Tree Seed in Malawi

organisational survey

Pedersen, Anders P.; Chirwa, Paxie W.

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- Organisational survey

Anders P. Pedersen and Paxie W. Chirwa

Forest Research Institute of Malawi (FRIM)

World Agroforestry Centre
TRANSFORMING LIVES AND LANDSCAPES

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Authors
Anders P. Pedersen and Paxie W. Chirwa[1]

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Collaborating partners
Forest Research Institute of Malawi[1]
Kufa Road, Box 270
Zomba
Malawi
Phone: +265 524 782
Fax: +265 524 548
Email: frim@malawi.net

World Agroforestry Centre (ICRAF)
United Nations Avenue, Gigiri
PO Box 30677-00100 GPO
Nairobi
Kenya
Tel: +254 20 524000 or via USA +1 650 833 6645
Fax: +254 20 524001 or via USA +1 650 833 6646
Email: ICRAF@cgiar.org
www: http://www.worldagroforestrycentre.org

Publisher
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Hørsholm Kongevej 11
DK-2970 Hørsholm
Tel.: +45 3528 1500
E-mail: sl@kvl.dk

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Preface

This report is the outcome of a baseline study on the movement of tree seed from collection site to end user, typically nurseries in Malawi.

This work is part of a larger diagnosis of the tree seed sector in Malawi undertaken by FRIM, ICRAF and *Forest & Landscape Denmark* (FLD). Another survey on nurseries is underway. The report provides a description and understanding of the current tree seed systems as seen from the point of view of different *organisations*. This, together with results from the two other surveys (December 2004) provides tools to assess the potential for possible improvement to facilitate supply of larger amounts of better, more varied and cheaper seed.

Thus, the present working paper depicts and analyses the present tree seed situation in Malawi, including seed movements and stakeholders from the organisational viewpoint.

The report focuses on analysis and discussions. In conclusion, efforts have been made to reveal the actual status rather than to fully exhaust the topic in all details, since a complete survey was not possible within the time frame given. We have, in order to increase readability, presented the majority of the results in the Annexes.

Acknowledgements

Acknowledgements go to FRIM for hosting, co-ordinating and making staff available to conduct and report the survey. The Seed Supply Specialist from ISSAAC, Mr. Jens-Peter Barnekow Lillesø and from FLD, Mr. Søren Moestrup, have assisted with the document. Other FLD staff, Dr. Hans Roulund, Dorthe Jøker, Melita Jørgensen have improved the quality technically, grammatically, and by setting up the report.

ISSAAC

ISSAAC's objectives are to develop stronger and better seed systems that will enable small-scale land users to capture the benefits of utilising agroforestry systems for increased food security and increased income from sale of products produced on farm. Other organisations and institutions in Africa also develop technologies to improve the livelihoods of small-scale land users. A major bottleneck for dissemination and appliance of these technologies is lack of seed and other reproductive material. The traditional providers of reproductive material of trees and shrubs in Africa are not developed for decentralised production and supply that can meet the potential demand from millions of farmers. Many organisations and institutions are presently trying to fill this seed gap.

The situation for tree seed can be compared to the agricultural seed systems in Africa, where the seed demand-supply relationship in many smallholder-farming systems does not function well. However, while commericial crop seed systems are being tried out by a multitude of NGOs, donor projects and CGIAR centres, free tree seed and seedlings are still being handed out by numerous institutions, projects and NGOs in most of Africa.

Successful development of decentralised tree seed systems will depend on a thorough understanding not only of technical aspects of seed production and handling, but also institutional, organisational, social and economic dimensions of development of rural producer organisations and information networks.

ISSAAC is based at ICRAF, Kenya, and operates in Burkina Faso, Malawi and Uganda, the countries which have been chosen to represent the three regions of Sahel, Southern and Eastern Africa, respectively. ISSAAC has a secretariat with a seed supply specialist based in Nairobi and who works closely with a national counterpart in each country. The present project period ceases end of year 2005.

Acronyms and abbreviations

ADP	Agricultural Development Programme
ARET	Agriculture Research & Extension Trust
CARD	Churches Action for Relief & Development
CGIAR	Consultative Group on International Agricultural Research
COMPASS	Community Partnerships for Sustainable Resource Management
CURE	Co-ordination Unit for the Rehabilitation of the Environment
CBOs	Community Based Organisations
DFO	District Forestry Office
DFSC	Danida Forest Seed Centre, Denmark (now part of FLD)
ELDP	Evangelical Lutheran Development Programme
FLD	*Forest & Landscape Denmark*
FRIM	Forestry Research Institute of Malawi, inc. NTSC
GCA	General Collection Area (likely on 'public' land)
GO	Governmental Organisation
ISSAAC	Improved Seed Supply for Agroforestry in African Countries
JPO	Junior Professional Officer
ICRAF	World Agroforestry Centre (previously: International Centre for Research in Agroforestry)
LRC	Land Resources Centre
MAFE	Malawi Agroforestry Extension Project
MEET	Malawi Environmental Endowment Trust
MOA	Ministry of Agriculture
MKW	Malawian Kwacha (currency unit)
MZADD	Mzuzu Agricultural Development Division
NGO	Non Governmental Organisation
NRM	Natural Resource Management
NRMCs	Natural Resource Management Committees
NTSC	National Tree Seed Centre at FRIM
RFO	Regional Forestry Office
RUFA	Rural Foundation for Afforestation
SADC	Southern African Development Committee
TLC	Total Land Care
TSCN	Tree seed Centre Network
VNRMC	Village natural resources management committees
WESM	The Wildlife & Environmental Society of Malawi
WVI	World Vision International

Summary

The present survey on tree seed in Malawi was accomplished as part of ISSAAC (ICRAF programme) and the main objective is to analyse tree seed procurement systems. The survey was carried out as a collaboration between Danida Forest Seed Centre (now FLD) and FRIM in Nov. 2003.

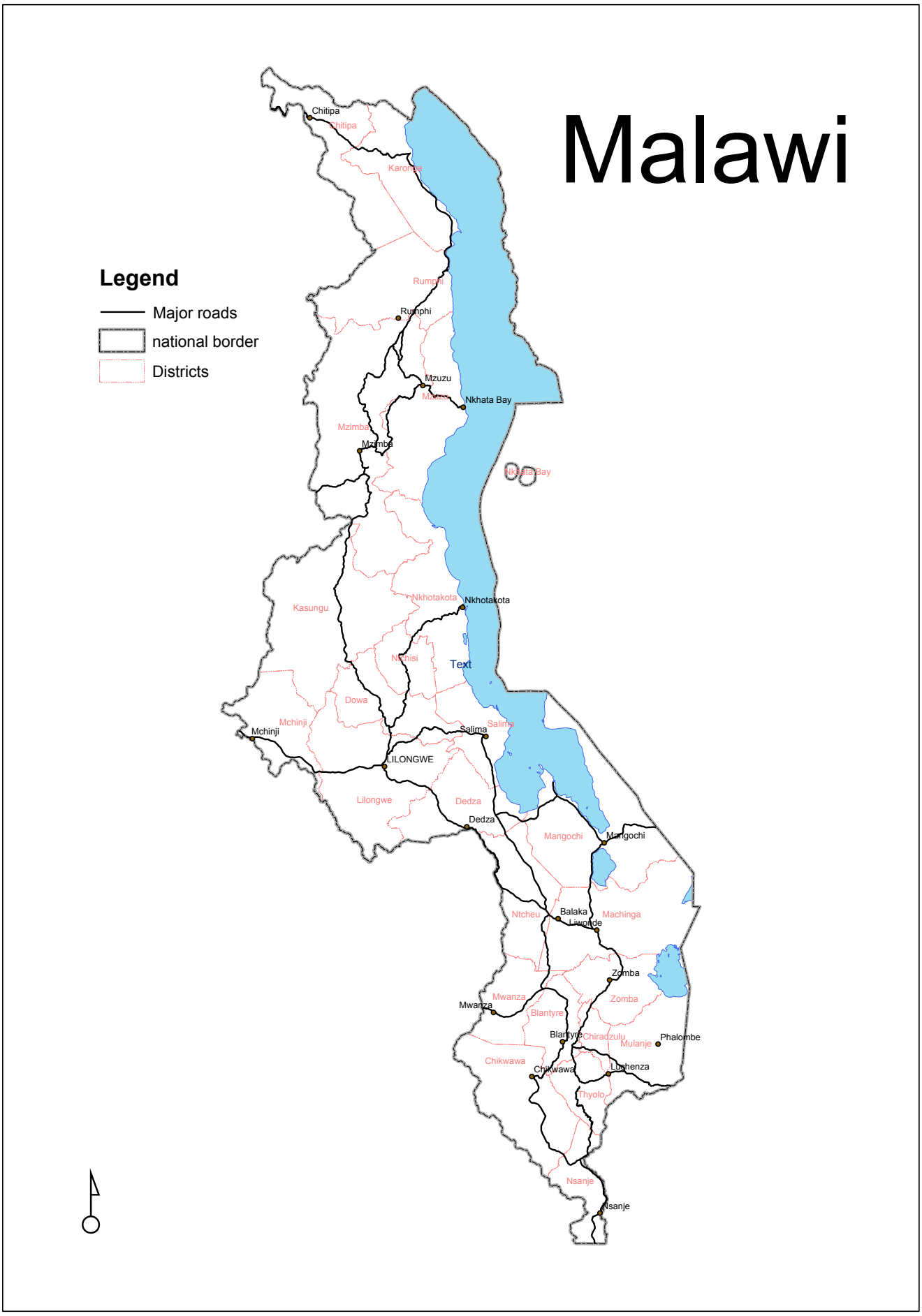
25 formal interviews among different organisations including NGOs, GOs, commercial and semi-commercial companies and other stakeholders were carried out. All major regions of Malawi were covered. Findings were quite coherent and mutually supportive giving a country overview:

The survey identifies major tree seed stakeholders in Malawi and their importance. It explores the most used tree species and ranks their importance. Modes of operations in tree seed procurement and distribution are described. Factors like pricing, quality, competition and markets are examined and analysed. Further, the geographical coverage and various types of organisations are presented to get a balanced overview. Other findings which affect or improve seed production or its capacity are explored where available.

Findings confirmed relatively quickly that there are only two permanent tree seed suppliers in Malawi, the National Tree Seed Centre (NTSC) at Forest Research Institute of Malawi (FRIM) and Land Resource Centre (LRC). A third major seed supplier is World Agroforestry Centre, ICRAF. The latter deals exclusively with 5-6 agroforestry species, while LRC deals with some 20-25 species. FRIM initially supplied predominantly forestry plantation species through NTSC. At present the supply is extended to include tree seed for various other uses, holding the country's largest accession with some 40-60 species.

A free tree seed market is virtually absent as it has been taken over by these three oganisations who all buy seed (very competitively) from either specific areas (seed sources) or general seed zones, where they purchase seed from villagers/ collectors. FRIM exclusively sell seed and surrender all sales to the Ministry (Government). LRC is becoming increasingly commercialised and sells seed at a low price to their 'partners', who then *give* it to local nurseries at no cost or only ask a nominal price. ICRAF purchase and redistribute seed for free to its co-operating nurseries/NGOs. Seed quality is generally considered satisfactory with a few exceptions of seed that does not store well for long periods of time, e.g. *Khaya anthotheca* and *Toona ciliata*. The genetic quality within species was of virtually no concern among those interviewed.

The end users of seed are typically communities or individuals with little or no purchasing power. That is one reason why commercial seed dealers are few or absent. However, substantial purchase of seed is done by NGOs or projects who have resources and at times expressed interest in finding alternative seed suppliers to get more, better and cheaper seed. Mobilisation of local communities to collect the seed for buyers is hampered by organisational problems and competition for the same seed sources by different actors may also risk compromising on seed quality.


Malawi
Legend
Major roads
national border
Districts
Chitipa
Karonga
Rumphi
Mzuzu
Nkhata Bay
Mzimba
Kasungu
Nkhotakota
Ntchisi
Text
Dowa
Mchinji
Salima
LILONGWE
Lilongwe
Dedza
Mangochi
Ntcheu
Balaka
Machinga
Liwonde
Zomba
Mwanza
Blantyre
Chiradzulu
Mulanje
Phalombe
Chikwawa
Lushenza
Thyolo
Nsanje

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1. Background

1.1 General

Improved Seed Supply for Agroforestry in African Countries (ISSAAC) is a collaboration between World Agroforestry Centre (ICRAF), FLD formerly Danida Forest Seed Centre (DFSC), and national tree seed centre (NTSCs) in the three participating countries of Burkina Faso, Uganda and Malawi. The activities are co-ordinated from ICRAF, Nairobi. The programme is financed by Danida. The institutions involved all contribute to the implementation (ICRAF and FLD with staff time and funds, and NTSCs with staff time). The five year implementation phase of ISSAAC (2001 - 2005) may be divided into three (overlapping) stages: (i) Diagnosis; (ii) Implementation of pilots; and (iii) Support to development of tree seed systems. At this stage work is on collection and synthesis of information to get a national overview of tree seed traffic, stakeholders and species involved.

Later, national pilot mini-projects, based on the first diagnosis, will try out alternative seed systems together with stakeholders. ISSAAC's tasks will be to seek funds and support for their implementation.

The assumption is that seed 'production' starts in the field or on farm. It then works it's way vertically through a marketing system to the user. This 'vertical perspective' (Miles 1992) is an important element of any agri-business assessment and it identifies the seed stakeholders. Further, it illustrates their function in the marketing system.

In agriculture, competition exists across every level. Small-scale farmers compete with other small-scale farmers. Understanding this competition can shed light on the problems being faced by all in the seed sector and illustrate techniques that enterprises or individuals are using.

Stratification or levelling is a method to depict a better representation of stakeholders to interview with the least action. Stakeholder interest and commitment should be explored to assess potential from the human resource side. A critical condition for any successful pilot project is the commitment of local organisations that have a stake in this seed sector.

1.2 The Malawi case

Over the years Malawi has suffered from forest depletion and degradation through charcoal burning, clearings for agriculture, wood demand etc. However, tree planting programmes spurred a demand for seed in the fifties, which initially was based on imported seed. To alleviate the problem a national tree seed centre (NTSC) based at Forest Research Institute of Malawi (FRIM) was established in 1966 following the establishment of the Tree Breeding Section in 1965 which was given the responsibility of forest and plantation seed. However, in recent

years tree species for other primary uses have gained more importance (particularly agroforestry and fruit trees).

