

FACT SHEET:

COWPEA - *Vigna unguiculata*

Legalega Research Station
Horticulture Unit



Cowpea are small kidney shaped beans in the legume family. Its uses varies as grains, vegetables, fodder and as cover crop. Cowpeas are drought tolerant crops and has the ability to fix atmospheric nitrogen and is adaptable to wide range of soils. Cowpeas are very good source of vegetarian protein and provides other important vitamins and minerals. Cowpea is exported as fresh peeled and also grown locally as food security and quick income generation.

RECOMMENDED VARIETIES

Mana - preferred for export

Tara - preferred for export

MATURITY

Mana: 65 to 70 days

Tara: 65 to 70 days

NUTRITIONAL FACTS:

Koronivia Research Chemistry Laboratory

Nitrogen %	3.88
Moisture %	11.1
Crude ash %	4.3
Phosphorus %	0.3
Potassium %	2.3
Calcium %	0.2
Magnesium %	0.2
Sodium	0.14
Iron (mg/kg)	54.6
Zinc (mg/kg)	33.2
Crude Protein%	24.5
Energy MJ/kg	17.6

Seed rate kg/ha, expected yield t/ha and gross margin

Variety	Seed Rate kg/ Ha	Seed Rate 1/4 acre	Green pod t/ha	Dry Seed t/ha	Gross Margins 5t/ha (\$10/kg- Green)	Gross Margin 1.5t/Ha (\$10/kg- Dry)
Mana	16kg	1.6kg	3 to 4 tonnes	1.5 to 2.0 tonnes	Income - \$45,000	Income - \$13,500
Tara	14.5kg	1.5 kg	5 to 7 tonnes	2.0 to 2.5 tonnes	Total expenses- 9304.00 Profit - \$35,696	Total expenses- \$8554 Profit - \$4,946.00

SOIL REQUIREMENTS:

Wide range of soil types are suitable but good drainage is necessary.

FERTILIZER REQUIREMENT:

Mixture of 100kg Blend A and 100kg Blend B, applied as basal application.

(Lower rates on more fertile soil depending on soil analysis results). Apply *Molybdenum* at the rate of 1kg/ ha at 2 weeks and 6 weeks after sowing. Soil analysis should be done before fertilizer application.

WEED CONTROL:

Hoeing or mechanical inter row cultivation can be done as and when required.

PEST CONTROL MANAGEMENT:

For control of Bean pod borers (*Maruca testulalis*)
Apply Prevathon at the rate of 10-15ml to 10L of water.

Apply Bifenthrin at the rate of 15-20ml to 16L of water.

Apply Multiguard at the rate of 16ml to 16L of water.

Spray when eggs appear on the flowers. Regular inspection of the pest during flowering and after each harvest is necessary.

For control of Aphids, Leaf miners and other pests
Apply Rogor at the rate of 16ml to 16L of water or
Apply Bifenthrin at the rate of 15-20ml to 16L of water.

PLANTING TIME:

Cowpeas can be planted from February to October. Planting during wetter months (Nov- Jan) will result in heavy vegetation, late flowering and reduced yields.

PLANTING DENSITY:

Fertile: 65cm between rows and 30cm within rows (mechanised).

Poor soil: 65cm between rows and 20cm within rows (manual).

HARVESTING:

Green pod - harvest 55 - 80 days from planting.

Dry pod - 80 -120 days.

STORAGE:

For long storage, seeds are treated with insecticide (*Carbacide*) and fungicide (*Mancozeb*) at the rate of 1gram/kg of seed or coated with a thin layer of cooking oil (3ml/100g of seeds) to prevent weevils from attacking.

Pulses in Organic Agriculture

Pulses can be used in organic agriculture as rotational, for intercropping or for green manuring and with good agronomic practices it can vastly lead to an increase in yield. It provides food security with least negative impacts on the environment fetching premium price in the market.

Pulses thrive well under drought and marginal conditions adding organic matter to improve soil health providing more nutrient availability.

GROSS MARGIN FOR COWPEA (*Vigna uguicalata*) GREEN POD

1.0 ASSUMPTIONS

Spacing : 0.65m*0.2m

planting density: 77,000

Yield range (5000kg- 7000kg green pod)

Average market price (\$10/kg)

MoAW seed price: \$3.58/kg

2.0 Income	Quantity	Unit	Unit Price	Total
Estimated (Av) Yield	5000kg (5000-7000kg)	kg		
Farm gate (Av) price (purchasing at \$10/kg farm gate price)	\$10.00/ kg (range \$8.00-\$10.00)	kg	\$10.00	\$50,000.00
Rejected(pod borer)	10%	%		\$5,000.00
Marketable yield	90%	%		\$45,000.00
Total Income				45000

3.0 Direct Costs

3.1. Land preparation

Ploughing (twice each at \$320.00/ha)	2	ha	320	640.00
Harrowing (twice each at \$220.00/ha)	2	ha	220	440.00
Rotovating @ \$220/ha	1	ha	220	220.00
Seed drilling @ \$220/ha	1	ha	220	220.00
Inter-row cultivation (once at \$220.00/ha)	1	ha	220	220.00

