

Project Summary

Title	Enhancing Productivity of Maize-Based Cropping Systems through Additive Intercropping with Leafy Vegetables
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Purpose	The general objective of the proposed project is improvement of maize-based cropping systems through increased productivity of the land on which maize is grown. Additive intercropping with leafy vegetables is suggested to be one relatively cheap options.
Project Summary	Maize is the most important staple food crop throughout Eastern and Southern Africa. Among small scale farmers who are the majority, maize is predominantly grown in intercropping systems, such as with legumes. As such, intercropping is a widespread practice in maize-based cropping systems in Southern Africa. Considerable research has been done on intercropping with maize and other annual crops. 'Replacement series' system of performing crop mixtures has been used in the majority of studies done, so far. The alternative is 'additive' intercropping. The latter system means that where the intercrops have markedly different development patterns or durations one component is added to the other so that the final plant population is usually more than had either been sown separately. This is desirable, for instance, where the longer duration intercrop is the more preferred crop species and its yield should be relatively unaffected by the shorter duration intercrop planted in between. Almost throughout Eastern and Southern Africa, maize fits the description alluded to here. The proposed research is based on this scenario. The study will determine the feasibility of additive intercropping maize, a staple food crop, hence preferred crop, with selected leafy vegetables, which are relatively shade tolerant, with a view of maintaining maize productivity and increasing land productivity. The converse will also be

	investigated, that is, a situation where the vegetable farmers could improve the productivity of their land by introducing a certain population of maize into the vegetables. The task of this study will be to determine the populations and spatial arrangements of the vegetables (in the first case) and of maize (in the second scenario) to introduce in an additive manner. The intercrops will be evaluated both biologically and economically. Two MSc. students will be trained and these students will be in charge of one or the other of the above two scenarios. The students will lay out the experiments, collect the data and analyze it for their theses and journal papers. Simple on-farm trials will be carried out by selected maize growers to introduce them to and to allow them evaluate on their farms the relatively new technology-of incorporation of at least one row of a leafy vegetable between the maize rows planted at their normal inter-row spacing of 90 cm. Farmers' groups will be invited to visit this on-farm trial and their comments solicited. The results will be applicable throughout Eastern and Southern Africa where maize is the predominant food crop, and also where leafy vegetables are needed to diversify the diet and improve human nutrition. Monitoring and evaluation will include not only analysis of the results by the students, PI and collaborators and submission of reports and journal papers, but also mid-term and end of term of the project's first phase seminar presentation of the preliminary and final results to staff at Luyengo campus and stakeholders in the maize industry in Swaziland. The input of participants will be considered in the second season (replication in time) of the experiments or second phase of the project.
Country and Specific Location(s)	Swaziland
Participating Institutions	University of Swaziland, Ministry of Agriculture
Start Date	September, 2012
End date	August 2014
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