The early, major objective of NTSC was then to procure and handle seed for the establishment of industrial plantations of *Eucalyptus* and *Pinus* species. Currently the objective has expanded by seed supply of multipurpose tree species to the different stakeholders involved in tree planting. Moreover, the quality aspects are prioritised.

Since 1997, NTSC has collected approximately three tonnes of seed yearly while the annual demand at that time was over 10 tonnes (Mkandawire, 1997). The NTSC collects seed from a category of stands including source identified stands, general collection areas, seed orchards and seed stands. The NTSC distributes seed to various customers. Formerly the Forestry Department was the largest customer but this has been surpassed by the demand from NGOs. In fact, the NTSC is currently unable to meet the seed demand from NGOs and has cited a number of reasons, the major one being poor funding from government (Chilima and Namoto, 2002). This inability to supply seed was reported as early as 1997 when a tree seed user survey was conducted and a number of organisations identified inadequate supply of seed from FRIM as a major problem (Masamba and Shaba, 1997). A few new players have appeared on the scene. They collect, process and/or supply tree seed. The two major organisations are LRC and ICRAF. They mainly deal with agroforestry tree seed. FRIM supplies most of other tree species in demand in addition to the agroforestry ones.

As Agroforestry gained momentum in the nineties, a US-Aid project, MAFE (now changed to Land Resource Centre, LRC) started supplying agroforestry tree seed in the Central region (see Figure 1). Initially, supply was fully donor financed for development purposes. Later, it gradually changed to become semi-commercial and recently the aim is to reach economic sustainability through donor independence in 2004. As seen from LRC's purpose and modalities (Annex 1), they deal with many more products other than seed.

ICRAF, however, has throughout the nineties procured seed for promoted/ favoured agroforestry species (in particular Gliricidia) from FRIM/NTSC. Since 2002 and the start of the ICRAF project 'Accelerating Impact of Agroforestry Technologies on Smallholder Farmer Livelihoods in Southern Africa', a new situation was created whereby ICRAF became temporarily strong and influential in the tree seed market. Presently, it may be the biggest agroforestry seed procurer / supplier in Southern Malawi. However, this project ends June 2004, unless otherwise prolonged.

2. The survey

2.1 Survey frame

a. Who and where

The Malawian organisations targeted for the survey vary from individuals, farmer co-operatives, NGOs, GOs, to trade associations who deal with tree seed. The term Organisations should be understood in the broad sense as it may entail individuals as well as groups. A condition of formal inclusion in the survey is that that they are either stakeholders or they play an essential role in seed.
Thus, the survey covers organisational stakeholders in tree seed, particularly NGOs. However, it also includes governmental organisations (GOs), dealers (buyers and sellers), and to a minor extent: village groups, private persons, collectors, and seed 'sponsors'. Basically, we deal with maximum three strata:

Strata	Stakeholder type	Deemed Frame (number)
A.	NGO's (inc. 'projects')	120
B.	GO's & Dealers	50
C.	Others (village groups, etc.)	500

Strata A and B are by far the main focus of this Survey. The deemed, indicative frames estimates those actually dealing with tree seed in Malawi one way or another.

From deskwork prior to field survey, NGO-lists were examined. Starting point became two, slightly outdated manuals from 1997 listing hard-facts on all major NGOs working in the NRM-sector in Malawi (CURE 1997: 1997 Directory of Non-Governmental Organisations involved in Natural Resources Management Activities in Malawi, and Ministry of Local Government and Sports (1997): Participatory Development: Directory of Stakeholders). Some 60 organisations in tree seed/NRM were identified (see description of those visited in Annex 1). Organisations possibly dealing with NRM and assumingly tree seed, constitute a diverse and geographically widely scattered/branched group.

Among the NGOs and GOs we have tried to find the seed-wise most significant, well documented and possible to survey quickly. Thus, strata A and B could be more intensively sampled. Furthermore, most NGOs have representations in the larger towns. The C-group: CBOs, like e.g. VNRMCs who are not the main target in this survey despite the fact that there must be many in a country with 2000 villages. However, small stakeholders may be included if met by chance. They may add to qualitative findings and further may confirm or question main information found from the core-survey.

b. Subject

The subjected material investigated is limited to tree seed. Seedlings, as an outcome of seed, and vegetative propagation material from trees are only dealt with sporadically. By trees are understood all domesticated and exotic species prevailing in Malawi for the purpose of particularly agroforestry, but also for other purposes, e.g. forestry and horticulture. Some species such as fallow crop species, which are more like shrubs and normally not considered as trees, are included. This is due to the role and relevance in a context of agroforestry.

2.2 Survey purpose

The purpose is to list stakeholders involved and evaluate their relative importance in the tree seed markets if such exist. All major seed pathways should be found and analysed from angles of found demand and supply mechanisms. To alleviate bottlenecks in future pilot projects, focus has also been on identifying constraints in seed procurement (see Annex 3 and Interview form (Annex 5)).

Apart from identifying/quantifying by sampling and assessing those involved in tree seed (the stakeholders) there are other purposes. The impact by stakeholders' actions on the entire seed sector shall be judged. These actions can be formal, such as government policies and regulations or informal, such as internal self-regulating mechanisms. Firms, NGOs, and other buyers of seed are assumed somehow linked. It should be explored how they affect one another. Is the entire tree seed sector viable and are there any substantial markets? The survey intends to examine which markets are essential.

More specifically the purpose is to get an impression of categories and importance of tree seed sources, a country survey of stakeholders and methods in collection, seed handling, procurement, purchase, sale, outlets, distribution, customers, etc. This is to depict the seed movement from tree (seed source) to end user, nursery or the one who sow the seed. In this survey head focus is on the seed suppliers, while another parallel survey deals with the users (nurseries).

Conclusively the purposes can be shortlisted in terms of enlightening qualitatively, and preferably also quantitatively, the listed questions:

- Who are stakeholders in tree seed?
- How do they operate (get and give)?
- Where does seed come from and end?
- Limitations / bottlenecks if any?
- Is seed quality of concern and how?
- Seed pricing and its influence on market?
- Are tree seed commercially viable?

2.3 Strategy and method

The survey was limited to include a realistic number of stakeholders who actually could be met within the 12 days. It was realised that all stakeholders could not be met in any strata. NGOs, GOs and other possible seed dealers were prioritised. Before starting out it was also agreed upon to interview as many relevant organisations as possible at the expense of long in-depth interviews with each.

Selection within the frame was semi-random; i.e. first categorise A and B stakeholders briefly, then next selected 'randomly' within categories. Focus was put on the larger and strongest seed consuming/ producing categories. Eventually, focus was narrowed down to those still active and responding. Some five NGOs had ceased operation, could not be contacted, or had changed their focus away from seed. The selection procedure is thus somewhat biased, but the survey became operationally more feasible.

Covering more may reduce bias, gaps, and accuracy at the expense of some precision. The survey was not completely randomised nor completely systematic. It merely takes place as an iterative process in each of the three major regions to which the survey was fairly equally divided between.

At times, reconfirmation and redirection etc. occurred, but altogether the daily schedule worked well. Most common deviation was the finding of other organisations or persons during the stipulated daily programmes. Advantage was often taken to interview new people on the spot whenever such a chance occurred.

Semi-structured, open-ended interviews are applied. The form (see Annex 5) was developed in detail together with Seed Supply Specialist, DFSC and FRIM. It was not tested in the field before being applied. It was used as basis and an attempt was made to complete major issues in each case. The form had the dual purpose of enabling focus of the conversations and disallowing the interviewees to exclusively 'drift' into own favourite topics/opinions. The informal interview character was applied to access more elaborate and deliberate information. Forms were not given to stakeholders, partly for convenience, partly to avoid too much detailing and to avoid fear of organisational commitments.

2.4 Implementation of survey

The interview team included all presumed major stakeholders, i.e. those who beforehand were known to be very big in terms of seed volume. These, which are very few in Malawi, were together with others who were assumed significant listed from a planning meeting in Zomba before take-off. The primary list of potential stakeholders was extended by FRIM's NTSC huge customer register, by local contacts, and small meetings before departure.

Eventually, through asking colleagues and gaining new information from ongoing interviews, other possible stakeholders were included. Few, additional major stakeholders (strata A and B) were added and contacts were recorded ad hoc for possible inclusion. Priorities were made deliberately to include the largest stakeholders in

terms of tree seed, e.g. WVI, LRC, ICRAF, and FRIM. Further different types of organisations were visited to get broader coverage. As our knowledge increased, some additional ad hoc interviews were done as chance arose and information became available. That entailed e.g. local seed collectors, local group collectors, sellers and buyers. A few additional persons, with special knowledge on the topic, were identified, e.g. a newly graduated master student from Bunda college.

In the various regions, active NGOs and other stakeholders were easily and willingly pointed out. Malawi is quite small and 'everybody knows everybody' – in specialised fields like tree seed and planting. For every interview a further update on list of possible stakeholders, contact details, etc. was added to complete the frame and enable us to spot the most important ones. Some individuals were also considered and informal interviews ensued.

Criteria listed in ascending priority: 1. Within Survey frame; 2. Geographical coverage; 3. Differential (organisational coverage); 4. Ad hoc adjustments; 5. Independent / 'random' selection; and 6. Utilise incurred opportunities by meeting stakeholders within frame incidentally.

Time was divided equally between the 3 major regions of North, Central and South. Logistics was a limitation as to whom and where we could manage in the given time. A few geographically marginal NGOs were not visited. However, when passing through rural areas we took advantage of visiting some additional NGOs on the way (e.g. Dedza, Kasungu, and Bunda). For the North, communication is difficult and only two appointments were made before arrival. A few, remote NGOs and seed consumers in the furthest North and the most Southern regions were not visited due to time constraint.

The interview typically took place at the organisation's offices. A few took place in connection with meetings or at hotels. Less time than anticipated was spent on the NGOs because the group was extended by GOs, CBOs, and parastatal organisations who are also involved in tree seed issues in Malawi. The interviews were conducted upon appointments by both interviewers (the entire team) present. They were intense and lasted 1-2½ hours. The amount of information obtained was comprehensive. After a short briefing of ISSAAC and the purpose of the mission, the interview/talks began. The form was useful as a guiding tool that helped the group to get back on track when the interview was going too far or became derailed. Notes were made on notepads. Documents, lists and PR-material were collected. Seed was inspected when available.

Beside the interviews conducted, real in-depth discussions were seldom carried out. Information had to be done at that time. Project documents and species lists etc., were often sent later. This turned out to be difficult for various reasons. Eventually only a few were received.

Only once the team failed to meet targeted interviewee (in the North). Otherwise all short listed NGOs, were available to the team.

3. Results

3.1 Stakeholders

26 interviews were conducted countrywide. Most of the NGOs involved in natural resource management (NRM) in Malawi are based in the Southern (Blantyre) and Central regions (Lilongwe) of Malawi. As for the North, the outcome was successful although only a few confirmed contacts had been established. Nine interviews took place in three days through announcement of mission and consequent ad hoc planning. In a couple of cases we were invited to workshops where we met the persons we were looking for or were directed to the essential persons/organisations. The Northern part of Malawi has one large, national NGO called RUFA. Some NGOs only have project/programme offices in the North (e.g. WVI, Action Aid). A unique player in seed collection and supply is the international organisation, ICRAF, who are involved in seed collection either in their own capacity or in collaboration with FRIM.

Annex 1 provides a uniformed brief background, mission and beneficiaries etc. of all the organisations visited. It appears that environmental restoration, soil fertility improvement, and poverty alleviation are the main driving goals behind the organisations. People met and institutions visited are detailed in Annex 2.

In total 26 organisations and stakeholders were interviewed out of an entire frame of max. 80-100. The response was 100% among those selected and 'found' (only a single, 'loss' in the North incurred: the NGO representative was delayed returning from a workshop– though willing to discuss his organisation).

Sampling intensity:

Strata	Stakeholder type	Adjusted Frame	Survey Coverage
A	NGO's (inc. 'projects')	80	25%
B	GO's & Dealers	20	15%
C	Others (village groups, etc.)	2000	<1%

The 'Adjusted Frame' are revised 'Frame Idea' figures (See The Survey, Sampling Frame, previous pages) upon which the survey was accomplished. They are the surveyors best 'qualified guesses', adjusted from the indicative frame. Due to the immense sensitivity to definitions of stakeholders the precision of estimate is low.

Most of the organisations are mainly involved in acquisition of seed from the major two or three seed dealers and supply seed to farmers - either as individual farmers or in terms of village communities (Annex 3). Incidentally, a 3-4 'free lance seed collectors' were met. Those met were connected to the forest sector such as forest labourers or forest 'assistants' and made constructive efforts to find customers for seed from own collections.

The actual and final seed users are farmers, nursery owners or village communi-

ties/ groups. Some NGOs act as donors to other NGOs (e.g. MEET and COMPASS) by providing funds for procuring seed from the major seed suppliers. There are clearly two major organisations, FRIM and LRC, that appear to be the overall seed suppliers to various NGOs and GOs.

3.2 Species in use

The choice of species procured by NGOs are mainly demand driven by farmers or based on 'guided choice', i.e. chosen by farmers upon dialogue/advice from FD or extensionists. The species in high demand from FRIM and LRC as expressed by the NGOs were the typical agroforestry species, accounting for 67% of FRIM's, > 90% of LRC's, and 100% of ICRAF's seed sales in 2003. These species are *Faidherbia albida*, *Tephrosia vogelii*, *Senna spectabilis*, *Gliricidia sepium*, *Albizia lebbeck*, *Acacia polyacantha*, *Afzelia quanzensis* and *Khaya anthotheca* (Annex 5). Some species are strongly favoured and even branding the three main suppliers as shown in the indicative table of species institutional importance, see table 1:

Table 1. Species focus by the largest three tree seed suppliers (simplified from Annex 5) in Malawi.

Species ↓ Institution →	**LRC**	**FRIM**	**ICRAF**
Azadirachta indica	+	+	*0*
Cajanus cajan (agric.)	+	*0*	+ + +
Calliandra calothyrsus	*0*	+	+
Faidherbia albida	+ + +	+	*0*
Gliricidia sepium	+	+ +	+ + +
Grevillea robusta	*0*	*0*	*0*
Senna siamea	+ + +	+	*0*
Senna spectabilis	+ + +	+	*0*
Sesbania sesban	+	+	+ + +
Tephrosia vogelii	+ + +	+ +	+ + +

Legends: 0 no seed + occasional ++ substantial +++ major

The choice of species from the different suppliers also followed a category of groups associated with the uses as indicated below (Table 2):

Table 2. Species groups and regions covered by major Malawian tree seed suppliers

Species category ↓ Institution →	**LRC**	**FRIM**	**ICRAF**
Agroforestry species	+++	+	+++
Fruit trees		(+)	+
Indigenous species	+	++	(+)
Species diversity		+++	
Plantation species		++	
Region →	Central (North)	South, Central and North	South and vicinity countries

Legends: (+) occasional + minor ++ substantial +++ major

Table 2 shows that while LRC and ICRAF focus almost exclusively on agroforestry species, FRIM is covering a wider range, including traditional forestry species and indigenous species.

