

# Master/Diploma-Thesis in Participatory Sorghum Improvement

Topic	<b>Assessing the effectiveness of an augmented strip-test design for farmer participatory yield testing of a larger number (150) of sorghum progenies in Mali, West Africa.</b>	
Time period	Starting any time (a.s.a.p.)	
Department	Angewandte Genetik und Pflanzenzüchtung (350a) and Bioinformatik (340c) in cooperation with the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) in Mali (West Africa)	
Contact Persons / Supervisors	<b>PD Dr. Bettina Haussmann (Inst. 350a)</b> bettina.haussmann@uni-hohenheim.de <b>Prof. Dr. H.P. Piepho (Inst. 340c)</b> piepho@uni-hohenheim.de	<b>Dr. Fred Rattude,</b> ICRISAT, BP 320, Bamako, Mali f.rattunde@icrisatml.org
Project	Assessing and refining the concept of dynamic genepool management and simultaneous farmer-participatory population improvement in pearl millet and sorghum (funded by The McKnight Foundation)	
Description of the Project and the intended Thesis	<p>A method for multiple-environment on-farm testing of a larger number of genotypes needs to be developed for effective population improvement in Mali, West Africa. Major challenges for effective yield testing of larger numbers of progenies include: a) the traditional replicated on-station testing sample only very limited number of environments, and these environments poorly represent actual farmer managed conditions on-farm, and b) on-farm testing of a large number of progenies with many participating farmers can not readily accommodate sufficient replication of multiple-row plots to obtain satisfactory repeatability. Therefore, to overcome these difficulties an on-farm testing procedure was initiated whereby a) the total number of progenies was subdivided into subsets, with each farmer testing only one third of the entries, and b) a single replicate augmented design was used to maintain a sufficiently simple, “farmer friendly”, field trial yet enable estimation of error and progeny performance relative to common checks.</p> <p><b>Specific Objectives:</b></p> <p>1) To assess the feasibility and effectiveness of an augmented strip test design for on-farm yield testing, in terms of a) estimates of repeatabilities of individual trials and identification of any identifiable environmental factors (sowing date, soil fertility, geographic location) related to repeatability levels, and b) the consistency of progeny yield performance within and over testing zones when expressing yield as a percent of check means within each individual farmer strip-test.</p> <p>2) To assess the actual yield performance of progenies selected using the on-farm augmented strip-tests versus replicated on-station yield evaluations both in on-farm and on-station testing.</p>	
Period of Data Collection	Data Available: Grain yield data from on-farm strip-test (single replicate, augmented design), with 17 farmers in 2011 and approximately the same number in 2012. Replicated experiment station trials, both under low-phosphorous and high-phosphorous conditions, in 2011 and 2012. Arrangements for student travel to Mali to interact with the sorghum breeders and opportunities for student participation in additional data collection may be envisaged.	
Used Methods	Statistical analysis	
Requirements	Background in plant breeding, and interest in research for applied breeding method development; Strong interest for statistical analysis	
Miscellaneous	The thesis should be written in English; subsequent publication in a peer-reviewed journal is envisaged. This topic is only available as Diploma-/Master-thesis (not as Bachelor-thesis)	