

Vegetable Gardening in Development and Relief

Selecting Seeds, Selecting Strategies

Peter Marks



seed programs
international

Why Garden Vegetables?

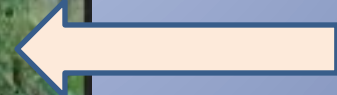




Most hunger relief programs focus on staple foods -considered central in the diet and which are easily stored. We focus on fresh garden vegetables. Why?

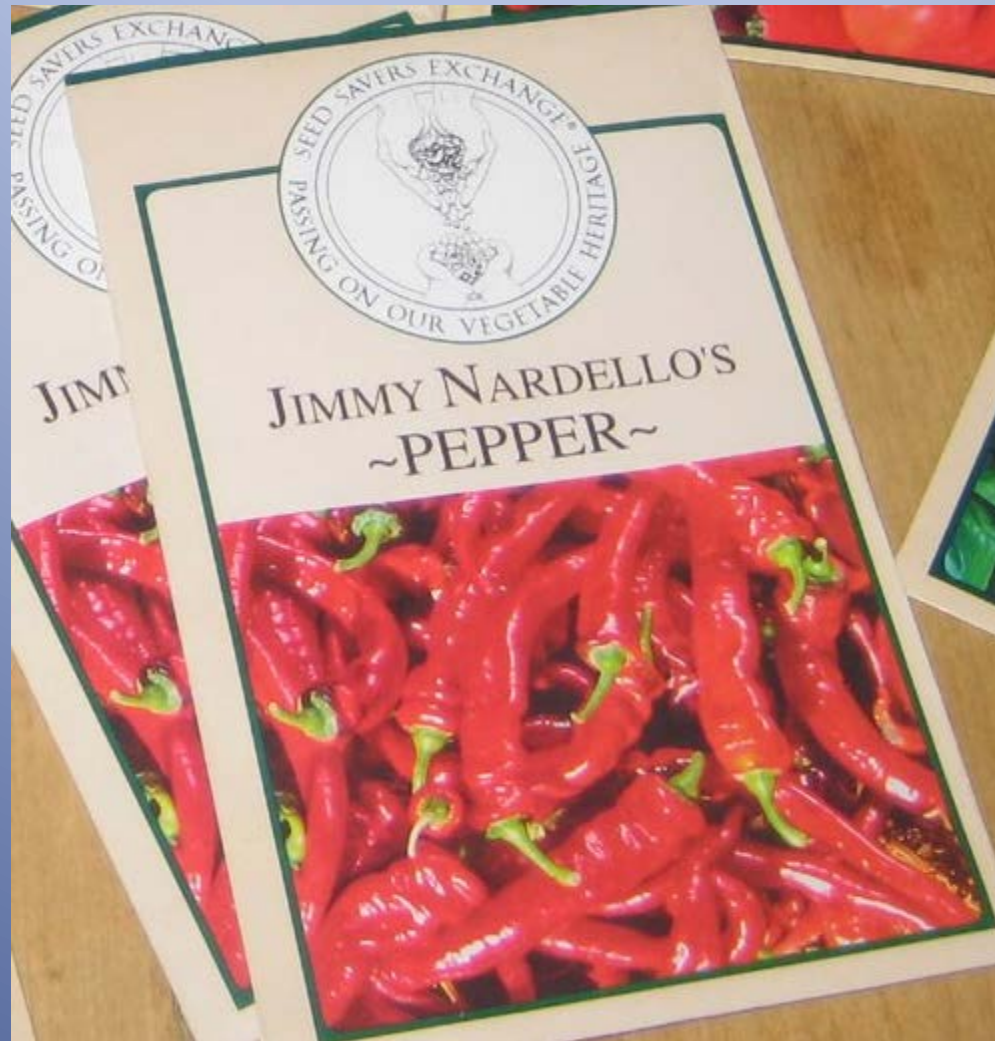
You are a
captive
audience . . .

