



Deutscher Tropentag, October 11-13, 2005, Hohenheim

“The Global Food & Product Chain—  
Dynamics, Innovations, Conflicts, Strategies”

## Effect of Bee Pollination on Seed Set and Nutrition on Okra (*Abelmoschus esculentus*) in Cameroon

MOSES TITA NJOYA<sup>1</sup>, DIETER WITTMANN<sup>2</sup>, MATHIAS SCHINDLER<sup>2</sup>

<sup>1</sup>University of Bonn, Agricultural Sciences & Resource Management in the Tropics and Subtropics (ARTS), Germany

<sup>2</sup>University of Bonn, Institute of Agricultural Zoology and Bee-Biology, Germany

### Abstract

The study was conducted from June 2004 to August 2004 at the out sketch of Yaounde (Cameroon). Okra (*Abelmoschus esculentus*), Malvaceae, is a native of West Africa. It has a considerable economic importance because the seeds and pods are used for food. Hand and insect pollination of okra flowers gave seed sets varying between 73–84% per pod which differ significantly ( $p < 0.05$ ) from that of the bagged flowers (spontaneous self pollination) which just rendered 57% seed sets per pod. An increase of 10.3% in seed sets from cross pollination over forced-self pollination and a 16% increase in seed sets was recorded from forced-self pollination over spontaneous-self pollinated flowers. Noteworthy, that a fecundated seed contains 91.5  $\mu\text{g}$  nitrogen whereas an unfecundated seed has only 2.6  $\mu\text{g}$  nitrogen; this means that a fecundated seeds contains 35 times much more nitrogen. As a consequence, cross-pollinated flowers rendered more fecundated seeds; with 311.1  $\mu\text{g}$  more nitrogen per carpel than seeds from spontaneous-self pollinated flowers with more unfecundated seeds. An increase of 754.1  $\mu\text{g}$  carbons and 192.2  $\mu\text{g}$  of nitrogen per carpel were noted comparing seeds from forced self-pollinated flowers with those from spontaneous self-pollinated flowers. This demonstrates the need for cross-pollination in the okra garden to achieve optimum yields both in both seed quality and seed sets. Observation of 829 individual bees of at least 4 different species visiting okra flowers indicates that *Megachile* sp. had more contacts with the stigma upon landing (56.1%), thus, it possibly does cross pollination. *Halictus* spp. are considered potential pollinators for self-pollination, as they frequently roll on the anthers and consequently on the stigma of the same flower (86.3%) before taking off. *Xylocopa* sp. is a pollen thief, as it visits okra flower just to collect pollen but does not aid in pollination. *Apis mellifera* is mainly a nectar collector in okra flowers.

**Keywords:** Bee pollination, nutrition, Okra (*Abelmoschus esculentus*), seed set