In general, very few species are in play. Strikingly, most or even all species being dealt with are identical for the clients. A typical example was that of the two NGOs (CARD and WVI) whose figures below clearly indicate that the same or very similar species are in priority (Table 3). Interestingly though, CARD activities are mostly in the South while WVI covers all three regions of Malawi. This probably is due to the criteria of species choice, and in particular, the participatory, demand driven selection.

Some NGOs also highlighted farmers' interest in indigenous fruit trees such as *Tamarindus indica*, *Flaucortia indica*, *Azanza garckeana* and *Sclerocarya birrea*. However, very small volumes of these species are supplied (see Annex 5: Country figures). ICRAF through its fruit domestication programme started supplying seedlings of *Uapaca kirkiana*. Seed suppliers such as LRC and ICRAF deal mainly with agroforestry species. ICRAF focus basically only on very few agroforestry species. Pigeon pea, *Cajanus cajan*, is by some categorised as being an agricultural crop.

FRIM provides the most diverse number of species including plantation tree species (eucalyptus and pines) and other indigenous species. The species procured locally or 'Informal' are more diverse than those branded and supplied by 'the suppliers'.

The controversy of planting *Eucalyptus* was highlighted by two NGOs during the course of interviews. The reasons stated being excessive water consumption (by CURE and Greenline) and a negative impact on crops (Greenline). However, most organisations use it in their planting programmes due to its high demand, popularity, predictability, good growth and straight stem form making it excellent for poles and timber. *Eucalyptus grandis* is in high demand and seems precious to most farmers. However, in general *Eucalyptus*' negative effect on crop was stated.

Largest Seed Suppliers and species focus

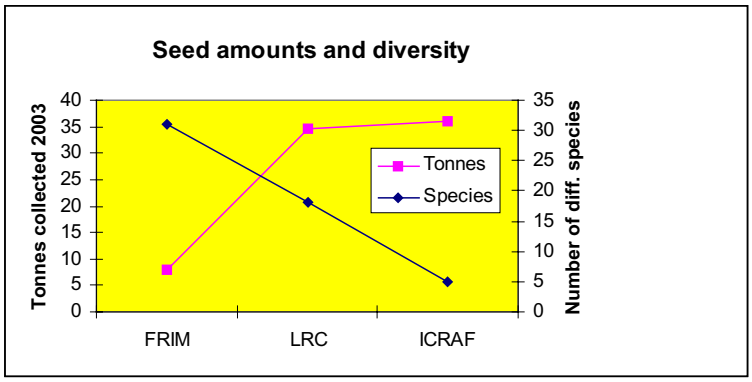


Figure 2. Seed amounts and diversity for seed procured in Malawi in 2003 for the main 3 suppliers. Derived from Annex 5: Species volume - country figures

Figure 2 shows in essence the results of the survey depicting actual seed procurement for the three major suppliers. As indicated previously, FRIM collects and/or supplies a wide variety of species while the amounts are modest as compared to LRC who specialise in fewer and almost exclusively agroforestry species. However, the amounts in kilos are 5 times higher while the species constitute only half of what FRIM is managing. ICRAF plays an even bigger role than LRC at present in terms of agroforestry seed, but deals with only some 6 species. Further, as seen in Annex 5, pigeon pea constitutes half of the procured tonnage.

As seen in Annex 8, LRC plays a central role procuring and distributing seed to farmers and NGOs. Seed is purchased and taken to LRCs' compound where it is further processed (cleaning, germination, fumigation and grading). The NGOs buy seed from LRC at a subsidized member-price of which 70 % of the price is paid by LRC (Kamoto 2003). This modality is ceasing while LRC is becoming increasingly commercial (survey findings).

3.3 Seed procurement and supply

A major purpose of the survey was simply to identify seed origin. All interviewees were thus asked about their supply sources whether institutional or physical. Annex 1 and 2 show the identified stakeholders actively involved in seed procurement and seed supply in Malawi.

Table 3. Sourcing of Tree Seed. Summarised results on seed suppliers and sources of seed to the surveyed organisations and persons. Excerpt from Annex 3.

From: Collector/Supplier	**To: Customer/Receiver**
Formal	
FRIM (MNTSC)	CURE, MEET, CARD, COMPASS, Greenline, World Vision, Lilongwe Forestry Project, Action Aid, (Tedi Kamoto), Total Land Care, ELDP/LWF, ARET, Mzuzu RFO (North) through MASAF, "Seed & Nursery" Mzuzu, Border Zone Project (GTZ/EU), World Vision – Mzuzu, Concern Universal, WESM Total 18
LRC	MEET, CARD, COMPASS, World Vision, Lilongwe Forestry Project, Action Aid, (Tedi Kamoto), Total Land Care, ARET, Public Works Prgm., RUFA, Border Zone Project (GTZ/EU), Land Resources Conserv. (MZADD), World Vision – Mzuzu, Concern Universal, Total 15
ICRAF	CARD, GreenLine Total 2
Informal	
Own projects/ own collections/ subcontractors	CURE, MEET, COMPASS, Greenline, LRC, FRIM, ARET, "Seed & Nursery" Mzuzu, Border Zone Project (GTZ/EU), Sust. Forest Mgmt. Pgm (RFO-N), Fo. Research Asst. Major Msiska, Concern Universal, WESM Total 13
CBO/VNRMCs (±DFO)	World Vision, Lilongwe Forestry Project, (Tedi Kamoto), LRC, Total Land Care, ELDP/LWF, Public Works Prgm., RUFA, World Vision – Mzuzu, NTSC-FRIM, WESM Total 11

Table 3 shows the national importance among the suppliers. The main picture is that most stakeholders use more than one supplier and various sources. Only two suppliers appear consistently. Most stakeholders deal with local, 'Informal' procurement as well. Informal suppliers, people having their own collections and village collections, are numerous. They are identical in the sense that they are lo-

cal purchases or direct cost related. Such community based local collections are, on the whole, the most frequently reported way of getting seed. Local collections and informal supply is on the increase.

Most organisations use this method, now including FRIM and, in particular LRC. These two suppliers play by far the largest part as national suppliers, while ICRAF has a much less important national role – at least among the organisations interviewed. The reason why ICRAF is considered as a major player is 1) from supplied seed figures; 2) increasing focus on vegetative propagation; and 3) export to other regions.

Most customers, particularly the NGOs, procure seed from either FRIM or LRC. Main factors governing the choice of seed supplier were proximity, long-term commitments (for those who have been termed as partners) and, to a lesser extent, pricing as most of the NGOs did not seem to highlight pricing as a major concern for seed access and procurement.

NGOs also indicate that they obtain extra seed from local sources in the areas where they are operating despite the more dubious quality. This mostly involves local collection by communities who supply the seed at an agreed price, as the NGOs will have facilitated the collection to an extent by providing training and material support. Out of 22 NGOs and GOs interviewed, 17 (>70%) obtained some of their seed from local collection by communities. Typical examples were ELDP and Lilongwe Forestry Project who obtained 25% and 50%, respectively of their seed requirements from local communities (Annex 3). The local collections were predominantly for agroforestry species such as *Tephrosia volgelii*, *Senna siamea*, *Senna spectabilis* and *Acacia polyacantha*.

The role of middlemen and/or contractors at field level was not fully captured or disclosed. However, indications from the main seed suppliers reveal that they also use local (assigned?) seed collectors to obtain seed of some species - especially for the species mostly found on public land such as *Faidherbia albida*, *Afzelia quanzensis* and the *Senna* species. Except for the certified seed sources (e.g. *Gliricidia*, *Eucalyptus*, and *Pinus*) managed by FRIM, all the other seed sources have just been identified as such. That excludes formal agreements with the tree/land owners on access to the tree seed. During the interviews, competition among the main seed suppliers was highlighted as a potential source for further constraint to a smooth and effective seed procurement programme.

3.4 Procurement and supply constraints

As mentioned above, competition on collecting seed from the same, identical seed sources is one of the constraints that the main seed suppliers identified (Annex 2 and table 1 (see identical species)).

At times FRIM, LRC and ICRAF tend to use not only the same seed sources but also often identical seed collectors at each other's expense implying indirect price competition. In some cases this involve NGOs who obtain seed from the same

areas. This further seems to be the causal factor for untimely availability of seed coupled with lack of sufficient or new seed sources.

During the interviews there was an indication by most NGOs that they encourage local communities to arrange seed collection. The reasons stated for promoting this modality are typically 1) cost lowering and cheaper seed, 2) stimulation of local engagement through process learning, and 3) economical, local sustainability through incentive. The mechanisms for seed procurement and subsequent seed distribution and/or exchange are often not clear or consistent. In some cases the seed is bought by a NGO at a nominal fee from local seed collectors (organised as well as unorganised) and thereafter supplied to other farmers at no cost, but in smaller portions.

In other cases NGOs have provided initial input such as training in seed collection and are able to get the seed for free. It is then supplied to the other farmers for free. Except for one visit (Mkwinda farmers group), which works with Lilongwe Forestry Project, most NGOs were not forthcoming with detailed information on how local seed collection was organised.

Only a few constraints experienced in seed procurement were found. These turned out to be similar to those faced in seed distribution including the centralisation of FRIM and LRC and viability problems. In some cases the casual seed collectors / sellers cited the poor market structure as the main hindrance to a smooth tree seed flow - especially for fruit trees seed/seedlings. On the other hand, some NGOs felt that the mode of operation of some government projects/programmes hindered the distribution of tree seed to the village communities. For example MASAF pays communities to plant trees. Thus logically, communities tend to prefer MASAF to those projects by other NGOs who do not pay. Planting agronomic crops and other farming activities during the growing season limits tree seed collection, distribution, and planting, as farmers must give highest priority to agriculture and food.

3.5 Quality and documentation

During the Survey the perception of the term quality focused almost exclusively on the physiological quality of the seed; i.e. vigour, viability, germination, and – to a lesser extent: purity, seed weight, moisture content. The genetic quality is dealt with at the end of this section.

Only a few NGOs indicate that physiological quality of seed is of decisive importance. That means indirectly, that seed quality is not recognised as a big problem, though examples of bad experiences could be given.

Table 4 is an attempt to conclude and simplify the varied and fragmented information on seed quality into a simple overview. This can hardly be done without bias due to wide interpretation and evaluation possibilities. However, tendencies are clear that the overall quality of procured or delivered seed is good (67% of all) or satisfactory (20%). Where FRIM is most frequently evaluated and thus the

conclusion here is altogether sharp that the seed from FRIM is good (see exceptional species, below). Another frequently evaluated group is 'other'. However, due to the mixed nature of this group the validation and use of this result is not generally applicable – except for the variation! It is thus worth noticing, that local (other) collections are quite often rated as being of good quality – although at times they may definitely be of the worst quality. At interviews it appeared twice that the poor seed quality of local collections was deemed, and not based on fact. These 'quality discussions' with NGOs at times drifted into the potential of improved quality from local collections through training and extension.

The quality issue is poorly covered for ICRAF because ICRAF-Malawi supplies seed to only a few NGOs and furthermore deals only with a few, orthodox species. The vegetatively propagated indigenous fruit trees, which have high ICRAF priority, were not examined in this Survey.

Quality ➢ / **Provider ➘**	☺	😐	☹	**Total**	**%**
FRIM	XXXxXXXXXxXXx	xXX	X	17	35
LRC	XxXxXXxxX	xXX	XXX	15	31
ICRAF	xX	x		3	6
Others	xXXXXXxxX	xxX	xX	14	29
Total	33	10	6	49	
%	67	20	12		100

x = less significant statement or statement with reservations. X = Substantial, fairly clear, strong statement

Table 4. Summarised results of the survey part on seed quality. Briefly interpreted from the more elaborate/complex information given (see further in Annex 7).

Less than five NGOs report that there are no problems on quality of seed obtained from the two suppliers, FRIM and LRC. By quality of seed the stakeholders interviewed exclusively focused on the physiological quality, particularly germination and age/expiry. Problems of poor seed viability were mainly reported for species such as *Khaya* and *Toona* from both these suppliers, see Annex 7. The recalcitrant seed nature of these particular species result in instable and perishable seed of short longevity. However, poor seed quality (read: poor germination) for other species such as *Senna spectabilis*, *Faidherbia albida*, and *Gliricidia sepium* were reported obtained from LRC. This is opposed by LRC, who allegedly discard any seed with germination percentages lower than 80% upon seed testing. Seed of Faidherbia albida issued by FRIM, which in at least two cases were of poor quality (virtually dead!) despite being subjected to the international ISTA seed-testing standards. Similar sentiments were expressed for seed that was supplied by local collectors especially for seed sourced from collectors who were not trained by FRIM. One NGO (ELDP) has gone to the extent of encouraging village communities into establishing seed banks but it's still questionable if these involve genetically superior material.

Some NGOs claimed that seed quality was compromised due to the poor packaging and mode of transport, e.g. it was mentioned by customer George Mgwira (see Annex 2) that 'busses were not always suitable means of transport with spilt oil, delays and extreme exposure'!

Tag in seed bag incidentally found upon delivery at NGO at time of meeting for interview

Melia azedarach (Indya)
Remove pulp and soak in cold water 24 hours.
Sow 3 seeds/tube at 3 cm depth.
Chotsani khungu ndipo munyike mmadzi ozizira maola 24 ndipo bzalani njere zitatu muchubu zamitsani masentimitala atatu
Ex. Bwanje, 2003

Seed documentation of the seed sent to some NGOs was not adequate - especially for seed from LRC where figures for seed viability were not provided unless required by the receiver and this would be at an extra cost. As for FRIM, the tags were physically seen in the field while visiting CARD and contained information on accession (number), species (scientific name), provenance (locality), weight (kg) and receiver (customer) but did not have information on viability.

While FRIM focus on factual seed documentation, the information provided by LRC is quite different - namely on seed pre-treatment before sowing. Although the information is useful in both cases, it is very brief with no information on quality and germination. However, in both cases, this information seems available at the headquarters. Some receivers were not getting documentation with seed from LRC; however, LRC claim, that it depends on extra payment only.