Time to
show off
my garden.



This is a
bed of
sweet
non-bell
peppers
on Oct
10.

Started 13 plants, 4 varieties, inside on
March 25



Planted out May 20.
Eleven plants survive a
windstorm.

We only eat
them ripe. First
ripe peppers
July 20.



Rest of July



August 1-6



August 9



Rest of August



September / October



Total Harvest:
740 ounces = 21kg = 46 pounds



Very light amount of non-edible matter.
Conservatively 90% edible by weight.

400g of peppers contain the recommended daily intake of Vitamin A for a pregnant woman to maintain health and avoid birth defects.

For the 40 days of peak harvest of this tiny crop, it would provide almost all of this amount of Vitamin A for one pregnant woman. (157 micrograms Vitamin A per 100g of raw red pepper). With no other Vitamin A in diet.

Per 100g: 212% daily Vitamin C, 12% folate, 2% protein, 12% Vitamin E. A source of over 30 different members of the carotenoid nutrient family.

So, what's my point?

Peppers are the miracle food? NO

Everyone should grow them? NO

I tell the story of this one small crop of peppers specifically because they are commonplace, they are not a miracle food, and yet in one tiny garden anywhere in the world, they MIGHT work miracles.

Why annual garden vegetables?

1. They are readily grown in a mixed multitude of species and varieties.

North Korea

- This spreads risk

- Decreases the impact of a single crop failure
- Increases the chance of “miraculous” results from one or more crops.



Why annual garden vegetables?

Guatemala

2. They are readily grown in small plots close to the home, which is good because. . .





a. In many cultures, annual vegetable gardens fit well with the work of women, who are carrying water to the house anyway, and are the primary preparers and preservers of food. Which means . . .

a. In women's hands,
the whole family is
likely to benefit from
both nutrition and
income harvested
from the garden.



b. Especially in crisis situations, and in extreme poverty, men often travel away from home to seek income elsewhere. The small kitchen garden is a good fit.



Iraqi widows receiving SPI vegetable seeds.

Why annual garden vegetables?

Haiti

3. They increase agrobiodiversity and nutritional diversity.

Why annual garden vegetables?

