

Highlights

CIAT in Africa

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The Highlights series summarises research results and policy implications from the work of CIAT and its partners in Africa

New bean varieties for Ethiopian farmers

The common bean (*Phaseolus vulgaris* L) is an important traditional pulse in Ethiopia particularly in the Rift Valley, Haraghe Highlands and Southern Region. It is a basic component of cropping systems of small farmers and diets of people of Ethiopia as in many other countries in east, central and southern Africa.

A cash and food crop

Bean is both a food crop and an important source of cash. The importance of dry bean as a market crop varies within and across production areas. In the Rift Valley, more than 90% of beans are marketed whereas in the eastern zone the crop is grown both for food and cash.

Bean production areas in Ethiopia can be broadly classified into four agro-ecological zones: the central, eastern, southern and western zones grouped according to altitudes, rainfall, soil, production systems and geographical locations. Production constraints, both biotic and abiotic are specific, though some e. g. local varieties with low potential yield and susceptibility to pest and diseases are common to all zones. Similarly, preferences and types of bean grown vary in different zones.

Development of production technologies

To increase farmers' bean productivity and also to respond to their varied needs and preferences, the national bean programme of Ethiopia, in collaboration with ECABREN and CIAT, over the past 15 years has been developing and making available to farmers cultivars with improved yield potential and resistance to important biotic and abiotic constraints. Complementary efforts are also made to develop crop management practices, integrated pest management technologies, soil management systems to improve fertility, and less intensive labour technologies.

Improved bean cultivars

The national strategy to develop improved bean varieties has evolved over time. In the past, evaluation of promising improved bean lines was done across several growing environments, with the expectation of identifying varieties adapted to a range of different growing conditions. A few improved varieties were released, such as Mexican 142 and Red Wolaita. But this approach ignored specific needs of different bean growing zones and potential cultivars appropriate to specific production systems may have been rejected.



Seed multiplication (top slide). Participatory selection of new bean varieties (bottom slide).

Zone	Name of Variety	Release Year	Use / Type
National	Mexican 142	1973	Canning
	Red Wolaita	1974	Food
	Black Dessie	Early 80s	Food
	Brown speckled	Early 80s	Food
	Awash-1	1989	Canning
	Roba-1	1990	Food
	Atendaba	1997	Food
	Beshbesh	1998	Food
	Zebra	1999	Food
	Awash Melke	1999	Canning
Western	Goberasha	1999	Food
Southern	Melkie	1998	Food
	Tabor	1999	Food
Hararghe	Gofta	1997	Food
	Ayenew	1997	Food

Target zone, variety, year of release and potential use of cultivars in current use

Few genotypes would be suitable to all bean growing environments because of differences in consumer preferences and specificity in adaptation to climatic conditions and cropping systems. Hence a National Planning Strategy Workshop (1990) decided to adopt a decentralised approach for bean improvement to give more rapid genetic progress through increased local selection. Subsequently, several varieties have been released targeting different environmental zones.

Efforts have also been made to evaluate the advantages of a participatory plant breeding (PPB) approach and its integration in the breeding strategy. Results show that farmers are willing and able to select from a relatively large number of lines and are interested in a much wider range of seed types than previously considered in the conventional breeding approach. One of the four additional varieties scheduled for release in 2003 result from this participatory selection initiative.

New released varieties target different environments and provide with superior performance to local landraces in grain yield, resistance to diseases or other important traits. Yield improvement of new bush bean cultivars over previously released cultivar vary between 5 and 69%.

Characteristics of some released varieties

Examples of export types

AWASH-1

- Origin: CIAT
- Growth habit: Indeterminate bush

- Maturity period: Early (75 days)
- Seed market class: Small white
- Resistance: Angular leaf spot, CBB, rust.
- Use: Good canning quality and very good export type
- Yield potential (on-station): 20-25 q/ha

OTHER VARIETIES:

Mex 142, Awash, Melke

Examples of food types

BESHBESH

- Origin: Selected by EARO from a CIAT cross
- Growth habit: Indeterminate bush
- Maturity period: Medium (76 days)
- Seed market class: Small cream multiline
- Resistance: Primarily against bean stem maggot (BSM), rust.
- Market potential: Good for local market
- Yield potential (on-station): 25-30 q/ha

ROBA-1

- Origin: Bred by CIAT
- Growth habit: Indeterminate bush
- Maturity period: Early (75 days)
- Seed market class: Small cream
- Resistance: Anthracnose, CBB, medium to bean stem maggot.
- Growing zone: National.
- Use: Replacing field pea in *shiro*, *wat* and *kik* preparation, and good for local market
- Yield potential (on-station): 24 q/ha

GOBERASHA

- Origin: CIAT (bred by ICA Colombia)
- Growth habit: Determinate bush
- Maturity period: Medium (78 days)
- Seed market class: Large red
- Resistance: Angular leaf spot, CBB, rust.
- Use: Food type with local market potential
- Yield potential (On-station): 25 q/ha



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