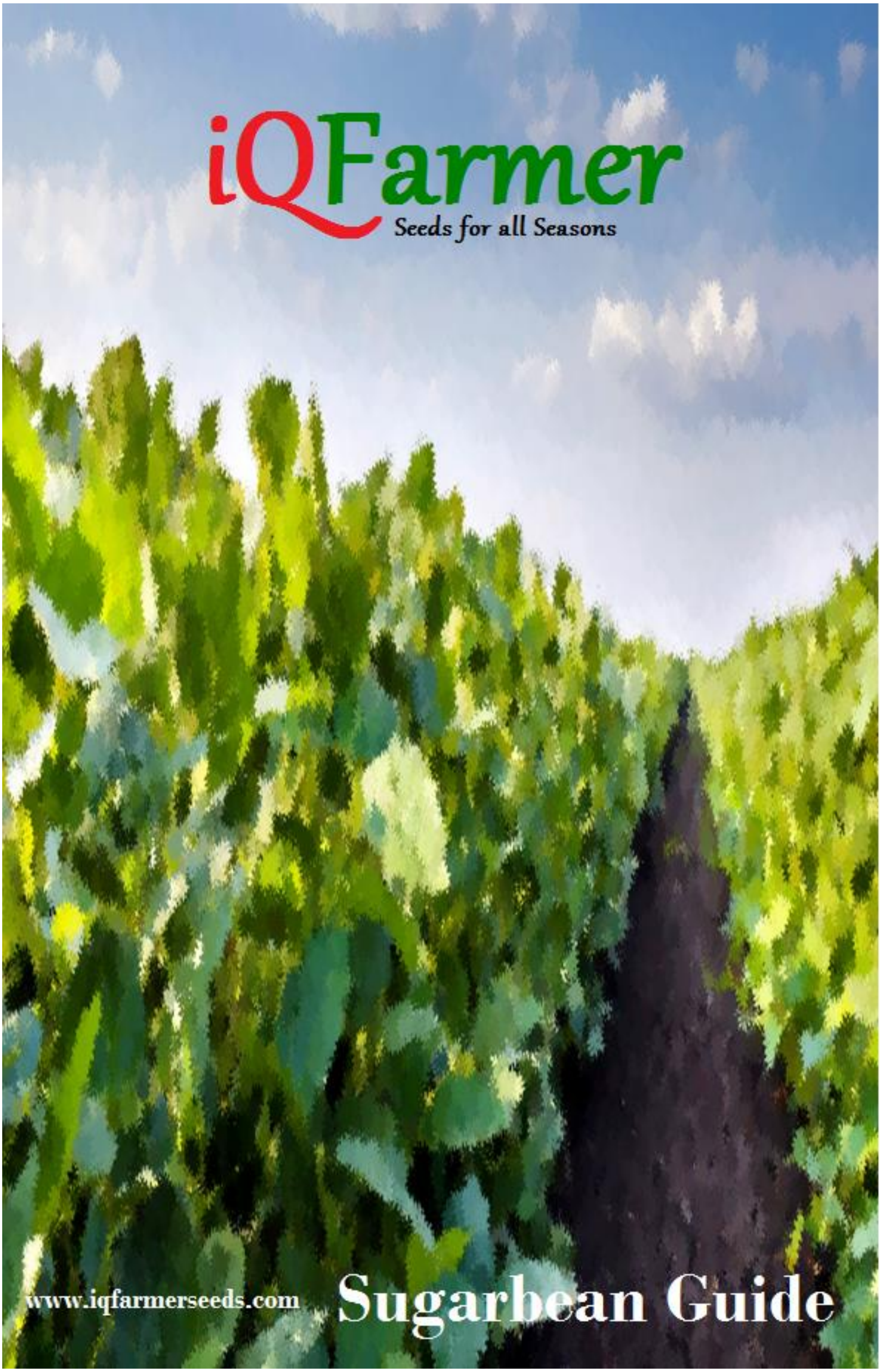

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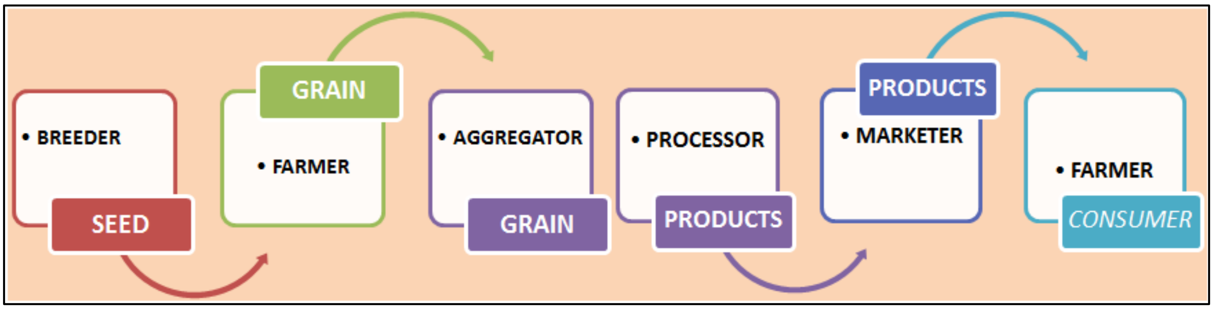
Sugarbean Guide

