

S13-06**Progress and challenges in genetic improvement of yam
(*Dioscorea alata* L.)****Gemma Arnau^{1*}, Erick Maledon¹, Elie Nudol¹, M. Claire Gravillon¹**

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Yams constitute an important staple food in tropical and subtropical regions. *Dioscorea alata* is one of the major cultivated species with a wide geographical distribution. It is currently second to *D. rotundata* in terms of production volume. Several traits of *D. alata* make it particularly valuable for economic production. These include high yield potential, ease of propagation, early growth vigour for weed suppression, and long storability of tubers. However, several abiotic and biotic constraints limit its development, including anthracnose disease caused by the fungus *Colletotrichum goesporioides* Penz, which is a constant threat.

The three most important selection criteria of breeding programmes are resistance to anthracnose, tuber quality and yield potential. *Dioscorea alata* is a polyploid species ($2n=40, 60, 80=2x, 3x, 4x$) and ploidy increase is correlated with better agronomic performances. Cultivars are exclusively propagated by vegetative multiplication and present a poor to non-flowering level that poses a major constraint to the rapid development of improved varieties.

The first improved diploid varieties were produced by the Centre Tuber Crops Research Institute (CTCRI, India). Recent research was conducted by the CIRAD to understand the origin of spontaneous polyploids and the different ways that can be used to produce polyploid hybrids (triploids and tetraploids). The first improved tetraploid varieties were produced by the French Agricultural Research Centre for International Development (CIRAD, Guadeloupe), and are now under evaluation in farming systems using a participatory approach in Guadeloupe and Martinique.

This and other useful knowledge that was acquired about genetics and the available diversity of this species through the use of biotechnological tools (cytogenetic techniques and molecular markers) will be presented. The partnership and the studies that have been undertaken to improve the efficacy of breeding programmes will also be presented.