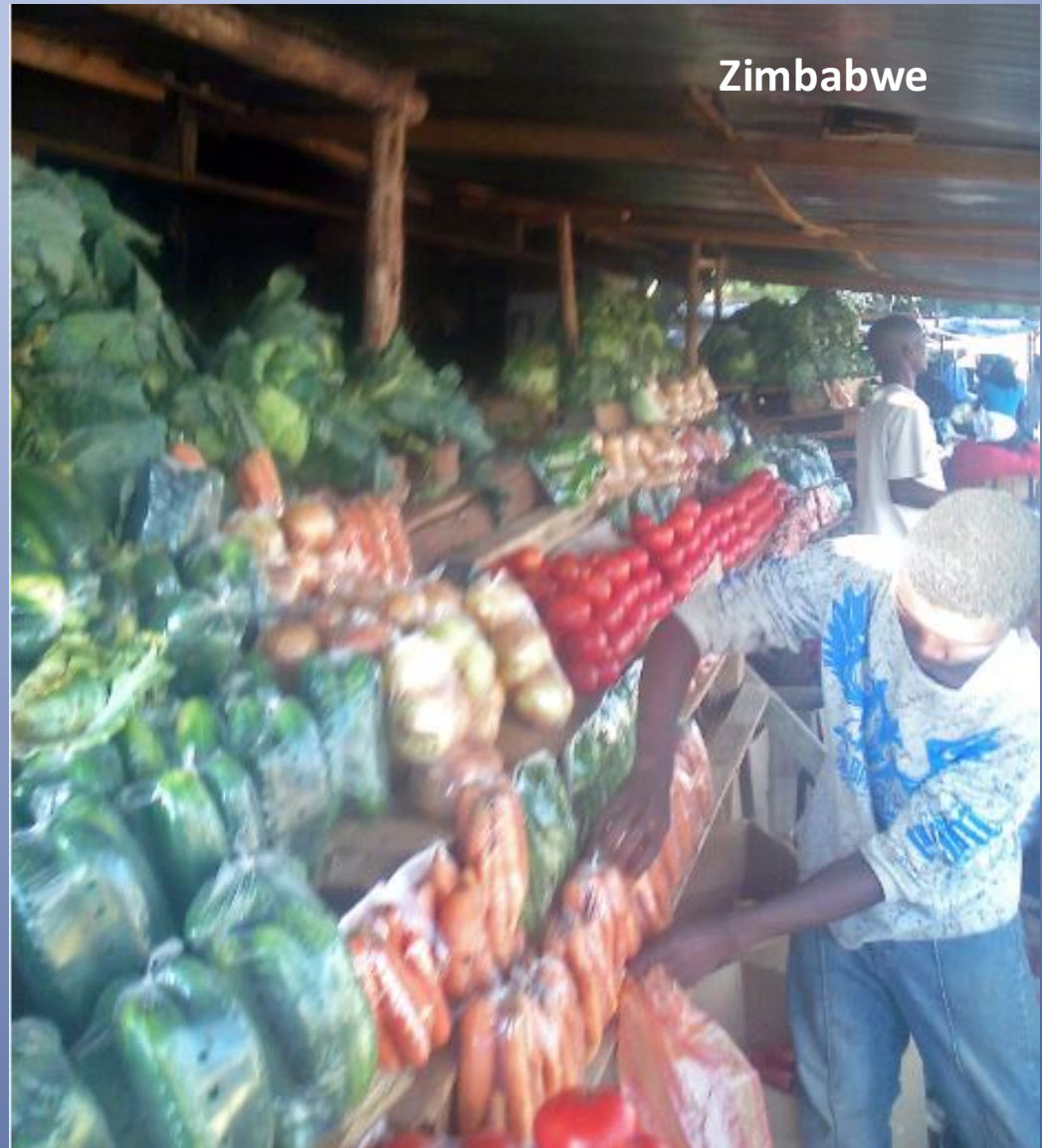
4. Many are quick to harvest and some can be planted 2-4 times per year. Compared to tree crops and other perennial crops, harvest seasons can be more easily manipulated by a capable grower. Hunger has an annual rhythm.



Why annual garden vegetables?

5. As perishable specialty crops, they are more readily sold in local markets at a price fair to the buyer and seller.

Income buys school fees, medicines, home improvements, livestock, etc.



Why NOT – reasons for failure

Always ask yourself and the community: why AREN'T these crops already in production.

SPI was launched in 1999 with the very simple idea that hungry people lack good seed, and by receiving seed, they could grow food they need.

We've provided 15 million seed packets to partners in 75 countries since we launched, and in places, this very simple model applies just fine. But mostly, it's not so simple . . .

SPI Seeds Grow All Around the World



Key concept: 3 Stages of a Healthy Seed System: **Availability, Access, Utilization**



1. Availability – is good, appropriate seed in existence in the community served?

Key concept: 3 Stages of a Healthy Seed System

2. **Access**: can all people access quality seed? From where: traders, shops, dealers, aid, seed-saving?

If not, is it because of affordability?

Geography/transport?

Discrimination / power structures?

Is lack of access to LAND the real issue?

WATER?



Helping with Access: Example 1



Our partners in Guatemala, ASO-Ixil, order diverse vegetable seed from within GUA and make it available in the hardware store. They subsidize the price, by giving qualified families and widows a voucher to help them afford the seed. Then, they use project funding to reimburse the store owner.

Helping with Access: Example 2

Instead of spending \$200 to ship seeds from the US, spend that \$200 on a microloan to Eddy the entrepreneur for motorbike gas and his first seed purchase in the big town an hour away.