Value Chain Map



Every **iQFarmer** knows that real wealth is unlocked by taking a value-chain approach to agriculture. We therefore encourage all farmers to study the value chain map below as they embark on this profitable venture, so as to pick their best strategy to unlock maximum short- and long-term benefit.

SOIL TYPE AND LAND PREPARATION

Deep tilled loam soils with good drainage. However other types of soils are also able to sustain sugar beans, depending on an array of management and climatic factors under the farmer's employment. Ploughing is not recommended for soils and terrains that are prone to soil erosion.

PLANTING METHOD

This depends on the type of agriculture method in use but generally, farmers may plant seed into tilled soils (conventional tillage) or directly drill into untilled land (minimum or no-till). The farmer must ensure that their planting method offers the best chance of germination to the seed by covering with just enough soil that does not cap when wetted, and pressing or just firming (but not compacting) on top of the seed bed to facilitate optimum seed/soil contact, which is ideal for germination. It is best to plant when the soil moisture and temperature will promote optimum germination and initial growth.

Planting must be done at the right time to capture the best growing conditions, as well as to minimise pests and diseases. Sugar bean is best planted between late December through to mid-February for the rainfed crop, because it does not require too much rainfall. For some areas where supplementary irrigation is available, a double or triple crop is possible.

Plant so as to avoid high temperatures during flowering, frost before maturity and moisture or rainfall at maturity.

SEED

On average, farmers plant 100kg of treated seed per hectare, making sure that they plant the best variety to fulfil their market, yield and local environmental requirements.

Farmers must retain the tags attached to their seed packets for traceability purposes, where in the event of failed germinations or other lack of performance which can be attributed to the seed manufacturer, it is possible to trace the seller of the seed, the processing batch number and even the farmer who was contracted by the seed company to grow that seed. Retained sugar bean seed should not be planted for more than three (3) generations, and appropriate seed treatment is an absolute necessity to control pests and fungal diseases associated with emergence.

PRODUCTION CULTURE

Conventional or conservative (minimum or no-till). We do not recommend Zero till for our sugar bean varieties.

VARIETIES

At **iQFarmer Seeds** we pride ourselves in producing quality tested seeds to ensure maximum yields and returns for our farmers.

Our current sugar bean variety is a large-grained biofortified red mottled type (**NUA45**), whose difference will be found in the seed quality, contributing to superior emergence, growth and yield.
This variety has been bred through **biofortification** to supply superior nutrition and is suitable for growing in various parts of the country.

Before selecting any of our crop varieties, farmers should take into account the target market, desired yield, production system and weather conditions, product requirements or use.

Variety choice therefore depends on

- Potential yield and yield stability
- Stress tolerance (water, heat, cold, nutritional)
- Lodging/standability
- Intended use
- Maturity dates,
- Adaptability,
- Resistances and tolerances,
- Quality (physical and storage)
- Nutrition levels

GOOD ROTATIONS

Cereals and grasses

BAD ROTATIONS

Leaf vegetables, legumes, cucurbits, potatoes

SOIL PH

5.8-6.3

Lime should be added on the basis of soil tests to correct soils with a high pH.

DISEASES

DISEASE	REMEDY	NOTES
Bacterial blights		
Root Rot		
Anthracnose		
Scab		
Rusts		
Leaf spots		

** Scout regularly and control as necessary.

PESTS

PEST	REMEDY	NOTES
Thrips		
Heliothis		
Nematodes		
Cutworm		
Aphids		
Hoppers		
Bean stem maggot		
Boll Worm		
Semi loopers		
Red spider mites		
Stinkbug		
Leaf eating caterpillars		
Crickets		
General insects		
CMR beetles		

** Scout regularly and control as necessary.

WEEDS

Weeds will compete with crops for water and nutrition, while harbouring pests and diseases. Keep them below the threshold levels.

Common weeds in your crop must be controlled using registered chemicals from registered and licenced suppliers. Shallow manual or mechanical weeders may also be used to support your weed control programs under the conventional farming system.

