

## Faidherbia albida – The ultimate solution for Small-scale Maize production

We have talked about the importance of this tree before but after a field visit to Chongwe and Katete a revisit is worthwhile. In September/October last year we showed 120,000 farmers how to raise Musangu nurseries and transplant seedlings in their crop lands. In November we supplied all these farmers with sufficient seed and poly-bags to raise and plant out 240,000 hectares of trees at a density of 100 trees/ha.

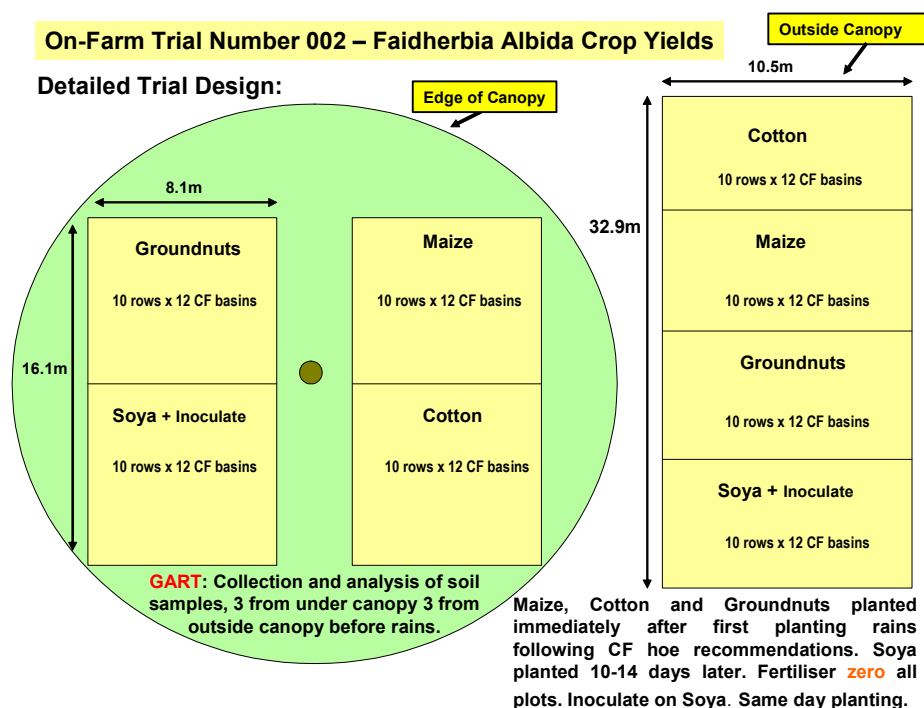
Of course we didn't expect to have achieved a full stand this would be a miracle because it's hard to convince farmers to do something that takes 10 to 12 seasons to begin to show benefits. Maybe we now have about 50,000 hectares of seedlings established? This article explains why we shall persevere until the goal of 240,000 hectares is achieved.

The spectre of climate change and rapidly escalating grain prices worldwide, *refer to Lester. R. Brown's article*, remind us of the unenviable position we would find ourselves in, if at some time in the future, we are obliged to import large quantities of Maize to feed ourselves. Imagine the ripple effects of a future situation where the southern African region as a whole experiences a season of inadequate rainfall and Zambia is forced to import Maize from overseas at exorbitant cost?

Many thousands of hectares of yellow Maize also informs us that the majority of smallholders have again planted late and with little or no fertiliser and if the predictions of fertiliser prices going up to \$800-1000/ton are realised, there will be even more of this next year.

There are a lot of very practical and sensible things collectively referred to as CF that farmers can do for themselves to maintain reasonable yields while reducing excessive dependency on fertiliser, but this is not the subject of our article, Musangu is.

This year we established 40 farmer managed trials to confirm for ourselves the performance of different crops under and beyond (outside) mature Musangu canopy, a sort of peek into the future. The diagram below shows the simple layout, 4 crops under the canopy and 4 outside with **zero** fertiliser applied to all.



Although the trials are yet to be harvested and measured, our preliminary observations are as follows.

▪ **Maize**

Maize yields under the canopy will vary from 70% to 300% higher than outside the canopy. The difference will depend on the fertility of the soil beyond the influence of the trees. The more degraded the soils the higher the differential. In some cases the crop under the tree will be excellent whereas the crop outside will fail altogether!



**Maize under mature Faidherbia - zero fertiliser**



**Maize 15 metres away outside - zero fertiliser**

▪ **Cotton**

Cotton yields under the canopy are likely to range from 15% to 60% higher all else being equal. We did a comparative cotton boll and square count at two locations. Mawanda: Cotton outside the canopy 19 bolls and squares, Cotton under the canopy 36 bolls and squares. Chilimanyama: Cotton outside canopy 11 bolls and squares, Cotton under canopy 46 bolls and squares.



**Cotton under mature Faidherbia - zero fertiliser**



**Cotton 15 metres away outside - zero fertiliser**

▪ **Legumes**

Scientific literature on the performance of legumes under Faidherbia is ambivalent. From our observations however, Groundnut and Soya beans become excessively vegetative and we expect yields to be suppressed due to very high fertility particularly Nitrogen.

Sixty years of research has shown that through leaf and pod fall, Nitrogen fixation and association with micro-organisms fertility accumulation per hectare under mature canopy is as follows:- **75kg N; 27kg P205; 183kg Ca0; 29kg MgO; 19kg K20 and 20kg S**. This is equivalent to 300kg of complete fertiliser and 250kg of lime and is worth nearly **ZMK 900,000** at current fertiliser prices! Why purchase fertiliser when nature offers the solution?

This is why we want small-scale farmers to establish Faidherbia and why NGO's who go on and on about 'food insecurity' should abandon endless rounds of workshops and encourage their beneficiaries to get planting!