Key concept: 3 Stages of a Healthy Seed System

3. Utilization

Do people know how to grow the vegetables in question? Store them? Sell them? Cook them? Do they like to eat them? Do they understand the nutritional benefits?

If people do not have the knowledge or interest to **utilize** a crop, then handing them the seed, fertilizer, tool, and technique to **grow** the crop does nothing to change that.

Availability + Access \neq Utilization

“To grow, harvest, prepare, and taste new foods is an energy-consuming experiment for families in poverty or crisis and may not happen automatically, even when people face hunger and malnutrition. Knowledge of nutrition can also be lost across generations of stress and displacement. People may not understand how eating vegetables is helpful to themselves or their children. They may not have recipes or tools needed for vegetable growing and preparation. Leafy and soft vegetables are more perishable than many other foods, so gains from eating are very short-term unless post-harvest handling and processing information is distributed along with seed or vouchers. For all these reasons, a focus on nutrition training is key to any vegetable growing program.”

Zambia suffered a series of crippling droughts from 2011-2014, to the point where Peace Corps volunteer (and seed distribution/training partner) Casey Hooten told us the people in her village were subsisting on tree leaves and caterpillars.



Now, Casey reports: “To date I have helped 137 households implement and sustain 137 gardens. My policy for the seed donation was that they attend one meeting on creating and maintaining a healthy garden (soil composition and components, water access, weeding, etc.), a meeting on food security, nutrition and seed saving, and then lastly that I would help them create the garden as well as provide monthly check ins.”

“The results have been phenomenal. Each of those households has become more food secure, has variety in their diet, are cooking new dishes with recipes I provided, and are planning on how they can expand with the next rainy season.”



Tip: In tropical climates, getting past the germination/seedling stage can be the most difficult. So, programs that share or sell seedlings can be a good alternative to programs that share seeds.



Raised Nursery Bed Construction, Liberia



Selecting Seeds-basic characteristics

- **Packet/container size – we have strong belief in small packets**
 - Avoid waste
 - Planting instructions, 1st choice: graphically, 2nd choice: in local languages.
- **Seed packets/containers labeled with a price in foreign currency are more likely to be redirected away from the targeted use.**
- **Don't rely on “packed for” or “use by” dates:**
- **Test germination just before planting season**

Seek Trusted Local/Regional Sources



Africa's Leading Agro Solutions Company

[Order Online!](#)

[» Home](#) [» About Us](#) [» Our Products](#) [» Empowering Women](#) [» Awards](#) [» Publications](#) [» Online Orders](#) [» Jobs](#) [» Contacts](#)



Vegetable Seed



Legume Seed



Cereal Seed



Oil Seed



Pasture Seed



Crop Protection



EW International

[About us](#)

[Products](#)

[News & Events](#)

[Recipes](#)

[Careers](#)

[Contact & Feedback](#)

EWS Group



Select your location

[GO](#)

Welcome to
East-West Seed International



Amaranth



Basil



Bean



Beetroot



Bitter melon

Those Seed Buzzwords

- **Open-pollinated** – selected/repeatedly inbred to have a fairly uniform genotype, such that – IF crossed only with itself, the offspring will be like the parents. Seed can be saved, if done with care.
- **Heirloom** – a non-technical term describing a seed variety as being handed down through generations.
- **Hybrid** – bred via an intentional cross of two specific parents, to achieve a desired set of traits. Like Mendel did with the sweet peas. Plants grown from seed saved will have a wide mix of traits, some of which may be undesirable.