The genetic quality was found to be of very little concern and interest throughout the Survey. Results are scarce and thus not listed. The immediate perception of quality was exclusively concerning the physiological part. Only when directly asked on the genetic quality, very few, particularly World Vision and MEET, mentioned this issue as a concern and a reason to buy only from the established dealers, 'the big 3', instead of venturing into community collections where also genetic quality could be a hazard. In three cases the discussions went further on seed source and planting site matching. These 3 observations were identical: seed is not sensitive by being transferred from one area to be used in another area. Conclusively (based on 3 observations only!), any seed source applies.

3.6 Seed flow

This section builds on data in the annexes, particularly annex 3, notes, and original Survey findings by Pedersen and Chirwa (2003). A visualisation is shown in Chart 1, opposite.

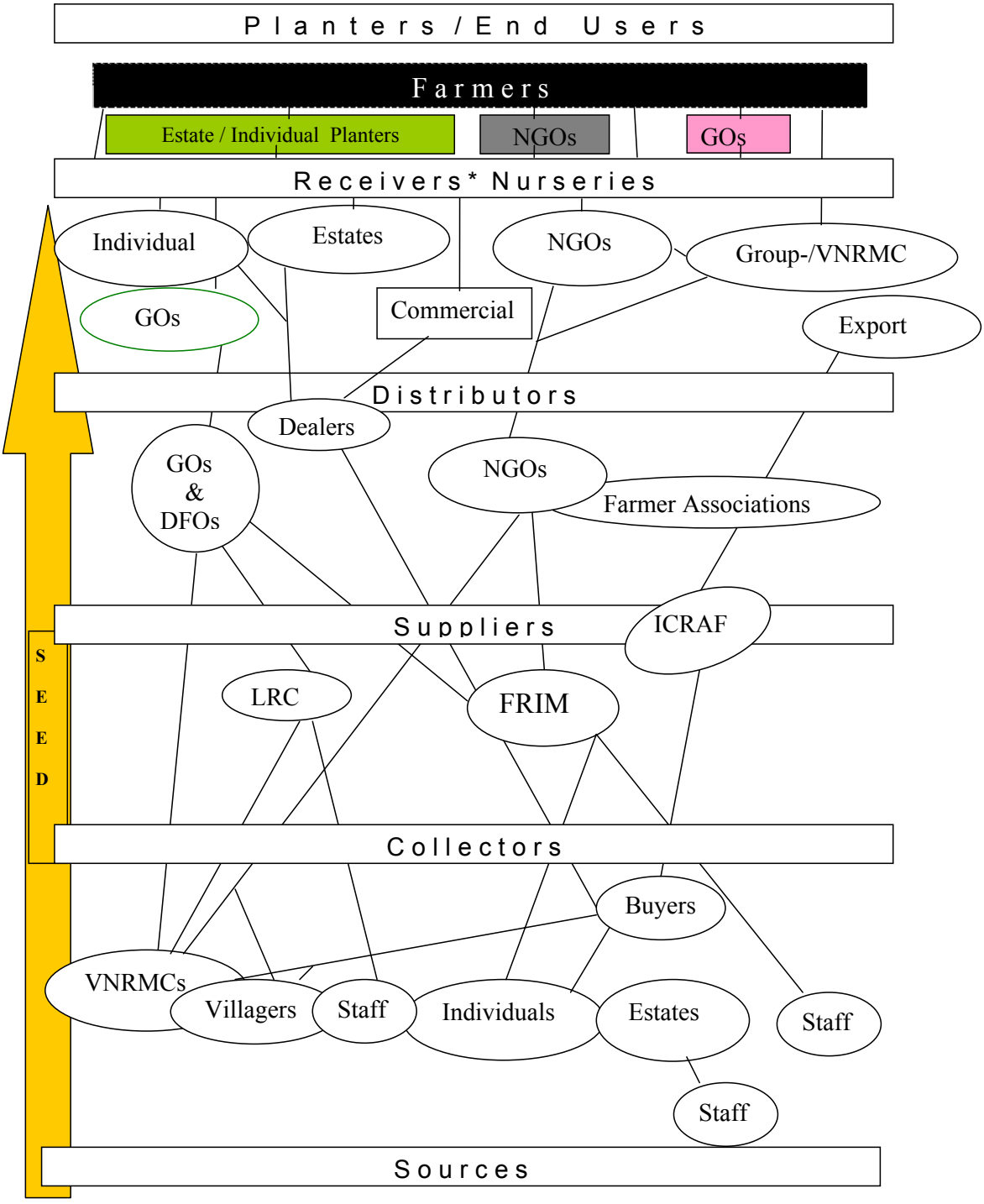


Chart 1. Main stream of tree seed procurement from being collected until end-use. Survey findings, Malawi 2003.

Seed movements among persons and stakeholders from tree to seedbed are in this context 'seed flows'.

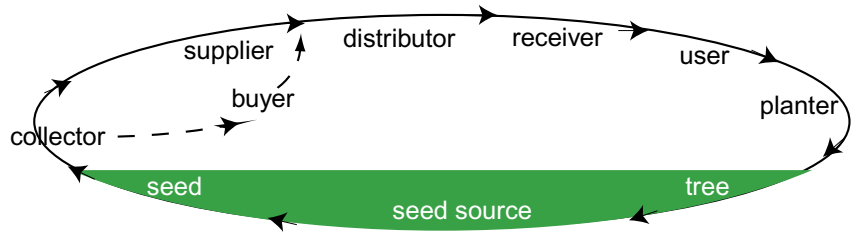
The seed collectors are primary stakeholders. The majority of these by far consist of farmers/villagers, groups such as VNRMCs, or individuals. They collect seed for mainly own use or community use. Further, they occasionally collect on request or contract on more or less agreed rates by external buyers. These buyers come from the country's three major suppliers (FRIM, LRC, or ICRAF) or at times even directly from the distributing organisations: the GOs and NGOs.

A second group of collectors are professional, i.e. being seed-collectors from organisations, particularly the NTSC staff at FRIM, collect special species and valuable seed sources themselves. Private seed dealers are absent in Malawi; the Survey could hardly point out even one.

By seed suppliers are meant those organisations who procure and deliver seed in bulk quantities. Not surprising, the same three 'majors' are dominating: LRC, FRIM and partly ICRAF. They deliver typically to seed distributors. Seed distributors are those who order, pay and split/fragment the bulk for end seed receivers.

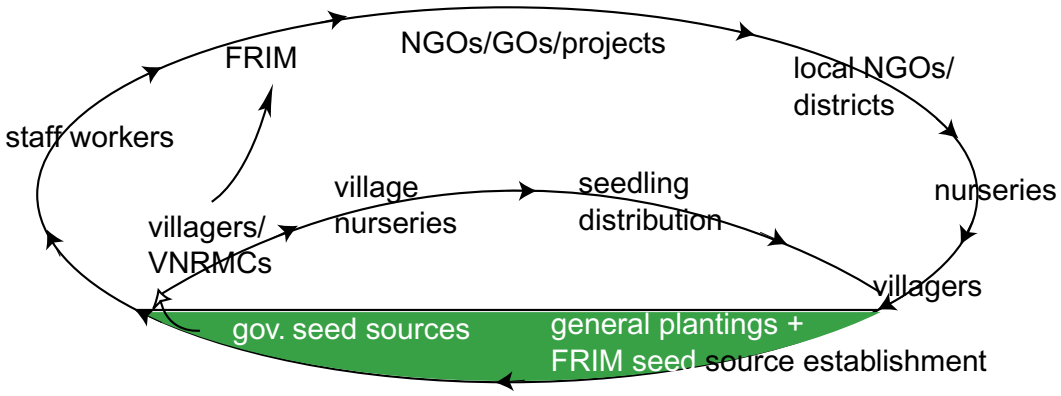
Seed receivers are basically tree seedling producing nurseries at all levels. NGOs distribute seed to own and group-nurseries. The ultimate seed users are basically the same group as the collectors, namely the farmer group and (a few) other planters.

In general terms, the tree seed circle/circuit from seed to man to tree can be outlined as:



Sketch 1. The major seed stakeholders (above) connected to each other and the physical frame (below)

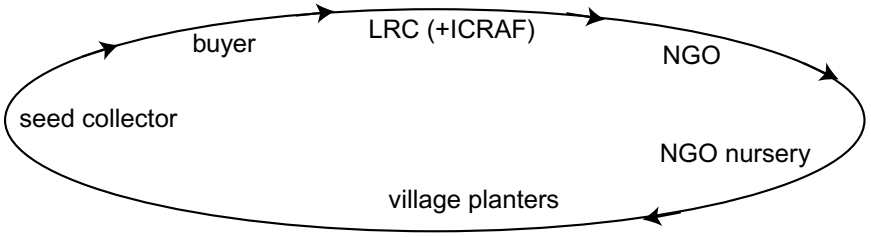
Sketch 1 depicts the perfect (full), general circle of seed picked by man from a tree population to new tree in another population which as times goes by will be subjected for collection from the next generation. If this model is extended to reality and provided with name given stakeholders, the classic Malawian picture can be described as in Sketch 2. The two levels of stakeholders illustrate central and decentral seed supply, respectively.



Sketch 2. The typical FRIM seed flow system with FRIM having a central national role in seed procurement.

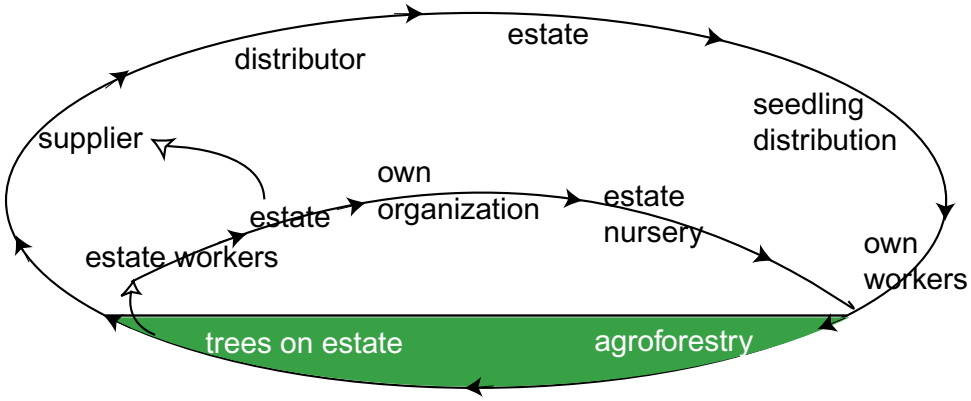
Sketch 2 shows that seed is also collected at a second level – not only by FRIM staff but also by CBOs (=villagers/VNRMCs) who either sell to FRIM or other organisations or even use the seed within the village. Some seed ends up as seedlings to establish new seed sources. The FRIM mode of operation differs from that of LRC's which does not establish its own seed sources.

Sketch 3 below displays the typical pattern of the other two major seed suppliers, the non-governmental ones. The villagers are here less visible actors. However, their role is of decisive importance for the success of buyers.



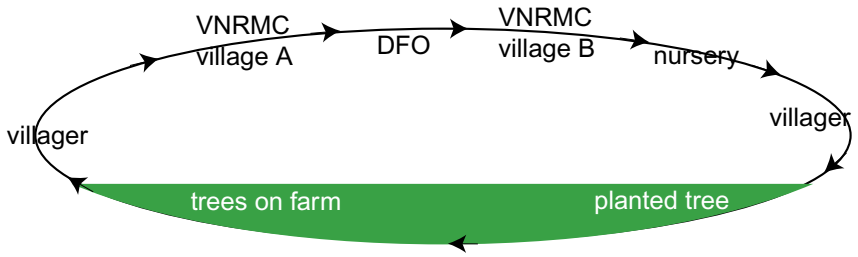
Sketch 3. Schematic, typical mode of operation in tree seed by LRC, a parastatal NGO seed supplier in Malawi.

LRC and ICRAF are considered as Suppliers. Their staff act at times as collection supervisors, or at other times as buyers bringing home the bulk seed, cf. Sketch 1. Distributors are the next link in the commodity chain; namely the NGO's.



Sketch 4. The estate scenario. Workers collect and estates use own seed and seed from organisations

Estates like e.g. tobacco estates, Sketch 4, typically use own local staff for seed collections. In a few cases they deliver seed to sister organisations like ARET who redistribute by sale to other receivers, mainly estates.



Sketch 5. Community based seed procurement and use facilitated and spurred by DFO's who may acquire seed for government plantings and projects elsewhere.

The information behind Sketch 5 is based on village visits to places chosen upon information obtained by DFO, Lilongwe: The villagers, trained or non-trained, but 'assigned', collect seed for the DFO upon agreements. The DFO collects and pay for the seed at a later stage. The DFO then redistribute the seed for use in other villages and planting areas. Activities are expanded through possible presence of any seed using (governmental) projects within the government system, like in this particular case, The Lilongwe Forest Project.

The mainstream is that seed passes through the headquarters of the main suppliers, FRIM, LRC and ICRAF. In rare cases the seed goes directly to users bypassing these main institutions. The majority of seed then goes to NGOs and other organisations where it is immediately delivered to the expecting end users. The end users are similar to those who collect seed. However, the end-supplies are usually earmarked, given out in small quantities as compared to correspondent village deliveries. Further, the supply from deliveries constitute more different species and more provenances as compared to a single local procurement, which tends to be of limited diversity, case by case.

Community, local and government nurseries are by far the main consumers. A few strictly commercial nurseries have a minor role. FRIM and LRC do not give out seed free unless to their own projects. Both are operating from external or government funding.

In an attempt to get an overall picture, the amalgamation of Sketch 1-5 is illustrated in Chart 1, which include all stakeholders. There are seen numerous players involved in the collection, handling, and supply of seed. Again, the three main players in seed procurement are FRIM, LRC and ICRAF. Despite the fact that most seed is collected locally, it is not exclusively collected here. The seed procurers organise collections. Further, they often guide, train, direct, examine, purchase, and transport the seed to stores and/or clients and other users.

