

Introducing Amaranth: Lessons Learned by CRWRC & Potential for Asia



This is What Grain Amaranth Looks Like



Grain Amaranth Can Also Have Red Flowers



Green Leaf and Tiger Leaf Vegetable Amaranths: Eating the Leaves is Good! But Plant Separate Parcel for Leaves



Could Grain or Vegetable Amaranth Fit Our Needs in Asia?

- It is very drought-resistant and likes bright sunshine----it might fit when planted toward the end of the rainy season?
- In several areas of Asia we see chronic malnutrition (over 40% of the children suffer stunting in some places). Amaranth offers high protein, and high lysine that compliments rice-based diets. It also offers high calcium and high vitamin content.

Nutritional Benefits: Shiny Skin!



Nutritional Benefits Reported

- Mothers report **children are brighter in school**, i.e. they are more alert after nutritious meals.
- Sequential visits show children having **shinier skin**, less dryness and flaking in arms
- Children under 5yrs **grow normally** once they eat amaranth every day and because of the tremendous results in the communities, the nurses in the clinics advise mothers with malnourished, underweight children to feed them amaranth.
- Health workers and mothers have told us on several occasions that there is **less anemia among mothers**. (Amaranth is high in iron)
- We also heard from mothers who did not have enough breast milk, that **milk production increased** tremendously.
- HIV+ people say that now the **ARV drugs don't make them feel ill**.
- We have heard on many occasions that people who are HIV+ and consuming amaranth that their CD-4 count goes up by several 100 points and are able to start the ARV drugs after the CD count is up to at least 600.

Nutritional Benefits

Cont'

- We have heard that people suffering with arthritis and hip problems felt much better after consuming amaranth.
- People have told us, that cows who consume the amaranth stalks give more milk.
- People have told us on numerous occasions that when chickens eat the amaranth chaff egg production doubles and the shells are harder.
- Market drivenness: Amaranth is now in demand in the markets of Kenya and Uganda, and millers are buying it.

GOAL: That Each Child Eat 20 Grams of Amaranth Every Day, and Each Adult Eat 40 Grams Every Day!

How to Eat ? African way: Preparing 3:1 Maize Meal+Amaranth Flour= Ugali



Eating Rice & Beans & Amaranth & Drinks: Latin America



Drink is Easy Way to Consume 20 grams of
Ground Amaranth /Day/Child or 40
g/day/adult



Eating Popped Amaranth Cooked with Rice



Popped Amaranth Cooked with Rice



Nutrition Teaching While Food is Prepared



Extension Steps Used

- **Show:** grain amaranth video on lap top computer to staff of partner organization in their regional offices.
- **Nutritional Talk:** Nutritional talk in village, share stories from other villagers. (If possible facilitate a new village to experienced village exchange visit. If possible invite Ministry of Ag. staff!)
- **Make sure women are invited:** Learning to cook amaranth is crucial!
- **Stress these points:**
 - First: nutritional benefits to children---brighter in school!, more strength for adults. Helpful for diabetics where dietary balance is key.
 - Later, mention benefits to those living with AIDs. We learned that if this is mentioned first growing grain amaranth caused stigma.
 - Stress the mixing ratio for mixing whole grain amaranth flour (milled in the maize mills with 1.5 mm screen) per amount of maize, millet, or cassava. Use 3 parts traditional carbohydrate source per 1 part amaranth flour for making “porridge.” Use 4:1 or 5:1 ratio for making ugali. A 3:1 ratio makes the ugali too sticky for soaking up the sauce that accompanies it.
- **To make porridge:**
 - Mix the two flours of amaranth and maize using 3:1 ratio
 - Stir into water that has been boiling water for 10 minutes
 - Mix in sugar and spices, like vanilla and cinnamon--- to taste.

While the food is Cooking, Farm Demo

- **Plant Two demonstration Plots:** One for eating leaves and one for eating grain.
- **Visibility:** Choose a spot at a clinic, school, or church---Choose a spot that people can easily watch and learn from.
- **Homestead:** choose a spot within the 10 meters of the homesite where the fertility is high and the family can easily observe.
- **Seed-Sand Mix:** grain amaranth seed at ratio of 1 part grain amaranth to 15 parts dry sand. This reduces the amount of thinning needed later.
- **Timeliness:** Emphasize that timely planting as soon as rains start, and timely thinning and weeding bring best results.
- **Seed multiplication:** Teach: harvest the strongest and healthiest plants first and save the seed for future planting.
- **Memory & Application Help:** Give each farmer 1 tablespoon of seed and a summary directions pamphlet.
- **Eat Amaranth food together!**

Pamphlet for Farmers

HEALTH BENEFITS OF AMARANTH

Amaranth contains proteins, carbohydrates, minerals and vitamins. These components enhance human growth and development, improve general health, and strengthen immune responses to combat diseases. In situations where dietary options are limited, or when immune systems are compromised, grain amaranth can make a significant difference in the quality of life of an individual.

