Collaborative Research Program for Improving Smallholder Food Security, Nutrition and Income Through Increased Production and Marketing of Climbing Beans

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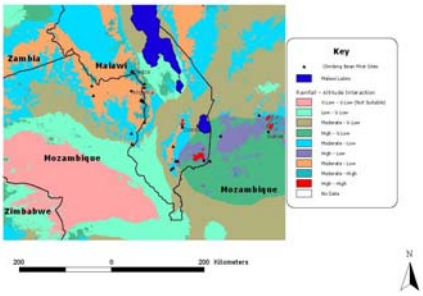
BACKGROUND OF THE PROJECT

Beans are an important crop for food/nutrition security, cash income and agro ecosystem improvement in Malawi and Mozambique. SABRN and CIAT have developed climbing bean varieties which have potential for wider adaptation and use across agro-ecological regions, and suitable for various consumer needs and market niches. This project is aimed at identifying suitable climbing bean varieties under different production circumstances to meet consumer and market requirements. It is implemented in two strategic transects Dedza-Angonia and Zomba-Gurue. The two transects have contrasting rainfall potential (700-900mm yr-1 and 1300-1600mm yr-1) but cover a similar range of altitudes (800-1600m).

Climbing Bean Pilot Sites



Objectives of the Collaborative research

- To increase efficiencies of bean production through cultivation of high yielding climbing beans linked to agro-forestry technologies for soil fertility improvement and provision of staking materials
- To link farmers to market to increase income through bean marketing.
- To build capacity of farmers, National Agricultural Research Services and other partners in sustainable seed multiplication and conservation technologies

METHODOLOGY AND RESULTS

1. BULKING START UP SEED

CIAT – SABRN has been bulking up breeders' seed of promising climbing bean varieties for PVS trials for new sites, and fast track seed multiplication with initial farmer groups and their partners . In 2008 a total of more than 20 kg of seed per variety was produced for the 20 promising varieties at the Bwanje Irrigation Scheme, and this was used for the subsequent trials in 2009 and farmer seed production.

Seed multiplication at Bwanje Irrigation Scheme

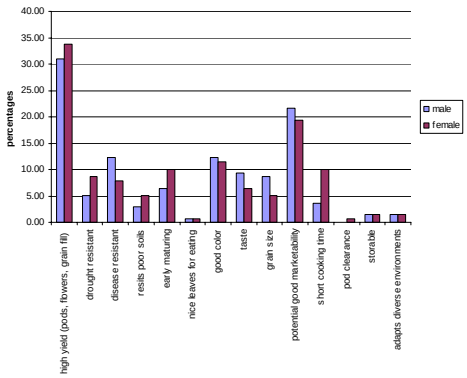
2. PARTICIPATORY VARIETY SELECTION

A diverse group of clients: farmers, traders, local hoteliers and other consumers are being exposed to promising climbing bean varieties for their input in selecting new bean varieties based on pre- and post-harvest traits. Stakeholders disaggregated by gender evaluated the varieties for positive as well as negative attributes using ribbons of different colors which the placed in plastic bags next to each variety

Farmers evaluating varieties at vegetative stage in Thyolo district - Malawi

Selection criteria

The criteria for selecting the preferred varieties was established disaggregated by gender across the PVS sites, and both men and women used grain yield and marketability as the key selection criteria.



Farmer selections

Stakeholders selected and ranked the preferred varieties. These differed by gender (men vs women) and transect (Dedza-Angonia vs Zomba-Gurue), however some varieties were crosscutting.

Transect	Varieties tested	Varieties selected across all sites		
		2007/08	2008/09	Crosscutting varieties
Dedza - Angonia	20	8	12	6
Zomba _ Gurue	20	9	12	7

Performance of genotypes in varied environments

The performance was evaluated based on yield with focus on altitude x rainfall x germplasm interactions in order to identify combinations of environments suitable for particular climbing bean varieties grown in association with agro-forestry technologies

Yield data

Entry	Seed colour	Bembeke (Dedza - Angonia transect)	Gurue (Zomba - Gurue transect)
MAC 82	CALIMA	448	1186
DC 86 - 215	RED	495	1006
MAC 38	SUGAR	729	1688
KANZAMA	RED	625	1274
MBC 34	SUGAR	1,552	1430
DC 86-283	RED	911	751
MAC 23	CALIMA	2,005	953
12D/2	CARIOCA	443	829
MBC 7	CALIMA	1,328	864
MBC 35	RED	1,484	1249
MBC 41	KHAKI	599	1018
MAC 53	SUGAR	521	1106
MAC 51	SUGAR	547	1169
MAC 12	SUGAR	729	1106
MBC 21	CALIMA	1,302	1319
MBC 39	CALIMA	1,141	801
MAC 3	SUGAR	521	922
MBC 10	CALIMA	646	1460
MAC 26	SUGAR	729	858
MAC 49	CALIMA	729	1218
Grand mean		876	1110
e.s.e.		83.2	182.2
cv%		42.5	23.2

3. ON FARM SEED MULTIPLICATION

Seed of client oriented bean genotypes were being multiplied in all the sites across the two transects. A total 600 farmers were participating in multiplying these varieties either as individuals or as groups. The quantities being multiplied varied from site to site depending on the 2007/08 harvest. In the 2008/09 season the program was scaled up to 30 new communities under the new partner Total Land Care

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