**Coffea canephora hybrid varieties**

An alternative to clonal varieties for producers

One of the major limitations in Coffea canephora growing in Africa is the low use of selected planting material. In Côte d’Ivoire, for instance, it only accounts for around 10% of coffee plantings. Hybrid varieties are an attractive alternative for producers.

**Limitations of current planting material**

As a general rule, three types of planting material are grown.

**Unselected material**

Coffee seedlings are obtained from seeds taken from genetically heterogeneous local populations. They have a low annual production potential, at around 400 kilos of green coffee per hectare.

**Clonal varieties**

These varieties comprise a mixture of at least five clones, and are distributed as cuttings. This mixture is made necessary by the strict cross-fertilization of C. canephora. Clonal varieties have an appreciable production potential, at around 2,400 kilos of green coffee per hectare per year.

However, heavy and costly infrastructures are required to produce cuttings. Recent decades have revealed the limits rapidly reached in the large-scale multiplication of clones and their distribution to farmers, who have ended up using unselected material, for want of clonal material.

**Hybrid varieties**

These varieties are distributed in the form of seeds produced in biclonal seed gardens. The seeds are relatively easy to produce and disseminate, but the potential of these hybrids—1,600 kilos per hectare per year—is less than that of clones. Identifying C. canephora hybrid varieties that are as productive as clonal varieties is therefore a major challenge for the development of C. canephora cultivation.

**Partners**

CNRA (Centre national de recherche agronomique, Côte d’Ivoire)
Creating new hybrid varieties

A long term selection programme was launched in Côte d’Ivoire in 1985 in order to optimize the creation of hybrid varieties. By 2000, this programme had resulted in ten hybrid varieties whose yields are statistically better than or equal to those of clonal control 461, one of the highest yielding clones currently distributed in Côte d’Ivoire. One of these hybrid varieties even achieves yields of 3.4 tonnes of green coffee per hectare per year, almost 40% higher than clone 461. The bushy architecture of the new varieties contributes towards easier harvesting and better ground cover. Consequently, with reciprocal recurrent selection it has been possible to double the production potential of hybrids in less than twenty years, enabling them even to exceed the yields of the best clones currently being distributed.

Towards controlled productivity

This result is a definite advance for C. canephora breeding which:
• opens up the way for the distribution of hybrid seeds produced in seed gardens,
• contributes towards increased use of selected planting material,
• leads on to a sustainable improvement in C. canephora productivity.

The varieties of tomorrow

The varieties of tomorrow will need to:
• offer strong potential production of coffee with a good cup quality,
• reduce input and labour costs,
• be eco-friendly.

New tools, such as molecular markers and genetic modification, will help in the varietal improvement of Coffea canephora. However, conventional breeding remains the preferred route.

Research projects

Molecular marking to seek for genes linked to Robusta coffee quality (INCO-IQAR project).
Construction of a coffee tree gene bank.

For further information

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