Those Seed Buzzwords

- **GMO**— Contain genetic material that has been altered in a way that could not occur naturally by mating or natural recombination. Not always but often contain genes from another species – most commonly a bacteria or virus.
- For the non-grain garden vegetable crops we deal in, there is very little GMO material available anywhere, so this is an easy issue for us to duck. (a few summer squashes, sugar beets . . . eggplant, tomato, pepper not in US)

Land Race

- The traditional way of saving seed is by maintaining WIDE genetic diversity in a single crop. NONE of the seed types described in the last two slides do this. They are all bred down to narrow diversity.
- In one field you would have some that yield highest in an ideal year, some that yield a little in a drought year, some that yield a little in excess rain, and some that do best in a banner year for pests. Seed is saved from all types, each year, to maintain this risk management strategy.
- This is what you will almost never find in a seed packet.

Choosing Crops – ECHO Resources

- Martin, F., 2012. “Selecting Suitable Tropical Crops.” Agricultural Options for the Poor. Tim Motis, Ed.: ECHO, Inc. Available online at [www. echocommunity.org/resource/resmgr/a_to_z/azselect.htm](http://www.echocommunity.org/resource/resmgr/a_to_z/azselect.htm)
- “Selecting the Best Plants for the Tropical Subsistence Farm.” Dr. F. W. Martin. Published in parts, 1989 and 1994; Revised 1998 and 2007 by ECHO Staff – google to retrieve PDF

Great charts like this in resource #2

Table 10. USES AND RATING (0-5) OF USES FOR SELECTED TROPICAL FRUIT VEGETABLES.

0=none of the characteristic; 5=the maximum expression of the characteristic

Common Name	Food	Feed	Fiber	Construction	Fuel	Soil Amend.	Erosion Control	Modify Climate
Bitter gourd	3	0	0	0	0	0	1	0
Chayote	2	1	0	0	0	0	2	1
Melon	3	1	0	0	0	0	1	0
Okra	4	1	0	0	2	0	1	0
Pepper	5	0	0	0	0	0	0	0
Pumpkin	5	3	0	0	0	0	1	1
Tomato	4	0	0	0	0	0	0	0

The one use Dr. Martin doesn't cover in these charts is use in commerce to generate income.

A Few Tips on Selecting Vegetable Varieties



Central African Republic

Locally-available does not always mean well-adapted. This is more the case for cereal / staple crops than it is for vegetables. Vegetable seed supply chains are narrow and a variety can come to dominate local availability for the wrong reasons.

Don't Bring What You Love from Your Garden (Without Further Research)

Day Length in onions is a classic example.



Tomatoes – we like processing types.
Indeterminate.

Carrots – commercial hybrids (for heat tolerance) or the OP variety “Kuroda.” ECHO carries “Uberlandia” for seed-saving purposes.

Cabbage – widely grown due to storage/transport value. “Copenhagen Market” a commonly-available OP with heat resistance.

Squash – *C. moschata* types, i.e.
“tropical pumpkin” or “calabaza.”

Cowpeas – a great
crop, we are learning
more.

[www.fao.org/3/a-
au994e.pdf](http://www.fao.org/3/a-au994e.pdf)

