

Gliricidia intercropping in Zambia shows promising results

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The species *Gliricidia sepium* is a deciduous tree, cultivated and used for a variety of purposes in tropical regions. In Zambia, it is used for timber, firewood, medicine, charcoal, living fences, and plantation shading.

Additionally, both soil health and crop nutrition can be improved by the incorporation of the leguminous tree's leaf biomass.

In 2019, a joint research effort for demonstrating and documenting the effects of *Gliricidia* in different farming systems in Zambia was established. The emphasis of the project, coordinated by the Norwegian Institute of Bioeconomy Research (NIBIO), is to do in-depth analysis on the potential yield gains in maize-legume cropping systems using *Gliricidia*.

The project is now in its third year, and so far, the results are promising. Among other things, *Gliricidia* intercropping has proved to significantly reduce the tannin and phytic contents in soybeans, groundnuts, and maize grains. In addition, *Gliricidia* has increased the nitrogen content in grains, thereby increasing their protein content.

Field trials with crop and soil analyses from 15 sites

In the project, [field trials](#) with seven treatments at 15 sites in Zambia have been established. One of the treatments tested has included *Gliricidia* intercropping with maize, soybean, and groundnuts, with sole crops as control trials. Crop and [soil samples](#) from all sites have been collected and analyzed for—among other things—nutritional properties, mycotoxins and microbial load.

In general, the results show that the treatments with intercropping of *Gliricidia* provide higher ash, total carbohydrate, starch, amylose, and crude fiber contents than the controls consisting of sole maize. In addition to the increased nitrogen level and reduction of tannin and phytic contents in various crops, improved functional properties have also been observed.

As far as the common mold fungi *Aspergillus* spp. is concerned,

Gliricidia incorporation has had minimal effect on its occurrence and distribution in both soils and crops.

Lower mycotoxin prevalence with Gliricidia treatments

Overall, treatments with Gliricidia have resulted in lower mycotoxin prevalence, while sole maize registered with the highest levels. Gliricidia has also proved beneficial for [soil fertility](#) and [carbon sequestration](#), with total organic carbons stocks in soils ranging from 17,6—25,6 C t/ha.

"So far, results from the project indicate that correlating available Gliricidia agroforestry technology with [soil health](#) can indeed improve crop nutrition," says Project Coordinator Dr. Udaya Sekhar Nagothu from NIBIO. "This research should help how Zambian small-scale farmers adopting Conservation Agriculture with agroforestry can contribute to healthier, more nutritious food [crops](#)."

This outcome is in line with the Norwegian Government's priority to invest in areas related to food security and nutrition. The Norwegian Agency for Development Cooperation (NORAD) recently extended its funding of the Gliricidia project period with one year.

Provided by NIBIO – Norwegian Institute of Bioeconomy Research

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