3.2. Agro Inputs

16 kg pure seed (Source LRS, rate \$3.58per Kg)	16	ha	\$3.58	57.28
8 bags Blended fertilizer 50kg bag (basal application)	8 bags* 50kg	Kg	\$115	920.00
1 Kg Sodium Molybdate (recommended for red soils)	1	kg	\$94.00	94.00
8 Litres insecticide (insecticide (Multi guard- abamectin) 2L/ ha X 4 sprays @\$50/L)	8	litres	\$50.00	400.00
Total variable costs				2754.00

4.0. Labour Current farm labour rate of \$25.00 per day				
Seed sowing	1 day with 7 man	days	25	175.00
fertilizing and thinning	1 day with 7 man	days	25	175.00
Weed control	8 days with 6 man	days	25	1200.00
Insecticide application	2 days with 1 man (4 insecticide applica- tion)	days	25	200.00
Harvesting	2 days with 10 man (3 harvests)	days	25	1500.00
Selection of marketable pods & packaging	2 days with 10 man (3 selections)	days	25	1500.00
Total labour costs @ \$25/day		190		\$4,750.00
5.0. Other Expenses				
Pre & post-cultivation expenses (administrative, transport)				\$1,800.00
Total expenditure				\$9,304.00
3.0. Gross Margin/ha				
Return per labour inputs				187.87
				\$35,696.00

6.0 Gross Margins Sensitivity Analysis						
Cowpea – yield (kg/ha)		Marketable yield 90%	Price (\$/kg)			
			9	10	11	12
1	3500	3150	19,046.00	22,196.00	25,346.00	28,496.00
2	4500	4050	27,146.00	31,196.00	35,246.00	39,296.00
3	5500	4950	35,246.00	40,196.00	45,146.00	50,096.00



Dried Tara seeds

GROSS MARGIN FOR COWPEA (<i>Vigna uguicalata</i>) DRY SEEDS				
1.0 ASSUMPTIONS				
Spacing : 0.65m*0.2m		planting density: 77,000		
Yield range (1500kg- 2500kg dry seed)		Average market price (\$10/kg)		
MoAW seed price: \$3.58/kg				
2.0 Income	Quantity	Unit	Unit Price	Total
Estimated (Av) Yield	1500kg (1500-2500kg)	kg		
Farm gate (Av) price (purchasing at \$10/kg farm gate price)	\$10.00/ kg (range \$9.00-\$15.00)	kg	\$10.00	\$15,000.00
Rejected(weevils)	10%	%		\$1,500.00
Marketable yield	90%	%		\$13,500.00
Total Income				\$13500
3.0 Direct Costs				
3.1. Land preparation				
Ploughing (twice each at \$320.00/ha)	2	ha	\$320	\$640.00
Harrowing (twice each at \$220.00/ha)	2	ha	\$220	\$440.00
Rotovating @ \$220/ha	1	ha	\$220	\$220.00
Seed drilling @ \$220/ha	1	ha	\$220	\$220.00
Inter-row cultivation (once at \$220.00/ha)	1	ha	\$220	\$220.00
3.2. Agro Inputs				
16 kg pure seed (Source LRS, rate \$3.58per Kg)	16	ha	\$3.58	\$57.28
8 bags Blended fertilizer 50kg bag (basal ap- plication)	8 bags* 50kg	Kg	\$115	\$920
1 Kg Sodium Molybdate (recommended for red soils)	1	kg	\$94.00	\$94
8 Litres insecticide (insecticide (Multi guard- Abamectin) 2L/ha X 4 sprays @\$50/L)	8	litres	\$50.00	\$400.00
Total variable costs				\$2754.00
4.0. Labour Current farm labour rate of \$25.00 per day				
Seed sowing	1 day with 7 man	days	\$25	\$175
fertilizing and thinning	1 day with 7 man	days	\$25	\$175
Weed control	8 days with 6 man	days	\$25	\$1200
Insecticide application	1 day with 2 man (4 in- secticide application)	days	\$25	\$200
Harvesting	10 days with 6 man	days	\$25	\$1500
Drying, Threshing & Winnowing	4 days with 6 man	days	\$25	\$600
Seed Selection, Grading, Treatment & Packaging	5 days with 6 man	days	\$25	\$750
Total labour costs @ \$25/day		184		\$4,600.00
5.0. Other Expenses				
Pre & post-cultivation expenses (administrative, transport)				\$1,200.00
Total expenditure				\$8554.00
3.0. Gross Margin/ha				\$4,946.00
Return per labour inputs				\$26.88

6.0 Gross Margins Sensitivity Analysis

Cowpea – yield (kg/ha)	Marketable yield 90%	Price (\$/kg)			
		9	10	11	12
1. 1400	1260	2,786.00	4,046.00	5,306.00	6566
2. 1500	1350	3,596.00	4,946.00	6296	7646
3. 1750	1575	5,621.00	7,196.00	10696	10346



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