



Tropentag, September 17-19, 2013, Stuttgart-Hohenheim  
“Agricultural development within the rural-urban continuum”

## Morphological and Genetic Diversity of *Persea americana* Mill. (Avocado) in two Regions of Ghana

JANICE DWOMOH ABRAHAM<sup>1</sup>, JEMMY F. TAKRAMA<sup>2</sup>

<sup>1</sup>University of Education, Winneba, College of Agriculture Education, Ghana

<sup>2</sup>Cocoa Research Institute of Ghana, New Tafo-Akim, Ghana

### Abstract

*Persia americana* Mill (avocado) is a tree crop which originated from the tropics of the western hemisphere and has developed varieties, adaptable to a wide range of climatic conditions. It has three general ecological varieties: Mexican, Guatemalan and West Indian. Its fruit is pear-shaped and the edible part is a thick layer of greenish-yellow pulp, high in protein and fat. The avocado plant is important for economic, nutritional and medicinal reasons. Studies have shown that its leaves could be used to manage high blood pressure.

In Ghana, avocado is widely grown in the closed forest region, but it can be found in all regions. Despite the high nutritional content of avocado, malnutrition is prevalent in most rural communities in Ghana, and its potential medicinal use has not been fully investigated. Avocado has the potential to contribute immensely to the economy of Ghana if cultivated on commercial scale. We therefore investigated the distribution, uses, morphological and genetic diversity of avocado in the Ashanti and Central regions of Ghana.

Ethnobotanical surveys were carried out in 14 districts, while morphological and genetic diversities were determined among the accessions in eight districts. Microsatellites markers were used for genetic diversity studies.

Growth of avocado was better in the Ashanti region than the Central region. It thrived best in old cocoa farms and was cultivated on small scale. The plant was used for various medicinal and economic purposes.

Morphologically, they were mainly of Western Indian origin. However, accessions from the Ashanti region were more diverse in plant and fruit characters than those from Central region. Microsatellites analyses revealed 115 different amplification fragments, ranging from 5 to 22 alleles per locus, with an average of 11.5 alleles per locus. All microsatellites were highly informative with both genetic diversity and polymorphic informative content higher than 0.5. Using the unweighted pair group method with arithmetic averages, the genotypes were clustered into seven major groups.

The wide genetic diversity among the accessions indicates a wide genetic base for improvement of avocado through breeding and selection.

**Keywords:** Avocado, diverse, ethnobotany, genetic markers, microsatellites, morphology, nutrition