GRAIN AMARANTH IN EVERYDAY LIFE

"I started using amaranth, my high blood pressure became normal" (Amaranth Farmer in Uganda)

"My mother has diabetes and she feels much better since beginning to use amaranth" (Amaranth Farmer in Kenya)

"I feel much younger since I began eating amaranth porridge. My skin is better and I am more healthy" (65 year old woman in

**FOR MORE INFORMATION
ON GRAIN AMARANTH
PLEASE CONTACT:**

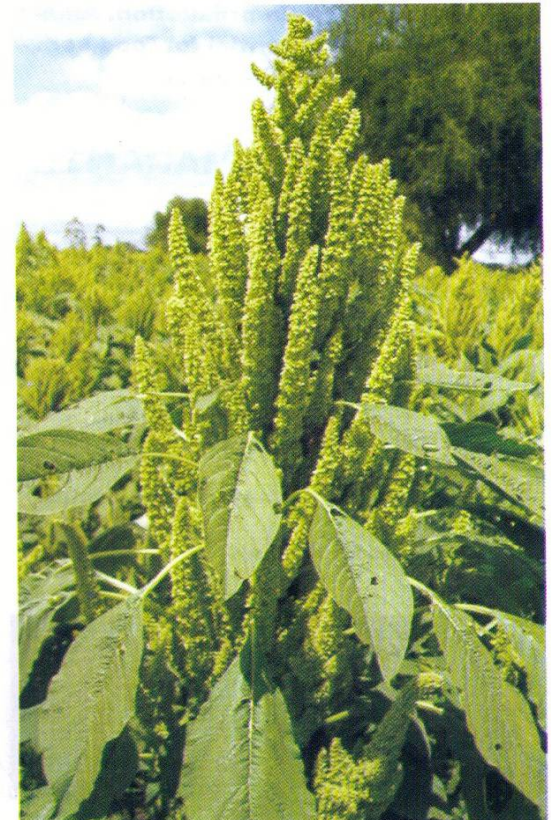


CRWRC

Loving Justice. Loving Mercy

**All Africa Conference of Churches
Building - 5th Floor
Waiyaki Way,
P. O. Box 66400
00800, Westlands
Nairobi, Kenya
Telephone: (254-20)444-58-28/9
0722-202062
0734-445828
Fax: (254-20)444-84-64
Email: crwrc@africaonline.co.ke**

GRAIN AMARANTH FACTS



WHAT IS AMARANTH?

Amaranth is a small-seeded pseudo-cereal grain that has high nutritional value. There are about 60 different species many of which grow wild. The leaves are used as a traditional vegetable in Asia and Africa. In the past 30 years, the plant has gained recognition for its nutritious seed and now several species are cultivated worldwide for grain production. Amaranth has high potential for food security in disaster prone areas.

USES OF AMARANTH

- Porridge (Uji)
- Bread (Mkate)
- Maize Meal (Ugali)
- Pancakes (Chapati)
- Donuts (Mandazi)
- Green Leaf Vegetable (Mchicha)
- Feed for Animals



NUTRITIONAL VALUE

- Recommended for children because of high protein digestibility and absorption into the body's system
- High levels of carotene, vitamins A, B, C, and E, iron, calcium, phosphorus and magnesium
- Lowers blood cholesterol level
- Boosts immune system to combat illnesses such as HIV/AIDS, Tuberculosis, diabetes, hypertension, bronchitis, cancer, liver disease, skin disease, kwashi-orkor, marasmas, hemorrhage, rheumatism, tapeworms, scurvy and others
- Rich in Lysine, an essential amino acid that is lacking in diets based on other common cereals and tubers
- More protein content than other cereals like wheat, maize, rice and sorghum
- Many sources say that Grain Amaranth comes closer than any other grain to a perfect amino acid balance. If mixed with another grain it can score 100%

Amino Acid Scores

AGRICULTURAL VALUE

- Drought tolerant, does well in arid and semi-arid areas
- Earliest maturity period of any cereal crop, ranging from 45-75 days
- Requires 51-62% of the water needed by maize and 42-47% of the water that needed by wheat
- Has few pest and disease problems
- Has a root system which is able to reach water and nutrients deep down in the soil



Homestead Plot



Follow-Up is Crucial

- 2 follow up visits per growing season. The first came at approximately 4 weeks into the growing season and we encouraged the partner organization's field worker to re visit at the 1st thinning, 2nd thinning , and harvesting.
- Farmer to farmer and staff to staff exchange visits proven effective.
- Hospital demos & gardens proven effective- hospital staff have become promoters.