Players range from well-established government owned organisations (FRIM, DFOs etc.), semi-commercial operators (LRC) to NGOs, estates, and indeed: individuals or communities (Chart 1 and Annex 3). Certified seed and genetically improved seed is supposedly only collected by FRIM since they own and

manage national seed orchards and other seed stands. However, there were cases reported to the Survey that ICRAF and LRC also collect from these areas, especially those of Gliricidia. The main source for all seed collectors is the 'general collection area' (GCA) that is predominantly on public land. As there obviously is no clear ownership or special agreements for collection in these areas, this provides the main seed source area in the country, especially for agroforestry tree species. Though not delineated and well identified in detail, the level of these seed sources can be characterised as being in the 'Seed-Zone' category, hence it is mostly known from which community or district it arises from. As concerns farmers' fields, the farmers collect themselves or with assistance from neighbours. The seed flow for main seed collectors typically starts with manual collection of seed from GCAs by staff or locals paid on contractual basis (piece rates). NGOs, government departments, estates, and individual farmers thus procure seed. It can either be processed locally or at central points (i.e. FRIM or LRC headquarters). Seed bought by the big organisations is delivered to their field managers/officers such as Area Development Programme (ADP) managers, District Forestry Officers (DFO) or Land Resources & Conservation Officers, or alike. These further distribute the seed to farmers, either as individuals or as village community groups.

3.7 Other findings

3.7.1 Pricing

Seed pricing for processed seed is very much determined by the major seed collectors and suppliers, namely FRIM and LRC, but also DFOs and ICRAF. FRIM sets the selling price on a cost recovery basis, while LRC subsidise seed purchased by their 'partner'-NGOs. LRC-clients in general are intended to pay at a different, higher rate but these prices are seldom applied. Thus, on average, the seed prices at LRC are for partners less than 50% that of FRIM (unweighted species avg., Table 5).

Anomalies in pricing are for example the price of *Tephrosia vogelii*, which is as low as 70 MKW at LRC compared to 400 MKW at FRIM (Table 4). At field level when seed is purchased from local communities each organisation in reality sets its own buying prices. These prices are dubious, varying and subjected to secrecy for reasons of competition and likely in some cases: profit to local middlemen who facilitates the deals. As concerns FRIM cumbersome government procedures complicate and delay purchase. The implication is that sellers may become impatient or tempted by other NGOs purchasing offers. Buyers tend to out-compete the government (inc. DFOs) by buying the seed on the spot after fast negotiations using cash on delivery basis (or carry away!). This makes it hard for the government institutions, which at times become losers due to rigid payment system. Most NGOs interviewed did not indicate that seed prices were prohibitive but merely pointed out unavailability of species and limited choice of species as shortcomings. However, a trend clearly seen is that NGOs are increasingly procuring and buying seed themselves through local communities. This diminishes dependency on FRIM and LRC and strengthens people's motivation locally. Presumably, costs may play a larger part than was expressed during the interviews.

Table 5. Seed Prices. Price list from largest Malawian tree seed suppliers of major Malawian tree species. (Survey, Nov 2003).

Institution ➢	Seed price MKW/kg FRIM	LRC	FRIM/LRC %
SPECIES			
Acacia nilotica	450		
Acacia polyacantha	450	150	33
Afzelia quanzensis	400	200	50
Albizia lebbeck	600	200	33
Faidherbia albida	450	150	33
Gliricidia sepium	750	400	53
Khaya anthotheca	450	380	84
Bauhinia thonningii	500	200	40
Leucaena leucocephala	450		
Melia azaderach	450	150	33
Moringa oleifera	500	200	40
Senna siamea	600	500	83
Senna spectabilis	600	250	42
Sesbania sesban	450	400	89
Tephrosia vogelii	400	70	18
Toona ciliata	750	1000	133
Terminalia sericea	450	150	33
Uapaca kirkiana	450		
Zizyphus mauritiana	450	150	33
Average			43.8

Source: FRIM & LRC

3.7.2 Choice of species

The survey established that all the main seed suppliers have concentrated on very few species that are predominantly agroforestry species including *Tephrosia vogelii*, *Gliricidia sepium*, *Faidherbia albida* and *Afzelia quanzensis*. The NTSC at FRIM has the most diverse species portfolio followed by LRC, while ICRAF deals with only 6 species in their seed programme. It is probable that species focus is a result of donor and government driven implementation programmes that have concentrated on a few technologies at the expense of traditional technologies. During the interviews, it was established that some farmers in some cases preferred fruit trees, including indigenous fruit trees, but were not supplied these. There may be a need to sensitise communities about the propagation methods of such alternative tree species enhancing options, awareness and availability of those species.

4. Discussion

4.1 Species

Choice of species is community demand driven or at least based on informed choice. It is obvious, according to the seed sales at FRIM and LRC, that many NGOs have narrowed their species choice to only a few tree species. The predominant ones are agroforestry species such as *Tephrosia*, *Faidherbia*, *Gliricidia* and a few others. This has resulted in cases where demand from NGOs for such species has out-stripped the supply and alternatives are not sought. With LRC mostly concentrating on agroforestry species, FRIM seems to have the advantage in species diversity. It may be necessary for the two institutions to revise or clarify their procurement and supply strategies. This will become increasingly important if FRIM is moving into commercial seed business and running the risk of leaving the diversity of species.

It became apparent that other, obviously well performing species are deliberately not collected or in demand. The reason for not trying out more species is not well revealed by this survey. Seed buyers, suppliers and collectors tend to concentrate on their most 'favoured' species and 'usually-promoted' agroforestry species (Tables 1 and 2). Many species do not get any attention though being utilised possessing an obvious potential. The seed commercial demand seems decisive. The viability of some species such as *Toona ciliata*, *Khaya anthotheca* has also affected their availability both at the procurement and seed storage level (see Quality, below). At the NGO level the centralisation of the activities of the main seed suppliers (FRIM-Zomba & LRC-Lilongwe) is cited as an obstacle to seed procurement suggesting the need for decentralisation. This is particularly valid in the North, where seed access is cumbersome, tedious, and supplies far from cover demand.

4.2 Suppliers

Seed suppliers in Malawi are not many but possess quantities of seed that basically can cover the entire country. However, certain species are in short supply. For an individual, the tree seed business may be risky and less prosperous to invest in unless new and more incentives are introduced into tree planting. Additional suppliers could be those minor ones who specialise in particular species. A typical example would be a seed dealer who is able to fill the gap left by the major players on the demand for *Gliricidia* seed. They would be competitive but marketing could be a hurdle in a country where communication and transport is difficult despite limited distances altogether. However, the survey disclosed a few individual sellers, who may have a single or a few species 'on hand' if the market or a buyer is present. The 'individuals' listed under Results (stakeholders) reveal an additional seed procurement capacity and an additional potential of seed collection at local level.

4.3 Quality

Experiences from Zambia (Anon. 2000?) have shown that the seed actually being supplied is of increasingly inferior quality in order just to meet the demand where supplies are low. High demand may lead to compromises on quality requirements. This is the case in Malawi when NGOs become involved in seed collection. Several NGOs expressed concern on the quality of local seed and two even refrained from buying locally and prefer the established seed suppliers (FRIM and LRC). Thus, there is a need to provide technical advice especially by training farmers and implementing agency staff in seed source identification, management, collection methods, sanitary and seed handling and technology.

4.4 Seed source quality and documentation

Most of the seed is collected in the general collection areas (GCAs). The most popular sources are those which are

- in good demand
- easy to access
- easy to collect
- big and productive
- reliable seeding
- easy to organise local assistance

These by far most popular and reliable sources cause conflicts among the seed actors (buyers and collectors). Thus, the first purchaser or collector to appear in an area will normally collect the prime seed (i.e. better quality) while those appearing later may be left with remnants or overmature seed. Seed suppliers need to maintain and control their seed sources by entering into formal agreements with the farmers or local communities. On the other hand, if local communities are trained and sensitised to form their own 'local collectors groups' they can sell the seed to main seed suppliers at the best possible price. This modality can be dangerous in an imperfect market where the stakeholders are few and the suppliers or alternative seed sources are plenty. A typical example in this study was seen when a farmers group from Mkwinda trained by Lilongwe DFO through FRIM was asking for the same price as that from LRC. They were also afraid that the purchaser at times may not appear for a long time and the seed may have been collected in vain or will expire or otherwise can't be kept (insects, deterioration, rodents, food consumption etc.). Recommendations for overhauling the present improved seed sources ('seed source management') to increase their production and to establish more improved, documented sources of those in heavy demand is obvious.

4.5 Economy

The revenue from sales in general flows back to the area where it is collected. A significant amount is consumed by facilitators, those who often are denoted 'seed collectors'. However, relative small payments go back to those actually

collecting at local level due to subcontracts, piece rates, hiring of children etc? Much seed is given out free; in real terms there are no cash returns from e.g. VNRMCs, villagers, and nurseries. They get the majority of seed from the NGOs in kind. Tree seed suppliers in Malawi are NGOs, FRIM, DFOs, GOs, ICRAF and LRC. The NGOs, GOs, and DFOs are supplying as well as buying and procuring seed by themselves. ICRAF procure and distribute free – not particularly to other NGOs but mainly to the farmers in their domain. Basically they relocate the seed. Most seed money is likely consumed by the organisations themselves, but as concerns the purchases: the middlemen, village heads, piece-rate collectors, are being paid. These may often hire cheaper collectors, e.g. farmers, children, jobless etc. FRIM and LRC are both indirectly driven by seed sales: The sale justifies their existence and volume in seed procurement. Though FRIM does not have a revolving funding, the high demand for seed that can be shown through demand and sales return provides a strong argument for continued funding from government.

4.6 Decentralisation and sustainability

There is a potential for individual farmers to go into more seed sales, especially for such species as *Tephrosia* where the seed source is actually nearby or even located on the farmer's field. However, seed quality, quantity, continuity, and stability would be maintained with the provision of technical backstopping for training in seed collection, handling and processing.

However, during the interviews there was an indication by most NGOs that they encourage local communities to do seed collection. The reasons stated for promoting this modality are typically 1) cost lowering and cheaper seed, 2) stimulation of local engagement through process learning, and 3) economical, local sustainability through incentive. The mechanisms for seed procurement and following seed distribution and/or exchange are often not clear or consistent. In some cases the seed is bought by the NGO's at a nominal fee from local seed collectors (organised as well as unorganised) and thereafter supplied to other farmers at no cost, but in smaller portions.

In other cases NGOs have provided initial input such as training in seed collection and are able to get the seed for free. It is then supplied to the other farmers for free. Except for one visit (Mkwinda farmers group), which works with Lilongwe Forestry Project, most NGOs were not forthcoming with detailed information on how local seed collection was organised. A unique player in seed collection and supply is the international organisation, ICRAF, who are involved in seed collection either in their own capacity or in collaboration with FRIM. During the interviews it was noted that some individuals had made deliberate efforts to collect seed by own initiative; especially those who are connected with the forest sector such as forest labourers and forest 'assistants'. This reveals underused capacity and an additional potential of seed collection at village community level.

A number of people met suggested alternative ways of meeting seed demand especially from the NGOs. This is in recognition of the fact that most government and semi-commercial organisations heavily depend on financial subsidies. Milimo (1995) suggested a strategy for Kenya that comprised a parallel approach that first strengthens the existing centralised seed centres and secondly develops mechanism for creating a more decentralised system that recognises and incorporates indigenous knowledge. For Tanzania it was discovered by Aalbæk (2001) that provision of seed from extension services triggers farmers' engagement to produce seedlings. He suggested decentralisation of seed procurement even at nursery level and to encourage local seed collections. This would compromise seed quality. However, his argument is that the main seed suppliers have dismally failed to meet the national seed demand with superior seed anyway. As concerns Malawi at present the main seed suppliers are centralised. The buyers (mostly NGOs) have indicated that proximity to the seed centres would ease their seed procurement and supply programmes. The scope for producing large quantities of superior seed of new, improved quality is thus there. However, FRIM seem not to keep up past and present tree improvement programmes. These could otherwise give an almost monopolising advantage commercially. An even better justification for this is FRIM keeping up country responsibilities towards increased wood production. More wood and better wood to be produced from genetically better material is a way forward improving local as well as national economy in agricultural as well as the forestry sectors.

4.7 Sufficiency of genetic quality

During interviews, there were several indications that seed and plant material transfers within Malawi across different areas or zones are possible. Seedlings thrive and suit the new sites. As long as most agroforestry species are not improved, except *Gliricidia* seed orchards, reference to certain sources is not a must and local sources are applicable as any usual alternative. Surprisingly there are no problems reported in transfering seed from point A to point B as the interviewees in general stated that Malawian species possess genetic plasticity, i.e. general adaptability to new and other sites. Absence of problems in source and site matching could also be due to insignificant delivery of seed to extreme areas, or due to delivery of specific species to specific areas. The absence of comparative studies to verify a general seed adaptability and fair seed quality make it a fragile conclusion. Technicians physically handling the seed were rarely asked about this directly.

To cover the immediate demand there is a justification by increasing or even completely decentralising seed collection, procurement and supply. This would, however, require support by training to keep up quality and momentum. Tree improvement would be a next step to enable supply of superior fast growing material of high quality and value. Additional flexibility could be for the NGOs to facilitate move or sale of seed from where it is in excess to those areas where it is lacking. They may be exchanged with other seed or goods, e.g. in a barter system. The survey indicates, however, that there is no premium on providing superior seed in terms of growth. Lack of tree breeding and improvement is still an issue and drawback in benefits from tree plantings. Field demonstration of deploying

new, stronger, higher yielding varieties of high quality would definitely change that attitude. However, such demonstration and their results' dissemination seem not to take place and, quite symptomatic, the Tree Improvement Sections and Seed Source Sections at FRIM are out of resources and inactive. A way out to visualise the shortcomings would be by introducing some quality criteria to the seed market.

4.8 The interview

On-the-spot interviewing has the advantage that all information gathered is current and probably updated. Any hypothesis or question that arose could easily be tried out while on tour. In this case the discussions came at a point where the seed situation in Malawi was openly and eagerly discussed. At such times the interviewees even took liberty to suggest improved methods in seed supply and-seed procurement.

Another advantage is that the method was highly efficient due to the number of interviews achieved across the country. The disadvantage was that there was virtually no time/energy to write up and analyse each interview before the next one was due. Being two professionals at each interview may be less economical as compared to solitary working interviewers. In this case the two interviewers complemented each other.

If the form had been more rigid it would have been easier to assign more interviewers. In its present form there is room for building up confidence creating a relaxed atmosphere when interviewing. The form could have been more detailed on seed flows. As it appears it does not follow a very rigid approach. This was on purpose, trying to create a conducive, less interrogative, atmosphere. The obvious shortcomings are its inapplicability for advanced statistical analysis.

