

## The African Market Garden

### Advanced Horticulture for the Poor

Alleviation of poverty and malnutrition and coping with climate change are three major challenges faced by Africa at the onset of the 21<sup>st</sup> century.

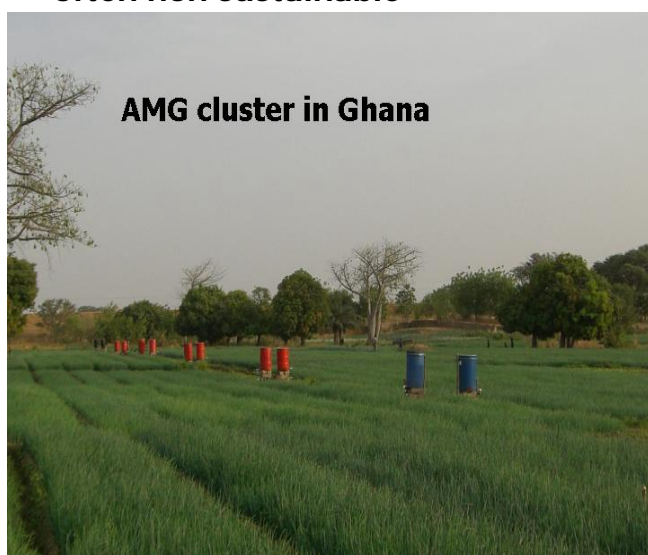
The African Market Garden (AMG), which is based on a low-pressure drip irrigation system combined with a comprehensive crop husbandry package - meets these challenges. It generates income for small producers, contributes to better nutrition and mitigates the effects of climate change through the use of irrigation.

#### High Tech Irrigation for the Poor

The AMG has all the advantages of pressurized drip irrigation (accurate and equal distribution of water in the field, no wetting of leaves and soil, application of fertilizer with the water) but at a fraction of the cost. The management package includes optimal crop husbandry and the use of quality vegetable varieties

#### Systems configuration

A plot of 500m<sup>2</sup> or more is required to sustain a family. For optimal performance and sustainability the AMG should be installed in clusters, one beside the other in the field. For inexperienced producers the communal system (where water, fertilizer and pesticide treatment are provided by the community) is recommended. Single isolated plots are often non sustainable



#### Alternative energy

AMG requires only one-meter pressure for operation. For this reason the AMG can draw on low-capacity renewable energy sources that abound in West Africa Semi Arid Tropics. These are:

1. The hydraulic pressure from shallow dams elevated 2-3 meters or more above the field

2. Artesian aquifers. Water reaches the surface with a pressure of 3-5 meters
3. Solar energy is cheaper and solar driven pumps require little maintenance



**Left-AMG clusters five meters below the dam=hydraulic pressure  
Center-solar pumping  
Right-free flowing water from an artesian borehole  
All are sources of alternative energy to be used by the AMG**

**Growing Improved Vegetables**

ICRISAT in collaboration with AVRDC-the World Vegetables Center is continuously selecting heat tolerant quality vegetables varieties to optimize the performance of the AMG. For example the Icrixina variety allows rainy season production of tomatoes where none was produced before. Maya is a high yielding non-bolting lettuce variety allowing year-round production. ICRISAT improved the Violet de Galmi onion for high quality, high yield and long shelf life.

So far ten new vegetable varieties have been selected.



**Icrixina tomatoes for the rainy season**



**Seed production of improved Violet de Galmi onion**



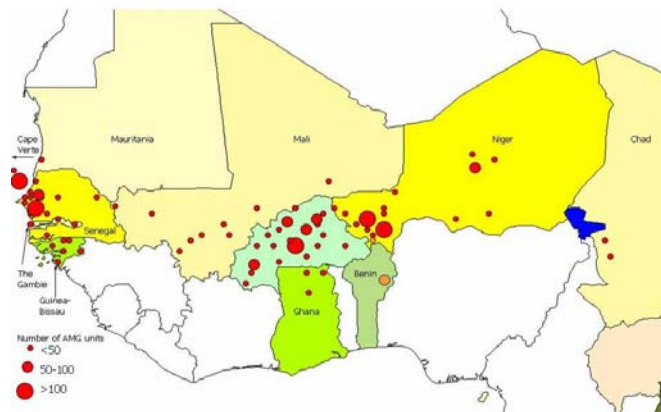
## Economics

The AMG offers a drastic improvement over the economic performance of traditional vegetable production systems of Africa.

Return to	Unit	Traditional Practice	AMG
Land is doubled	(\$/m <sup>2</sup> )	0.8	1.6
Labor is 6 times greater	(\$/day)	1.0	6.0
Water is quadrupled	(\$/m <sup>3</sup> )	2.7	10.0

## AMG in the Field

Over The last six years about 2,500 AMG units were disseminated in ten West African countries with the technical support of ICRISAT (see map below).



Senegal is now the focus of AMG dissemination in West Africa. 400 AMG units have recently been installed by a project called TIPA and hundreds more will be installed in the coming year



AMG onions in Keur Yaba-Senegal

## The Future

The AMG holds promise to millions of small African farmers struggling to escape poverty. It is now ready for mass dissemination