

MARAMA BEAN

Tylosema esculentum

Caesalpinaceae – Caesalpinia

ECHO® PLANT INFORMATION SHEET

Origin

The Marama Bean is a wild plant prized by people living in and around the Kalahari in southern Africa

Uses

The National Academy of Sciences reports, "Of all the plants described in this book, *Tropical Legumes: Resources for the Future*, the Marama Bean is perhaps the least developed" in terms of scientific study or plant breeding efforts to improve it. In Botswana and Namibia it is an important part of the diet in remote regions. It is a rich source of protein and energy in regions where few conventional crops can survive. It grows in some areas that receive up to 800 mm (32 in) rainfall and in others where rainfall is so slight and erratic that in some years almost no rain falls at all.

Cultivation

Dr. Stanford sent the following hints on germinating the seeds. Keep them warm (they come from the Kalahari Desert). Marama Bean seeds germinate after a rainstorm has swept the land, and the soil has moistened deeply, but the surface is drying. The thick shell, almost 1 mm (0,25 in), is extremely hard. When wetted, it swells tremendously. Then the embryo and endosperm will absorb water, and germination starts. To promote water absorption, you must first scratch the outside with a file. Do NOT try to hasten germination by soaking the bean in water. Be patient -- let it imbibe slowly by planting it in moist (not wet) soil or potting medium. Marama Beans prefer neutral to acid soil or sand. They do not withstand water-logging. The plants have long viny stems, but they are creepers rather than climbers. They hug the ground, presumably avoiding drying winds. Seedpods contain 1-6 seeds about the diameter of a thumbnail. During cooler months stems die back, but the underground tuber produces new stems when warm weather returns.

Harvesting and Seed Production

The tuber can attain a weight of over 10 kg (22 lb) after a few years. (A plant at ECHO produced a tuber larger than a basketball.) Young tubers are dug in the Kalahari at about 1 kg (2.2 lb). Tubers more than 2 years old are fibrous and/or astringent.

Cooking and Nutrition

Marama Bean seeds are never eaten raw. After roasting they have a delicious nutty flavor that has been compared to roasted cashew nuts. Europeans in southern Africa grind the roasted seeds and use them as a culinary substitute for almonds. Africans boil seeds with cornmeal or grind them to a powder that is boiled in water to make either a porridge or cocoa-like beverage. Raw seeds store well and remain edible for years. Protein content of seeds range from 30%-39% (comparable to soybean.) Oil content is 36%-43% (about twice that of soybean.) Like other legumes, the protein is rich in the amino acid lysine (5%) and deficient in methionine (0.7%). Baked, boiled or roasted tubers have a sweet, pleasant flavor. They contain up to 90% water (important to surviving the dry periods) and are an important emergency source of water. Presumably, it is the tuber of this species from which water is squeezed in the movie "*The Gods Must Be Crazy*". Tubers contain 9% protein on a dry weight basis. The seeds of white clover are excellent protein for poultry, sheep, swine, lambs, etc. Grazing of white clover may cause bloating in livestock if clover is the dominant plant or if livestock are very hungry and graze too fast.