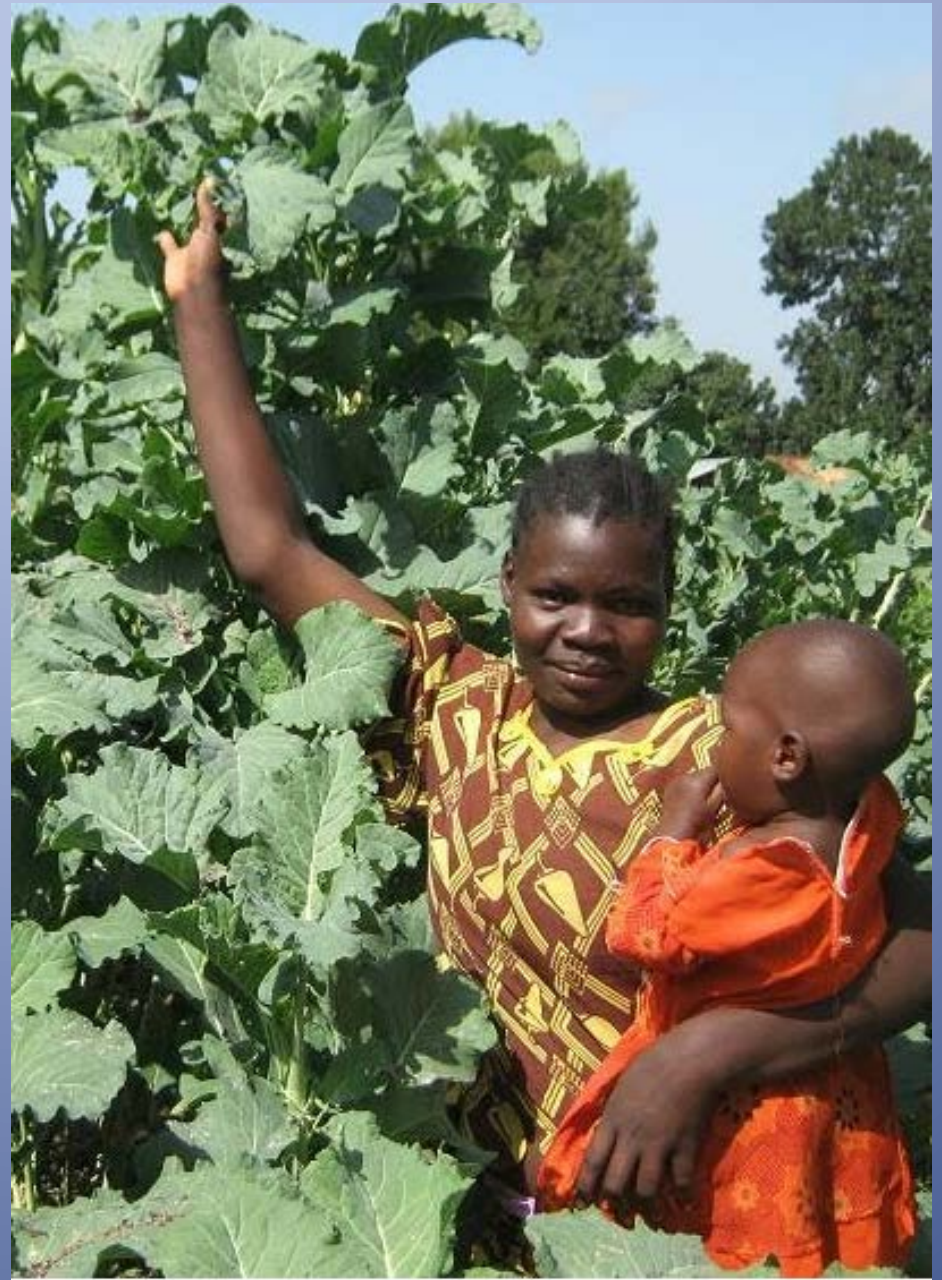


Okra – “Long pod green” – a short, fast plant (light on resources), great SPI partner results.

Cucumber – somewhat low nutrient value but high market value. What we call pickling types are good choices for the kitchen garden.

Beetroot – in our work we see that when you get down south of the equator e.g. Madagascar, Lesotho, becomes popular. We also see Chard (same species) a popular green in C. America.

Kale, Eggplant –
note both of these
veg have very
different types in
Africa (and Asia)
than we are used
to.



Greens – check
local
preferences.
The indigenous
native culture/
ecosystem
weighs in on
greens.

Hierba mora; Macuy;
Quilete (*Solanum
nigrescens*) – black
nightshade.



From the Frank Martin article: a cornucopia of tropical leafy greens:

Table 12. USES AND RATINGS (0-5) OF USES FOR SELECTED LEAFY VEGETABLES.