As seen from Results much information was confirmed successively by several stakeholders. Only very little directly contradicting information was found. A social forestry student found the same patterns and tendencies at district level (2 districts) as was revealed from the current survey (Kamoto, 2003). Conclusively, the overall results are deemed fairly reliable, depicting all major trends and stakeholders. However, quite many details, particularly for the minor stakeholders in strata C, still remain unanswered.

5. Conclusion and recommendations

The purpose of the survey was to enlighten certain questions:

1. Who are stakeholders in tree seed?

The survey has shown that the stakeholders involved in tree seed are very few with FRIM, LRC and ICRAF acting as the main seed suppliers and NGOs being the main seed buyers. NGOs organise collections of seed directly from GCAs to be supplied to farmers at all levels. The unique position is that of ICRAF who are also involved in seed collection but their seed is given freely to partner organisations and/or individual farmers. The role of local seed collectors was eventually during this survey, found to be quite significant. It was disclosed that 'seed collector' groups pop up occasionally when market possibilities occur. Such innovative persons/villagers are, upon rationalisation, considered as part of strata C, the CBOs. CBOs are Natural Resources Management Committees (NRMCs) or the similar Village Natural Resources Committees, or any Community Based Organisations. Their role seems to be overlooked by the main seed suppliers despite the fact that most of them get their seed from GCAs that are located on public land. There may be need to establish ways of empowering these local collectors in order for them to become active players in seed sales thus attaching value to tree seed at grassroots level.
The study could not disclose significant seed exchange at village level - neither among distant farmers, or between farmers and distant CBOs.

2. How do they operate (get and give)? and Where does seed come from and where does it end?

The seed comes from GCAs, farmland, estates or established seed sources. Annex 9 shows the commodity chain (cf. Annex 9) and interaction among seed stakeholders in a single diagram. It entails these 5 major elements of: i) seed sources; ii) collectors that may include VNRMCs, villages or individuals; iii) seed centres-FRIM, NTSC & ICRAF; iv) NGOs, DFOs & ADDs; and v) nurseries that may belong to NGOs, village groups & CBOs.

The stakeholders are many and each party tends to act and depend on several others. The 'majors', FRIM, ICRAF and LRC are fully aware of each others presence and while FRIM even supplies some seed to LRC, ICRAF gets minor quantities from both LRC and FRIM. This illustrates co-operation and mutual dependency although the competition aspect is also strongly present. FRIM's popularity relates particularly to its improved seed sources of *Gliricidia*, which may serve as parent material for more future seed orchards to other organisations. Only FRIM and ICRAF export seed and only FRIM and a few estates import seed to Malawi.

The seed ends in group nurseries, project nurseries, or individual nurseries at village (and district) level. The resulting seedlings are either shared, distributed, swapped, or sold to villagers.

3. Limitations / bottlenecks in seed supply and demand?

The main bottleneck in tree seed supply is inadequate production and supply, there may be an entry point for other seed dealers at the third level to provide the seed if demand continues to grow. This is also true for the current operations of the two main seed centres, FRIM and LRC, with both having heavily centralised structures with all seed being supplied from Zomba and Lilongwe, respectively. There is a genuine need for decentralising particularly their sales points with a possibility of sub-contracting seed sales to other organisations.

There is a higher seed demand, mainly from NGOs, than the three main seed suppliers are able to supply. This has encouraged competition between the seed suppliers as they basically collect from the same areas. Further to this, NGOs have in some instances resorted to their own local collection that has in some instances compromised on seed quality.

Though recommendations is outside the scope of this report the surveyers suggest a few measures required to address this issue:

- Establishment of new seed stands and identification of new seed sources
- Training of local collectors in seed collection, handling and processing
- Sharing of responsibilities by the main seed suppliers

If there was a possibility of an organisation that would co-ordinate mutual seed exchange or barter seed trade among villages at VNRMC level, this would help to distribute excess seed from say one CBO to another at a very minimal cost. However, the present lack of competition in seed supply causes the double role of buyers and sellers. Further there is a present seed income dimension at risk. This income may not easily or voluntarily be put at risk and could hamper development of a transparent seed market, which would create more competition and could diminish benefits to those who already have their own market outlet.

4. Is seed quality of concern and how?

The seed quality is said to be acceptable or good by those asked. These however, are rarely dealing with the seed directly. The seed traded in Malawi are not tested to international standards and are deemed to be of varying, unproven quality. Complaints were few and specific, however. Genetic concern among users is low, even (in some cases) said to be of little importance due to proper species choice alleging most species in play have wide adaptation capability.

5. Seed price and its influence on market? Are tree seed commercially viable?

The disparity in pricing of tree seed between FRIM and LRC with prices at LRC on average being 45% less than that at FRIM puts into question their costs, pricing mechanisms and profits. As LRC is trying to move away from donor subsidy, they will also have to operate on a cost recovery basis. This calls for the need

for FRIM and LRC to harmonise their seed pricing mechanism if they both want to survive. Or may only the strongest, best and most sustainable survive? Commercialising tends to compromise quality unless the users are very alert which may not always be the case. The customers may thus gain from competition and will move to the cheapest provided the quality is at least as good. Eventually, fewer suppliers on the market may drive up prices again through increased seed monopoly.

The market is imperfect and strongly influenced by the few, relatively economically strong and influential majors, strongly supported by their customers, who typically are short to medium term projects, which at a first sight could appear very vulnerable. Projects are fluctuating and out of forecasts and control. However, the altogether continued presence of projects somehow constitutes a form of sustainability.

The seed prices are boosted by this demand which indirectly prevents emergence of a sustainable and transparent natural market where the much lesser purchase power of farmers would come into effect.

Are tree seed commercially viable? This is not really answered as a whole, but the bid of the authors is that for most species and under the present fairly high seed demand they are commercially viable. The precondition is the resources and purchases streaming in from projects. A number of species would be lost if it was not for FRIM who has taken the task of covering a wide range of species which other collectors and suppliers do not find worthwhile dealing with.

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Annex 1 NGOs visited

Objectives, Focal areas, NRM strategies, beneficiaries and location

ACTION AID – MALAWI (AAM)

Objective: supporting sustainable development by assisting poor communities to improve their livelihoods through poverty reduction programmes.

Area of focus: Agroforestry, social forestry, agricultural production, soil & water conservation, training, fuel-wood saving devices, AIDS, emergencies relief, community empowerment.

NRM Strategies: Afforestation, PRA, agricultural credit, seed multiplication and distribution, local NGO funding, nursery establishment, provision of fuel wood conserving equipment, integrated pest management, forest conservation, vocational skills training, promotion of income generating activities, and training for transformation.

Target beneficiaries: Rural poor.

Geographical Scope; Dowa (Msakambewa), Mwanza (Thambani) and Salima. Nationwide for AIDS, seed & environmental projects.

CHURCHES ACTION FOR RELIEF AND DEVELOPMENT (CARD)

Objective: (i) to ensure self sufficiency in food production in order to improve nutrition and income; (ii) to ensure food security by increasing diversification of food (iii) to rehabilitate the degraded environment.

Area of focus: Agriculture production, community forestry, vegetable growing and training.

NRM Strategies: Provision of seeds, seed multiplication, fertilisers, introduction of improved livestock, technical and business management training, afforestation, credit packages, home management and economic training, small enterprise development, women in development and promotion of fruit tree production.

Target beneficiaries: Smallholder farmers in rural areas.

Geographic Scope: Nsanje, Thyolo, and Mchinji, Lllongwe.

CONCERN UNIVERSAL

Objectives: to empower the people of Malawi to identify and achieve own development objectives.

Areas of focus: Agricultural diversification, environmental management, nutrition education, participatory research, extension & training, business and marketing,

NRM Strategies: Local NGO capacity building, water and environmental sanitation, food security and sustainable livelihoods programmes, skills, literacy and vocational training; small enterprise development, seed multiplication; forestry & agroforestry

Target beneficiaries: local farmers, CBOs and indigenous NGOs.

Geographic Scope: Balaka, Blantyre rural, Chikwawa, Dedza, Ntcheu, Nkhotakota, Karonga.

COORDINATION UNIT FOR REHABILITATION OF THE ENVIRONMENT (CURE)

Objective: to assist NGOs enhance the impact, gender equity and sustainability of community – based natural resources management intervention through capacity building, co-ordination, information exchange and advocacy.

Areas of Focus: Co-ordination, collaboration, networking, capacity (skills) building in environmental education, soil and water conservation, and participatory approaches and gender issues.

NRM Strategies: Co-ordination of NRM activities of NGOs through: meetings, publications, provision of technical expertise in environmental planning and management, resource learning centre, promotion of sustainable natural resources management activities and gender issues.

Target beneficiaries: NGOs (environmental sector) and rural Malawi communities.

Geographical Scope: Nationwide

EVANGELICAL LUTHERAN DEVELOPMENT PROGRAMME (ELDP/LWF)

Objectives: to rehabilitate degraded areas, and encourage tree planting by individuals; to enhance food production through agroforestry

Areas of Focus: Agroforestry, community forestry, fuel – wood saving devices soil and water conservation, agriculture production and training.

NRM Strategies: afforestation; fuel efficient stove production and distribution; soft loan schemes, drought resistant seed multiplication; fruit tree planting; and, the promotion of food security.

Target beneficiaries: Small holder farmers and refugees.

Geographical Scope: Chikwawa, Dowa, Lilongwe, Dedza, Mulanje, Mzimba, Nkhatabay, Phalombe, Karonga and Zomba districts.

GREENLINE MOVEMENT

Objective: To have perennial rivers and wells throughout.

Areas of Focus: Environmental education, soil and water conservation and agroforestry.

NRM Strategies: Formation of village conservation committees, establishment of village nurseries and village forest areas and the protection of indigenous vegetation.

Target beneficiaries: Malawian communities.

Geographical Scope: Balaka, Machinga and Zomba.

TOTAL LANDCARE (LANDCARE)

Objective: Improve natural resource management and conservation with sustainable increases in smallholder production by increasing the adoption of agroforestry practices.

Area of Focus: Facilitating tree planting on farm land by rural communities and estates

Target beneficiaries: Small holder farmers and estates

Geographical scope: Dowa, Kasungu, Lilongwe and Mchinji

RURAL FOUNDATION FOR AFFORESTATION (RUFA)

Objective: to initiate programmes that will create awareness to the rural communities on the need for them to participate in tree planting thereby encouraging ownership and maintenance of woodlots; and implementation of ecological conservation methodologies.

Areas of Focus: Community participation, creating awareness on the need for nature conservation, creating an integrated function for co-ordination through provision of regional communal forums, community education and the regeneration of forest patches.

NRM Strategies: Establishment of a secretariat, District Co-ordinating Commit-

tees, area and village committees; establishment of nurseries and forest reserves; and water catchment preservation.

Target beneficiaries: Rural communities in Malawi.

Geographical Scope: Northern Region

WILDLIFE & ENVIRONMENTAL SOCIETY OF MALAWI

Objective: to promote full public participation in the wise management of wildlife, natural resources and the environment in Malawi

Area of Focus: Biodiversity conservation, wildlife utilisation, community forestry, environmental education, community capacity building and training.

NRM Strategies: Community based management nurseries; wildlife and appropriate species research; provision of extension services and resource materials; lobbying and input to corporate sector; environmental policy analysis and donor/government development; networking with other NGOs, government, donors, and educational institutions; fundraising and production of publications.

Target beneficiaries: Public at large, smallholder farmers; primary and secondary school students, colleges and university students.

Geographical scope: National

WORLD VISION INTERNATIONAL

Objective: Relief, rehabilitation and development.

Area of focus: Food security (agriculture and environmental rehabilitation), water, appropriate technology, small enterprise development, gender and development, relief, nutrition/primary health care)

NRM Strategies: Food security, nutrition and primary health care, water and soil conservation; integrated water supply systems, maintenance of water technologies; small enterprise, relief work, food for work nutrition/primary health care, and food aid to drought victims; environmental; hygiene, sanitation promotion, cross programme activities in the areas of appropriate technology; gender and development.

Target beneficiaries: Marginalized urban poor, drought victims on rural areas, smallholder farmers.

Geographical Scope: Chapananga – Kalambo EPA (Chikwawa), Mpokwa, Chingale, Mwambo EPAs (Zomba) Kamchocho (Kasungu), Kasongo, EPA (

Mulanje). Ntaja (Machinga), Ngodzi (Dedza), Muhuyu, Bale, Nchenachena (Rumphi) and Sankhulani (Thyolo).

MALAWI ENVIRONMENTAL ENDOWMENT TRUST

Objective: to establish, develop and manage an endowment trust fund to provide sustainable financing for environmental activities in Malawi carried out by communities, and different stakeholders in environmental and natural resource issues.

NRM Strategies: Afforestation, capacity building, energy research , human and wildlife conflict, soil and water conservation and natural resource based enterprise.

Target beneficiaries: CBOs, NGOs

Geographical Scope: National

COMMNITY PARTNERSHIP FOR THE SUSTAINABLE RESOURCE MANAGEMENT IN MALAWI (COMPASS)

Objective: to promote sustainable use of natural resources

NRM Strategies: facilitating effective CBNRM administration and technical services capacity, community mobilisation skills within government, NGOs & community groups, process of policy and legislative reform in favour of CBNRM, efficient liaison/communication/information exchange mechanism between and among CBNRM programmes and GBNRM small grant management services to finance special CBNRM opportunities.

Target beneficiaries: CBOs, NGOs and government

Geographical Scope: National

LILONGWE FORESTRY PROJECT (hosted by DFO-LILONGWE)

Objective: to minimise environmental degradation, protection of natural forests, reduce workload for women, to enhance food production and capacity building.

NRM Strategies: forestation, agroforestry, conservation and training.

Target beneficiaries: Village natural resources management committees (VNRMCs).

Geographical Scope: Lilongwe, Dedza, Mchinji, (Dzalanyama Forest Reserve) Salima (Thuma Forest Reserve).

LAND RESOURCES CENTRE (LRC), previously MAFE

Objective: Facilitate adoption of agroforestry, soil conservation and small-scale treadle pump irrigation technologies and co-ordinate and expand outreach efforts among Government, non-Government, and private sector organisations. Supply agroforestry seed, provide training and extension.

NRM Strategies: Semi commercial sale of seed to partners, government, donor projects and CBO's

Target beneficiaries: Partners, like CBOs, NGO, Forestry Department, commercial farmers. Other clients

Geographical Scope: National

AGRICULTURE RESEARCH AND EXTENSION TRUST

Objective: Para-statal organisation co-ordinating , supporting/surviving from tobacco farmers levies.

NRM Strategies: Service to estates, mainly tobacco (and tea?)

Target beneficiaries: estates, farmers' clubs

Geographical Scope: National

PUBLIC WORKS PROGRAMME

Objective: Rural development with 3 major components on roads, irrigation and forestry

NRM Strategies: afforestation, agroforestry. Encourage planting of trees and fruit trees at communal and individual levels.

Target beneficiaries: individual farmers, VNRMC, CBOs

Geographical Scope: Kasungu, Lilongwe, Mchinji, Dowa and Ntchisi

REGIONAL FORESTRY OFFICE, NORTH (RFO-N)

Objective: sustainable management of forest goods and services for improved and equitable livelihoods

NRM Strategies: afforestation, minimise environmental degradation, protection of natural forests and sustainable management of indigenous forests

Target beneficiaries: VNRMCs

Geographical Scope: The Northern Region of Malawi

SEED AND NURSERY SERVICES

Objective: conservation of trees, multiplication of trees, sale of fruit trees provision of agroforestry tree species

NRM Strategies: Tree seed sales, raising tree seedlings (nursery) and advocacy in tree conservation.

Target beneficiaries: Any interest group or individual

Geographical Scope: Mzuzu, Nkhata-bay, Mzimba and Rumphi.

BORDER ZONE PROJECT

Objective: to secure the Nyika National Parks

NRM Strategies: provision of inputs including seed, watering cans to community forest nurseries, school nurseries and individual nurseries.

Target beneficiaries: village communities along the borders of Nyika national park

Geographical Scope: Rumphi district

LAND RESOURCES CONSERVATION (MZADD)

Objective: reducing degradation on farmland, generating land resources information for better planning

NRM Strategies: mapping section, soil and water conservation, soil fertility improvement and land resources surveys and evaluation.

Target beneficiaries: smallholder farmers

Geographical Scope: Mzimba, Nkhatabay, Rumphi and Likoma.

NATIONAL TREE SEED PROJECT (NTSP) at
FORESTRY RESEARCH INSTITUTE OF MALAWI (FRIM)

Objective: to supply sufficient tree seed of high genetic and physiologica quality for all tree planting activities in Malawi

NRM Strategies: seed research, seed collection, seed handling/processing and testing, storage distribution and training in seed collection.

Target beneficiaries: Malawian seed clients in general. Mainly FD, NGOs, farmers (mostly estates).

Geographical Scope: National

Annex 2 List of contact persons

Tree Seed Survey in Malawi, November 2003. List of organisations and persons met.

Survey sequence	Organisation	Title / Position	Met / Name of Contact	Address	Office Phone	Email address
	SOUTH				+265	
1	CURE	Executive Director	Christopher Mwambene	Box 2916 Blantyre	01 645757 09 956769	cure@malawi.net
25	WILD LIFE SOCIETY	Head, NRM programme	William Chadza	Private Bag 578, Limbe	01 643502 09 922403	wesm-nrm@ africa-online.net
3	CARD	Deputy Director	Mr. Chimsale	Box 2733 Blantyre	01 652000	card@ malawi.net
24	FRIM NTSC	Seed Centre Manager	Mr. Dominique Gondwe	Box 270 Zomba	01 524548	ntsc@ frim.clcom.net
26	ICRAF	Horticulturist	Mr Thomson Chilanga	Box 134 Zomba	01534 244	t.chilanga@cgiar.org
2	MEET	Project Officer	Moses Mpezeni	Box 2733, Blantyre	01 620 303	meet@ africa-online.net
4	COMPASS	Community mobilization specialist	Nobel Moyo	Private Bag 263, Blantyre	01 622800 08 872153	nobel_moyo@ dal.com
5	Greenline Movement	Director	David Chitedze	Box 16 Machinga	01 549216	wpesmhg@ sdnp.org.mw
	CENTRAL Malawi					
6	World Vision	Food Security Manager	Daniel E Kanyerere	Box 793 Lilongwe	01 757294 08 824781	daniel_kanyerere@ wvi.org
10	Land Resources Centre	Coordinator	Dr. Henry Phombeya	Box 30291, Lilongwe	01 757090	
11	Total Landcare	Regional Director & Project Manager	Trent Bunderson & Zwide Jere	Box 2440; Lilongwe	01757090 08 838072	tlc@ malawi.net
12	Decentralized DFO-Tree Seed Centre	Forest Assistant	Kaunda Henderson	Mkwinda; Lilongwe	As LLW DFO	
13	ELDP	Project Manager	Francis K Ngopola	Box 25 Lilongwe	01 727088 01 727288	ngopsy@ eldpmw.org
7	DFO/Lilongwe Forest Project	Project Manager -and DFO	Ms. Stella Gamma	Box 1296, Lilongwe	01 758020 08 846217	funsaniste@ hotmail.com

9	Forest Development Division	Assistant Head	Mr. Teddie Kamoto	Box 30048. Lilongwe	01 781 000	
14	ARET	Forest Extension Agent	Mrs.P.D. Kafera	Private Bag 9; Lilongwe	01 762066	director@ aret.org.mw
8	Action Aid	Sub-regional Food Sec. Co-ordinator	Mr. Edson Musopole	Box 30735; Lilongwe	01772899/ 892	edsonm@ actionaidmalawi.org
23	CONCERN UNIVERSAL	Project Manager	Jacob Paul Mapemba	Box 217, Dedza	01 223 048 08 879193	jacob.mapemba@ concern.universal.org
15	GoM/EU Public Works Programme	Forest Technician	Justice Ngulande	Box 1071; Kasungu	01 253604	pmu@ pwp.co.mw
	NORTHERN Region					
16	Regional Forestry Office (N)	RFO and Assistant RFO	Mr V Msiska Mr. S M Chipokosa	Box 223 Mzuzu		
17	SEED & NURSERY SUPPLIES	Shopkeeper/-owner	George Ngwira	Box 754; Mzuzu		
18	RUFA	Project Officer	Frank Innocent Mwafulirwa	Box 590, Mzuzu		
19	Border Zone Dev. Project	Agricultural Adviser	Mike Froude	Box 627 Mzuzu	01 334135	bzdpconsultants@ malawi.net
20	Land Resource Section	Conservation Officer	Mr. Dennis Tembo	Box 131, Mzuzu		
21	Sustainable Forest. Management. Programme	Project Manager	John Mwalweni	Box 223, Mzuzu	01 333 998 08 844595	sfmp@ africa-online.net
21a	Seed seller	Worker at RFO	Major Msiska	Mzuzu		

Annex 3 Seed sourcing, procurement and distribution

Organisation	**Seed sourcing**	**Seed sourcing, procurement and distribution**	
Abbreviatur	main supplier highlighted	Seed procurement constraints	Seed distribution constraints
CURE	FRIM	some species not available	to communities and c.-nurseries
	little amount from own, small projects	suitability never a problem	
MEET	LRC and FRIM	FRIM poorly stocked in Afzelia, Khaya, and Glirir-cidia	none. MEET only facilitates seed purchases seed on request for NGO's
	Chilengewe (NGO, Zomba)	only few good, reputable suppliers(2?)	
	WSEM Society (Zomba)	few collectors in the field	
		seed scarcity of some species	
CARD	LRC/FRIM	availability of Khaya, Gliricidia, and E. grandis	none: Field officers collect any new consignment to local communities. Max 1 w
	WAC(ICRAF)		
COMPASS	FRIM/LRC	seed availability (amounts insufficient)	FROM should be decentralised (distance!)
	Local (Makoka)	FRIM at times slow to deliver. TIMING!	
GreenLine Movement	FRIM, ICRAF	Gliricidia seed insufficient	Farmers sell seed (to ICRAF/FRIM) instead of raising seedlings
	Local collection (Tephrosia, Parkia filicodia, Ravolvia caffra, Khaya)	untimely seed availability	No seed or fruit markets
World Vision	LRC, FRIM	timely seed availability	passive attitude prevail towards tree seed
	Forestry Department organise community seed collections (S. siamea, T. volgelii)	seed price prevents / discourages (non-funded) local use of seed	

Organisation	Seed sourcing	Seed sourcing, procurement and distribution	
District Forest Office & Lilongwe Forestry Project	>50%: Local communities ("seed centres"): T.vogelii, S. siamea, s. spectabilis, A. polyacantha, Khaya)	seed availability	none
	FRIM/LRC	pricing of locally sourced seed not transparent and unstable	
		lack of seed storage	
Action Aid	FRIM/LRC	seed availability	none
Mr. Tedi Kamoto, Forest Dept. (ressource person)	NGO's purchase directly from CBO's/farmers. Farmers direct (FRIM can't compete)	middlemen blur prices	avoid too many links. Keep it simple
	FIRM/LRC	prices artifiacially high	
Land Resources Centre (Previously MAFE), Lilongwe	Farmers. Through staff / middlemen. Countrywide !	competetion with other buyers: NGOs, FRIM, ICRAF, particularly on Tephrosia, Gliricidia, Afzelia	timing: field harvest coincide with seed supply & nursery activities
	Own collections / own seed sources	lack of branches in other regions	poor handling of seed (storage / overkeeping)
	Subcontractors	funds	
Total Land Care	LRC	species offered insufficient	poor viability of some species
	less: FRIM, Local communities	poor timing (neem, trichilia, term. ciricia)	
Lilongwe (DFO), Seed centre no. 3, CBO, Mkwinda	Local, own collections	training need by FD / FRIM	Unfrequent communication dependency on outside transport and costumers. Pick-up time + payment varies
ELDP/LWF	75% FRIM, 25% Local collections	seed amounts insufficient	none, but logistics (distrubution) a bit complicated/ tedious
		improper timing (seed arrives late)	

Organisation	Seed sourcing	Seed sourcing, procurement and distribution	
ARET	LRC & FRIM (Eucalyptus), and local communities	species availability in time	none (small packing cumbersome)
		inadequate amount of seed	marketing/price? (ARET sells seed!)
		training of farmers insufficient	
Public Works Programme	LRC & Local communities (no links to FRIM)	sometimes inadequate amount of seed (e.g. flamboyant and S. siamea)	none. Easy through cluster method
Mzuzu RFO (North) through MASAF	FRIM	species availability	none
	Local Fo. Research Assistants (direct collect or purchase for RFO)	inadequate amount of seed	
Seed & Nursery Services shop	FRIM	seed availability at FRIM	marketing
	Local (particularly fruit trees, e.g. mango, lemon)	poor storage facilities	FRIM's poor communication
		logistics (distance to FRIM)	seed insufficiency
RUFA	LRC	inadequate amount of seed (e.g. Tephrosia v.)	none (except need for proper need assessment (by volunteers/Fo. Dept.)
	local farmers (mainly future plan)	lack of farmers involvement, e.g. to estbl. multiplication seed orchards	
Border Zone Project (GTZ/EU)	FRIM, LRC & Local (e.g. Eucalyptus)	communication lines. FRIM is distant	people tend to prefer MASAF who pay people to plant trees
			cases of "forgotten" seed
Land Resources Conserv. (MZADD)	LRC	logistics: transport to pick up seed from Lilongwe to Mzuzu	transport (many NGO can't access seed.
			Lack of (private) seed suppliers

Organisation	Seed sourcing	Seed sourcing, procurement and distribution	
Sust. Forest Mgmt. Pgm (RFO-N)	own procurement: Fo. Res. Asst collects to DFO, and RFO)	limited species at FRIM: For highlands only plantation spp. available. Unsuitable for catchment cons., etc.	none. Demand higher than supply
FRA, Mr. Major Patrick Msiska, private	collect bomber crop seed with friends	few species	limited ability to find customers.
World Vision, Mzuzu	FRIM, LRC, local "sourcing"	Insufficient amounts of seed available	none (own seed coordinator)
			farmers at times take seed for granted and do not valuate it
Concern Universal	LRC (Agroforestry species)	FRIM and LRC poor seed suppliers (can only deliver up to ½. Slow!)	sometimes famers not ready to sow at time of seed delivery
	FRIM (tree species)	species availability limited	Insufficient training on sed handling
	Local seed collections (esp. Indigenous, also from felled trees)	untimely seed quotations (Suppliers not firm and concise)	
NTSC-FRIM	Own collections in mainly own seed sources	LRC/ICRAF compete on same seed sources owned/ identified by FRIM	FRIM payment for seed slow/bureaucratic
	local collections / purchase of Tephrosia, Afzelia, Khaya, Feidherbia)	FD pays only for seed collection - not for seed supplied !	Delivery
		limited seed sources	Money flow beaucratic
		limited funds for collection	no marketing
		slow payments to collectors (not cash!)	
WESM	FRIM	breeded, improved seed hardly available	none
	Communities, Lunguzi & Mwanza	species availability	
	Tea estates	limited viability of species (e.g. Khaya)	
		pricing	

Annex 4 Seed volumes at two selected NGOs

Typical species importance revealed through seed procurement. Produced from two Malawian NGOs, which managed to produce figures at the time of the survey.

Species	Quantities (kg)					Rank
	2000	2001	2002	2003	∑	
			World Vision Internat.			
Tephrosia vogelii	45	7	51	2000	2103	1
Gliricidia sepium		10		95	105	2
Faidherbia albida	15	46	11	3	75	3
Afzelia quanzensis		47			47	4
Sesbania sesban	22	7			29	5
Senna siamea	3	13		5	21	6
Acacia polyacantha	4	7	5		16	7
Albizia lebbeck			5	10	15	8
Azadirachta indica	10	2			12	9
Senna spectabilis		1	10	1	12	10
Khaya anthotheca	6			2	8	11
Eucalyptus spp.	0	3	3		7	12
Moringa oleifera		5			5	13
Melia azadirach		3		2	5	14
Toona ciliata		0			0	15
			C A R D			
Tephrosia vogelii	80	86	131	150	447	1
Senna spectabilis	30		85	74	189	2
Faidherbia albida	10	6	76	65	157	3
Gliricidia sepium	30	56	32	20	138	4
Sesbania sesban	50	66		10	126	5
Afzelia quanzensis	20	22		81	123	6
Khaya anthotheca	6		30	34	70	7
Leucaena leucocephala	10	3	38	8	59	8
Melia azaderach				58	58	9
Senna siamea	8	6		36	50	10
Albizia lebbeck	10			30	40	11
Eucalyptus spp.	1	1	4	14	20	12
Pinus spp.	1	5		10	16	13
T. peruviana				15	15	14
Gmelina arborea		5			5	15
Azanza garckeana	3				3	16
Bauhinia thonningii	3				3	17
Flaucourtia indica	3				3	18
Sclerocarya birrea	3				3	19
Tamarindus indica	3				3	20
Toona ciliata	1				1	21

Annex 5 Species volume - country figures

Species	FRIM	LRC	ICRAF
		1649	
Acacia nigrescens	28		
Acacia nilotica	3		
Acacia polyacantha	248	2009	
Adansonia digitata	38		
Afzelia quanzensis	551	5097	
Albizia lebbeck	105	922	
Azadirachta indica	34		
Bauhinia thonningii		506	
Burkea africana	32		
Cajanus cajan			18000
Colophospermum mopane	13		
Combretum imberbe	5		
Dalbergia melanoxylon	5		
Delonix regia	114		
Eucalyptus spp.	71		
Faidherbia albida	1550	2988	
Gliricidia sepium	360	48	284
Jacaranda mimosaefolia	25		
Khaya anthotheca	465	2671	
Leaucaena leucocephala	16		
Melia azederach	63	2000	
Moringa oleifera	42	71	
Pinus spp	107		
Pterocarpus angolensis	7		
Senna siamea	345	2107	
Senna spectabilis	299	1547	
Sesbania sesban	29	529	2653
Tamarindus indica	4		
Tephrosia vogelii	3200	11482	14480
Terminalia ivorensis			
Terminalia sericea	29	139	
Toona ciliata	4	27	
Uapaca kirkiana			500
Widringtonia cupressoides	12		
Zizyphus abyssinica		239	
Zizyphus mauritiana	146	568	
Total, Kg	**7948**	**34599**	**35917**
Number of different species	**31**	**18**	**6**

Annex 6 Organisational questionnaire - Malawi 2003

FOREST RESEARCH INSTITUTE OF MALAWI
Seed/Seedlings Procurement / Distribution. Malawian NGOs
This questionnaire is made by ISSAC, an ICRAF-based project exploring the pathways of tree seed used in African countries

_____

Name of NGO	
Address of NGO	
Name of Interviewer	
Date of Interview (Day, Month, Year)	2003
Name of Respondent	
Status in NGO of Respondent	

Development objective of NGO _____
_____
_____
_____

Main activities (area of focus) of NGO
_____
_____
_____
_____

Geographical scope (Districts/Counties where NGO have/support activities)
_____
_____
_____
_____

Target beneficiaries (types and numbers)

Criteria for species selection including their intended end-uses _____
_____
_____
_____

6: How do you control the quality of the seed/seedlings in terms of genetic quality and in terms of physiological quality? (i) Seed Sources; (ii) Seed and fruit collection and handling until processing; (iii) Seed processing; (iv) Seed testing; (v) Seed storage and distribution
_____
_____
_____
_____
_____
_____
_____

7 Seed sourcing and distribution

Species	Purchase (who)	Collect (who & where)	Whom do you give/ sell or exchange	Amounts Kg seed/number of seedlings

Elaboration :
7A. Species
_____
_____
_____
_____
7BPurchase (who)
_____
_____
_____
_____

7C Collect (who & where)
_____
_____
_____

7E Amounts (Kg seed/number of seedlings)
_____
_____
_____
_____ _____
_____
8 Bottlenecks in tree seed procurement (listed after importance) :
_____
_____
_____
9 Bottlenecks in tree seed disbursements (listed after importance) :
_____
_____

10 General on price, revenue and direct costs

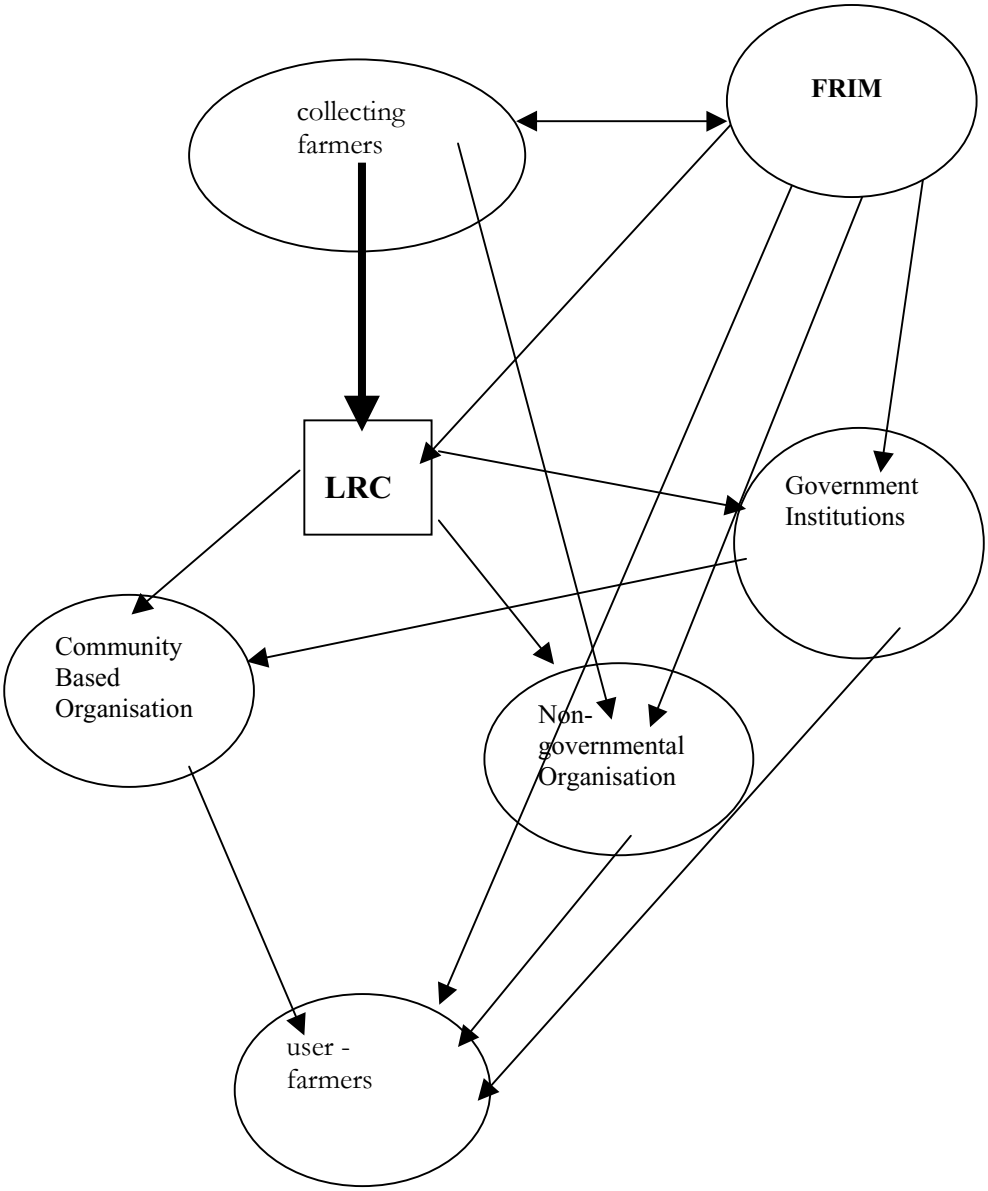
Annex 7 User opinions on Quality of Seed from various suppliers

	User opinions on Quality of Seed from various suppliers				
Opinion of: ▼	..on following supplier:				Remarks
	FRIM	LRC	Others	ICRAF	
CURE	Fine	n.a.	n.a.	n.a.	Nursery mgmt. problem, not seed. Seed/site match no problem
MEET	Good	Good	n.a.	n.a.	Viability of khaya poor
CARD	Good. Seed, well doc.	Good. No docum.?	n.a.	Good. No docum.?	Viability not supplied with seed
COMPASS	Good/fair	Good	(Makoka): OK	n.a.	Germination Important ! Seed/site match no problem
Green Line Movement	Good. Viability of khaya poor	n.a.	Very good if seed procurable	Good. Not for Khaya	Regret lack of markets for fruit and seed. Unlike in the past !
World Vision	Good	F.albida, Gliricidia poor germination	Deemed poor in local collections		Concern on poor Q from local collections. Require capacity building to be feasible
DFO/LLW Forestry Project	poor germination, esp. Toona ciliata and Khaya a.		Good, from 5 (trained!) villages. Storage problem!		5 villages adopted as local seed centres under DFO
Action Aid	Good	Good	Good	n.a.	Assume: only scarification is a problem
Tedi Kamoto	OK	O	If trained: Good	OK?	If villagers not ctd. Get training after 10y out of business: seed Q very low
LRC	n.a.	When G%<80%: discard seed!		n.a.	No field checks. Process, grade, test, store at centr. Unit. NB: Biased on judging own seed
Total Land Care	Very few complaints	Very few complaints	Senna and Tephrosia OK		Neem purchased from CRS?
Mkwinda (Farmer group)		n.a.	Good: Seed clean, not mixed.		Farmers are trained/assigned. Seed sources unclear or very small

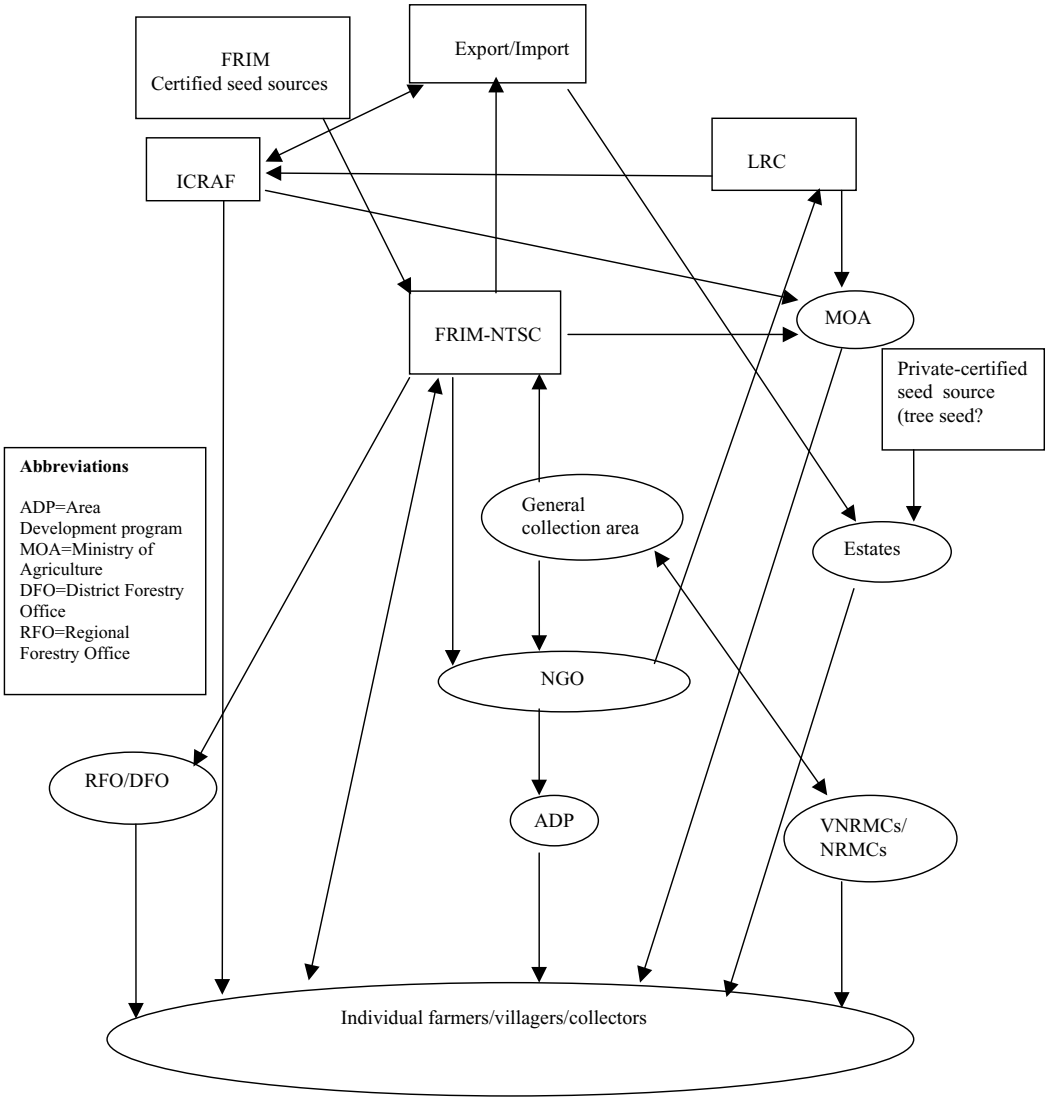
ELDP/LWF	Good	Often mixed, mis-labelled	Future hope!	Not as good as FRIM	Estbl. Local seed banks (= seed sources) with villages
ARET	last year <50% germination. This year better. Not perfect		n.a.	n.a.	Mainly eucalyptus in small packages.
Public Works Programme		Poor on Senna spectabilis: unripe, poor G%	Acceptable (Senna spectabilis and S. siamea)		Supports local collections since last year
RFO (N)	OK, but less than for local collections (logistics!)	OK (?)	Quite good and competitive!		Local collections needed as alternative
Seed & Nursery Services	Well tested. At times neg. affected by poor packaging, communication, long transport			n.a.	Consider local seed procurement - could be more effective, but quality?
RUFA	n.a.	Fair. Problems on no/low germination for T. ciliata		n.a.	No follow up from LRC on encountered problems ?
Border Zone Project	Main source. Good	n.a.	n.a.	n.a.	Provenance choice neither concern nor problem
Land Resource Conserv. MZADD		No problem	No problem	n.a.	Logistic problems. Seed shortage empty stores before quality become an issue
Sust. For. Mgmt / RFO-N	No problem	n.a.	No problem	n.a.	Quality no problem. Species availability is the real problem
World Vision, Mzuzu	Good. Except for F.albida	Good. Except for F.albida	Lower quality, low germination		Training can improve quality of local collections
Concern Universal	n.a.	Acceptable, except for F.albida. Documentation poor.		n.a.	FRIM not business minded: Delivery untimely and offer unsuitable species
FRIM NTSC	Apply ISTA rules for seed testing. Discard bad seed		n.a.	n.a.	NB: Biased on judging own seed
WESM	Good, except for Khaya (free redelivery!). Good documentation		Normally, even better than when from FRIM		No / little genetically improved seed available

Annex 8 Tree seed collection and distribution in Sharpeval-ley and Golomoti districts

(modified chart from report by Kamoto, 2003: Farmers' knowledge and experiences in tree seed handling and their future role in tree seed supply)



Annex 9 Composite chart of seed flows and their stakeholders. Survey 2003, Malawi



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