5,000	1,250
Bucket	U	3	1,500	4,500	1	4,500	1,125
File	U	4	1,000	4,000	1	4,000	1,000
Twine	Roll	1	3,000	3,000	1	3,000	750
<b>TOTAL DEPRECIATION</b>						<b>62,833.3333 3</b>	<b>15,708.33333</b>

## FINANCIAL RESULTS

Designation	500	Qty	Total	1 Farm. Seas./Year
Operating expenses				384,500

<b>Depreciation</b>				15,708.33333
<b>Turnover</b>				
Sale of stalks	1,000	40	40,000	40,000
Sale of grains	225	2,000	450,000	450,000
<b>Total Turnover</b>				490,000
<b>Gross margin</b>				105,500
<b>Net profit</b>				<b>89,791.66667</b>

#### IV - APPENDIXES

##### *4-1 Appendix 1: Favourable growing areas and conditions*

<b>No.</b>	<b>Crop</b>	<b>Annual rainfall (mm)</b>	<b>Previous crop</b>	<b>Soil type</b>	<b>Areas</b>
1	Zouaye Sorghum	600 - 1000	Cotton, Groundnut, Cow pea	Sandy-loam, sandy-clay, silt- clay, well drained	Foothills and plains of Mayo- Danay, Mayo- Kani, Diamaré and Mayo-Sava