PRUNING TO IMPROVE SPATIAL COMPLEMENTARITY IN UTILIZATION OF BELOW GROUND RESOURCES.

ROOT AND SHOOT PRUNING EXPERIENCE AT THE Vi AGROFORESTRY PROJECT - MASAKA.

TRIP REPORT

Sande B. Dickens **August 1999.**

SUMMARY

Resulting from the project(**ZF 0094**) initiation workshop held in January 1999, in which the **Vi project** reported to have carried out root and shoot pruning, it was decided that a study of the work done in Masaka area be undertaken to build their experience into the Katuna On-farm trials. It had been reported that Masaka farmers had shown signs of resistance to tree planting for fear of competition. With both root and shoot pruning farmers seemed willing and interested in tree planting.

The tour was undertaken by the AFRENA Forester supporting the pruning research in the Kabale region of South Western Uganda, expecting to learn techniques of root and shoot pruning and the effects that these have on trees and adjacent crops. The tour was for two days though the project staff were too busy at the time that it was only possible to study the work done at the demonstration center and visit one farmer. However, it was reported by the Vi officer in charge of Education and training, that the they work with around 120 farmers who Know and or practice root pruning.

Major lessons learnt during the tour include the following:-

- An extensive as well as intensive extension network which has ensured that many farmers in the Districts involved are reached and trained on pruning and other farming techniques.
- Root pruning seems not an "additional burden to the already extremely busy farmer" because it is usually done along with other farm activities such as weeding and opening up farm drainage structures such as water tunnels and ditches.
- Root pruning is not likely to have a big negative effect on tree growth because only a portion of lateral roots in the upper soil horizons which are likely to compete with crop roots are cut, and are normally cut during the wet season when the tree experiences no water stress.
- Constant contact between farmers and the project staff through the well established extension network which means that a farmer is well trained on pruning and followed up to avoid frustration if anything goes wrong on his or her farm.
- Good organizational set up with Extension assistants at the grass roots in what is called a concentration area, 14 extension Assistants headed by a Zonal manager who in turn reports to the head office.

The Vi Agroforestry Project experience is quite convincing that pruning is possible on most farmers fields and will go a long way in encouraging farmers to continue planting trees on cropland since it has the potential of reducing competition with crops yet yielding other benefits from tree based products.

Introduction

The word **Vi** is Swedish word meaning "WE". The Vi Project resulted from a visit to East Africa (Northern Kenya) by the Chief Editor of a Swedish Magazine called Vi Magazine in 1981 who observed a serious desertification problem. The project was first started in Northern Kenya at Kitale in 1981. It came to Uganda in 1993. It is also in Tanzania at Musoma and Mwanza. The original objective and major activities were basically tree planting in the Lake Victoria basin to combat the fast advancing desertification. This justifies its location in Uganda i.e. Masaka and Rakai Districts.

Due to the increase in population, and the fact that Land is increasingly becoming limited, the concept of tree planting was resisted since most of the species being promoted were not compatible with crops. Masaka and Rakai are found in the Banana- coffee Agro-ecological zone of central Uganda. There was need for Agroforestry if the original dream of tree planting was to continue. This prompted the project management to rethink their objectives as well as their activities.

The Vi Agroforestry Project.

The above name resulted from the name to change from mere tree planting to integration of trees with crops. There was need for extension to provide technical knowledge of looking after trees on farmland. Furthermore, even those who planted the trees found problems with them on cropland- they outcompeted their crops.

The name and methods of approach changed in 1998 from Tree planting to Agroforestry project. However, though the name and methods of approach changed, the original dream of "the green belt around the Victoria Basin" has remained the central goal of the project.
Presently, the major roles of the project include the following:-

- To improve the living standards of small scale farmers.
- Encourage income generating activities on farms so as to boost family income.
- To ensure sustainable fuelwood production on farms.
- Improved crop management and production.

Formerly the project raised over 100 species of trees. Presently, only 21 species are raised. This is as a result of two main factors:-

- Farmers' perception and need.
- Compatibility within cropland.