0=none of the characteristic; 5=the maximum expression of the characteristic

Common Name	Food	Feed	Fiber	Construction	Fuel	Soil Amend.	Erosion Control	Modify Climate
Amaranth	5	1	0	0	1	0	0	0
Belembe	5	1	0	0	0	0	0	0
Cassava	5	5	0	1	1	0	1	0
Ceylon spinach	4	0	0	0	0	0	1	1
Chaya	4	1	0	0	0	0	1	0
Horseradish tree	5	3	0	0	1	1	2	2
Indian lettuce	4	3	0	0	0	0	0	0
Indian mustard	5	4	0	0	0	0	0	0
Kangkong	5	3	0	0	0	0	1	1
Katuk	5	2	0	1	0	1	1	0
Leucaena	4	4	0	2	4	4	3	2
Okinawa spinach	3	2	0	0	0	1	2	0
Pacific spinach	5	2	0	0	0	1	1	0
Lagos spinach	4	0	0	0	0	1	1	0
Sissoo spinach	3	0	0	0	0	1	3	0
Sweet Potato	5	5	0	0	0	0	3	0
Watercress	5	3	0	0	0	0	0	0



In our work, however, we find many cases in which historic, cultural foodways have been lost for decades or generations.

At times traditions are irretrievable due to displacement from land or climate change. In these cases, new traditions may be necessary to achieve good nutrition and farm income.

Keep in Touch

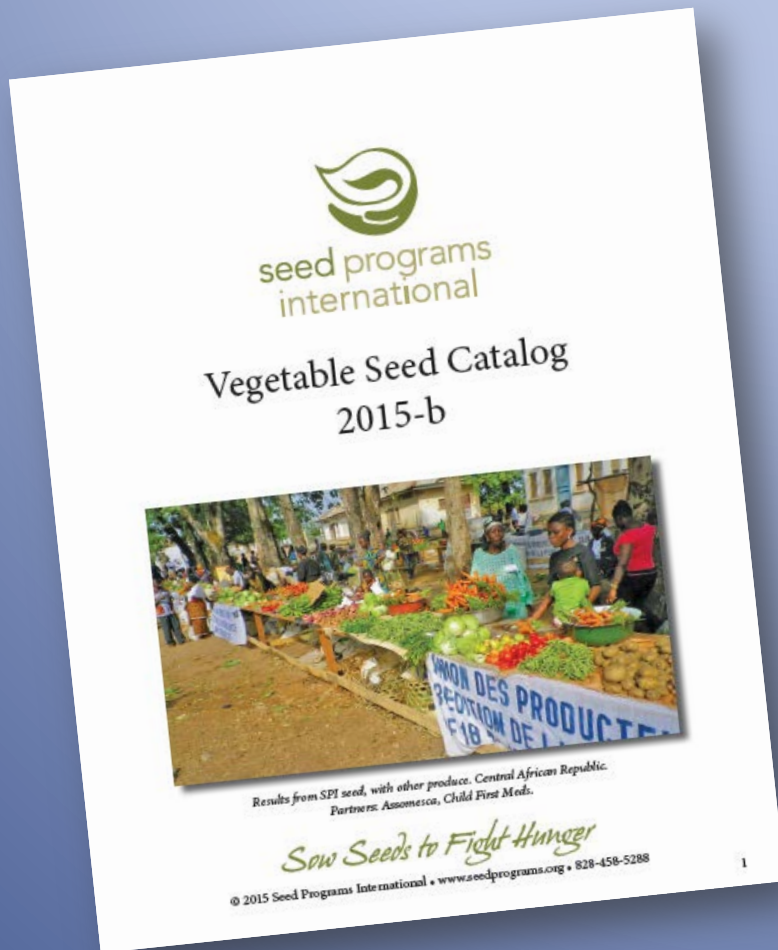
Peter Marks

Seed Programs International

828-707-1640

Skype: petermarksspi

peter.marks@seedprograms.org



Find our seed catalog and many other resources and stories at www.seedprograms.org.