Farm Demonstration Work



Partner's Results Summary 2007

CRWRC Partners' Results Summary-Dec 2007

Partner Org	No of Growers	Comments:
Uganda: COU Lango (Lira)	830	Rainfall: 1000-1500mm Acreage: 100A Marketing: Beginning Fertility: High due to fallow from Wars, IDPs returning
Uganda: COU Bunyaro-Kitara	1160	Rainfall: ? Fertility: good Diet: High in starch (root crops), low protein
Kenya: Anglican West Region CCS	210	Rainfall: High Fertility: low Market: failed in 2006 (40 MT)
Kenya: Mt. Kenya CCS	200	Rainfall: Semi-arid, cold nights, drought-prone Fertility: variable Hospital: Serves many malnourished kids and PLWH/A; uses amaranth in daily diet
Kenya: Reformed Ch. Of East Africa	130	Rainfall: both high and semi-arid Fertility: variable Hospital: serves many malnourished kids and PLWH/A
Tanzania: Magu	160	Rainfall: ? Fertility: Poor: "Something is missing from the soil" Diet: Poor, reliance on starch, root crops
Total estimated:	2690	

Highlights: Survey of 42 Farmers in 4 Regions in Dec 2007

- 35/42 repeated amaranth year to year.(83%)
- 24/42 grew more area than last year (42%)
Influence of market failure in Lira.
- Average area: 730 sq. m.(range: 2 to 10,000 sq m.)
- 12/42 sold some of their harvest (29%)
- 42/42 said they will plant again next year
- Ave harvest 51kg. (Range: 485 kg to 0)
- 32/42 had eaten amaranth within last 2 days.

Testimonials

- Mr. Davis Omanyo: CRWRC leader in E.Africa (2011) :
“Now we have lost count of the number of farmers using amaranth! Now it is in the markets of Kenya and Uganda.”
- Mr. Wilfred (W Kenya): “I was almost dying. I could not do anything for myself. But, since I began eating amaranth my health has improved quite a lot. It is because of amaranth.”
- Cosbel Centre in Lira, Uganda: One person testified that after eating amaranth for 8 weeks, his CD-4 count increased from 570 to 720. Normal is considered to be 800-1200. Similar testimonies are heard in Kenya.

Lygus Bugs: An Insect that Sucks On the Little Seeds in Chiang Mai



Lessons Summary

1. A crop that is not known by farmers requires much teaching time and follow up time. CRWRC learned that using a volunteer farmer couple helped a lot!
2. Start by teaching eating the new crop so people taste it first! (1 part to 3 parts, to 1 part to 5 parts= mix ratios, according to taste). 20 and 40 grams/day for children and adults. Plant 15 meters of row per person in family
3. Start by growing it for food; don't promise that you will provide a cash crop market.
4. It is mixes well with many traditional foods. This helps acceptance.

Lesson Summary Con't

5. Teaching the requirement of eating 2 to 3 tablespoons (20 to 40 grams/person) per day per person, mixing and cooking with the cereal at a ratio of 1:3 to 1:5, and organizing demonstration eating days have increased home consumption .
6. Don't assume you have the best varieties: varieties differ in photoperiod, taste and production—but ECHO SE Asia has good varieties.
7. Often HIV+ adults report improvements in their health with eating amaranth and frequently malnourished children show weight gains.

Try? Recipe for Lygus & other Sucking Insect Control: Dr. Novak, Texas A&M University

1. One gallon of compost into a five gallon bucket of water. When you make the mixture, put the compost in the five gallon bucket first.
2. Then fill it with water and add the quarter cup of molasses—this can be “feedgrade molasses”. You could try sugar.
3. Stir this mixture occasionally for the next day or two. This gives time for the microorganisms to multiply rapidly.
4. After the two days have passed ---add two tablespoons of citrus oil and stir thoroughly. At this point it is ready to use. Now strain the liquid and then use in sprayer (Citrus oil dissolves the exoskeleton of the insects.)

When You Try Whether Grain Amaranth Fits In Your Area

1. Remember: First, focus first on improving “Staff of Life” Crops of Primary Importance and Soil/Water Conservation and Restoration of Soil Fertility. Later introduce improved varieties of the main crops, than try new species, like grain amaranth. It needs good soil fertility.
2. Try vegetable amaranth in wet times, grain amaranth at end of rainy season. Aim for grain amaranth to reach harvest when the sun is warm and the air is dry.

References

- Food Reviews International. Vol 8, No 1, 1992: Special Issue on Grain Amaranth: New Potential for An Old Crop.
- Many materials and videos on amaranth: Puente A La Salud Comunitaria. Web site: <http://puentemexico.org/main/us/>

For Later

- Let's Try Eating Popped Amaranth
- Let's Try Eating Rice with Amaranth
- How about amaranth flour in drinks?