

# **Arabica Coffee Breeding in Ethiopia: a Review**

**BAYETTA BELLACHEW**

Institute of Agricultural Research, Jima Agricultural Research Center,  
P.O. Box 192, Jima, Ethiopia

## **ABSTRACT**

Coffee (*Coffea arabica* L.) stands first in the Ethiopian economy. It's production, however, faces a serious threat mainly as a result of coffee berry disease (CBD) and lack of recommended cultivars for different localities. In Ethiopia, coffee breeding work in progress since 1978 was primarily aimed at developing cultivars, which combine high yield with CBD resistance and good quality. Germplasm collection, selection and hybridization were the main activities to achieve the desired goal. About 2789 indigenous and 190 exotic accessions were collected. Some of these have died because of various reasons and currently 1927 indigenous and 128 exotic accessions are available in the gene bank. Rigorous screening of the first 1380 indigenous and all the exotic accessions for desirable traits resulted in 279 promising selections of which 17 CBD resistant selections were released. Recently, 3 cultivars were approved for release and over 10 are in the pipeline. In crosses among the indigenous selections, inheritance of desirable traits and effects of heterosis were studied. CBD susceptible genes were dominant over resistance and three to five major recessive genes whose effects are additive were estimated to be involved in controlling resistance. The study was advanced to F<sub>2</sub> through selfing and back crossing to confirm these results. Yield and the growth characters studied were governed by additive and non-additive gene actions, the non-additive being predominant. The F<sub>1</sub> hybrids exhibited significantly high heterosis of up to 69% and 60 for seedling character and yield, respectively. The highest heterosis was obtained among those crosses whose parents distinctly differ in origin and morphology. Currently, two high yielding and CBD resistant hybrids were developed and approved for release. The implication of the present selection and breeding results and future prospects are discussed in detail.