The pruning experience

The purpose of the tour was to familiarize with what has been done by the Vi Agroforestry project on Root pruning so that we can build upon their experience into the Katuna on farm trials. It has been feared that root pruning may unnecessary task to the farmer seeing it does not have direct and tangible benefit yet it requires labor input. It was therefore essential that farmers who have done it be visited to see how they did it and how they think or know they have gained in order to convince others that it is possible and useful to consider root pruning in the Katuna valley of Kabale and other areas where agroforestry is practiced.

One farmer and the demonstration center of the Vi Agroforestry project are the two sites visited during the tour. More sites would have been visited but at the time this tour was undertaken, the Vi project vehicles were all occupied with other work so moving from village to village was a problem. Worse still, it was a dry season in Masaka meaning that the exercise had not been carried out since it is usually done during the wet season.

The Vi Agroforestry Demonstration Center

The center was set up in February 1992 for farmers and others to see how agroforestry trees can best be inter-cropped in farms and how to best care for them. Kenyans were the first to suggest root pruning to Vi in 1996 to avoid competition. The species which were observed to have been pruned are *Maesopsis eminii, Polyscius fulva and Grevillea robusta.* All these trees are presently doing well and unless the ground is opened for one to physically see the cut roots, there is no evidence to suggested the tree was pruned since the pruning did not kill the tree nor did it significantly retard its growth compared to others in the same location. It is therefore suggested here that root pruning be done in the on - farm pruning research in the Katuna valley of Kabale.

The techniques are simple and the local hoe was used though a panga can also be used to cut back roots that are big. Roots are cut at 1ft(30 cm) away from the main tree stem and followed through. Only a portion of lateral roots are cut back i.e. those which are most likely to compete with crop roots in the upper soil horizons. The visited farmer emphasized that care must be taken not to cut all lateral roots or most of them, other wise the tree loses balance and falls to the ground. The practice is recommended during the rainy season when there is no water stress. It was also said that the practice should best start when the tree is about 3 ft(90 cm).

A Farmer's experience.

A female farmer was visited about 15 Km out of Masaka town in a village called Kajuna of Mazinga parish in Burunga sub County. She is located on top of a hill and grows a number of agroforestry species e.g. *Grevillea robusta, Melia azedarach, Markhamia lutea, Maesopsis eminii, Sesbania sesban, Calliandra calothyrsus* and many other fruit tree species such as Pawpaw, Passion and Avocado. She also has one goat, two cows, four pigs and a number of chicken. The crops she grow are quite diversified and include beans, bananas, coffee, maize, potatoes to mention but a few.

In her own words she says growing trees started by establishing her own home nursery in 1997 raising the above mentioned species for the following reasons:-

- As wind breakes since she stay on top of a hill wind destroyed her other crops.
- For soil and water management.
- For firewood especially through thinning since she can' t shoot prune her trees because she wants them as wind breaks.
- To produce fruits for home consumption, her domestic animals and if there is excess, she could sell for cash.
- Sesbania, Cordia and Calliandra are also for fallow purposes in addition to being fodder species. She has a woodlot of Sesbania and Calliandra on her farm as a fallow land.

Root pruned Grevillea trees were visited, the ground was opened to expose the cut roots and the roots seemed to be sprouting after cutting. The trees were planted in October 1997(two years now) but she says she has done root pruning three times. Root pruning is not done exclusively. It is done as she weeds or as she opens water drainage structures such as ditches and tunnel on her farm.

She first opens up the land to see how many lateral roots the tree may be having and she cuts those which are most likely to compete with crop roots. She does not cut tap roots. She also does shoot pruning where only those branches that shade adjacent crops are removed.

Conclusion

Root pruning has been seen as a difficult task and unnecessary especially that it does not yield immediate benefits to the farmer. Farmers need to be taught to begin looking at their agricultural practices not for short term benefits only but also for long term benefits. Root pruning has a potential of reducing competition with crops thus ensuring continued tree planting on farmland. The root pruning practice is not an added task to the farmer because he can do it along with other farm practices such as weeding and yet these are carried out mostly during the wet season when root pruning is most appropriate.

Recommendation.

On the background that both shoot and root pruning seem not to have adverse effects on pruned trees and have the potential to reduce competition between trees and crops, it is recommended that they be tried for the Katuna valley on farm boundary trees that were planted five years ago. Furthermore, since root pruning is not necessarily "an added task to the already overloaded farmer" as previously thought, it is worthwhile letting farmers try it out if the practice of agroforestry is to continue.