Pre-emergent and post-emergent herbicides are available from different companies and farmers must select herbicides contingent with the types of weeds they face on their farms. Apply these in line with the recommendations from your agronomist (do not mix agronomy advice from different agronomists or companies).

WEED	REMEDY	NOTES
Grasses		
Broadleaves		
Annual grasses and broadleaves		

NUTRITION

Beans need nitrogen, phosphorus and potassium plus a host of other micro nutrients.

REFER TO YOUR SOIL TESTS FOR APPLICATION RATES

Most farmers start off their sugar bean with Compound S or D (and SSP), although other variations are now available through different companies.

It is critical to link your soil tests to the available basal and top dressing (usually Ammonium Nitrate), while consulting your agronomist.

Provisional fertiliser application guideline:

BEANS	Compound S/D	Manure	AN/Urea	Rhizobium
Rate (kg/ha)	250-400	1,000	100-150	0.400-0.500
Application	100%	100%	100%	100%
Interval	Planting	Planting	First flowers	Planting

POPULATION/HA

150, 000 to 300, 0000 plants per hectare, depending on your variety and production regimes, with some people now preferring high populations and high feeding and irrigation regimes.

POTENTIAL YIELD

Tonnages will range depending on cultivar, production system and irrigation and feeding regimes, although some farmers have mastered the various input combinations to now hit from 3 up to 4 tons per hectare under irrigation; and 1.9 to 2 tons under dryland conditions.

IRRIGATION

Depending on the prevailing weather, available equipment and water, farmers are advised to do strict scheduling to just keep their field moisture levels optimum for their crop's growth. Matching the variety to the region's weather pattern will go a long way in also managing the supplementary irrigation costs, for rainy season crops.

Physical examination or the use of sensors in the field to verify the soil's moisture levels is recommended.

Irrigation can be effected using one of many methods, which include flood, drip, and sprinkler systems (conventional sprinklers, drag hose, mobile and fixed pivots). Conservation farming will also enable the reduction of water loss, further reducing irrigation costs and increasing the chances of achieving benchmarked potential yields.

TEMPERATURE

23 to 30^{0}C

Some modern varieties are now being bred for heat stress tolerance, as well as production under low heat unit conditions, in winter.

DAYS TO HARVEST

Up to 85-90 days, although some varieties may be earlier or later, depending on the available heat units, variety characteristics and management regimes in use. Our **iQFarmer** varieties have been bred to deliver highly competitive yields under stressful climatic conditions, within the shortest possible times.

HARVESTING AND HANDLING

All the processes from planting right up to the delivery of finished product are prepared for when the entire enterprise plan is drafted.

iQFarmers plan for their harvest and post-harvest activities right from the beginning and then implement them in good time. Equipment preparation and calibration are done well before harvesting, as well as the preparation of drying equipment, procurement of packaging or bagging equipment and materials, as well as handling and transport arrangements.

Sugar bean is harvested when the leaves and pods have dried and turned yellow-brown, and the grain inside the pods looks similar to the seed that was planted.

- Harvest by hand-picking or cutting the whole plant above the roots.
- Dry the pods or plants in the sun on a clean surface for one or two days before threshing, while avoiding the mixing of grain and soil particles
- Complete the grain drying in the sun on a clean surface-tested by cracking of grain if you bite it. If it bends or sticks to your teeth, further drying is needed

GRADING AND STORAGE

Clean the grain by winnowing to remove dust, chaff or other foreign inclusions, with final grading being done by removing shrivelled, diseased, broken grains and grains of other varieties.

Treat with grain protectant (based on future uses) and store in hermatic bags or metal silos.

SUGAR BEAN USES

- Grain for cash
- Home consumption
- Pre-cooked and packed

CONSERVATIVE TILLAGE PRACTICES

Sugar bean can be produced under various forms of conservation farming and farmers are encouraged to evaluate the short and long term options and benefits, including direct drilling, mulching (stover and polymer), strip tillage, ridge planting, zone tillage, crop rotation, intercropping and zero tillage.

Do not leave plain maize stover lying in the field as this will encourage erosion during the rain. Plant an immediate follow-on crop, especially after harvesting in-season silage.

CLIMATE SMART AGRICULTURE

Our varieties are adapted to different climates and matching variety or cultivar to climate is the first step towards building resilience, through which production, profitability and sustainability are possible in the face of climate change challenges.

Select the cultivar that best matches your regional climate/s, markets, resources, and projected weather changes over the growing period.

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Special Note

All technical advice given herein is strictly a guideline to get the farmer started. It should be noted that specific grower recommendations should be obtained from your local agronomist, whose recommendations will be based on the prevailing local conditions.

Add your notes here: