



NEWS OF THE COMMERCIAL FOREST SECTOR IN UGANDA

SPGS: Supporting private tree growers since 2004

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**Special Issue on
EUCALYPTUS**



The **Sawlog Production Grant Scheme (SPGS)** is a partnership between the Government of Uganda, the European Union (EU) and the Government of Norway (GoN). Since 2004, over 24,000ha of timber plantations have been supported by many commercial and community growers throughout the country.

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NURSERY & SEED UPDATE

by SPGS's Alex Atuyamba & Peter Bahizi



NURSERY CERTIFICATION

The SPGS's private, nursery Certification scheme that kicked off late 2010 is clearly having an impact. Not only has seedling quality dramatically improved but many more private nurseries have been heading down to SPGS's office requesting to join the process. Five new nurseries have been recently Certified (see text box right). Over the last planting season, we have also had some problems with seedling quality from some of the SPGS Certified nurseries and we are currently investigating complaints received from some growers. The main problems have been an apparent lack of mycorrhiza on some batches of seedlings and nurseries not sorting (i.e. grading) seedlings going to the field. We are currently talking to all nurseries involved and will be carrying out a re-assessment for Certification of all nurseries starting in August, 2011. UTGA staff will be part of this process to ensure that this important initiative does not end when SPGS's funding ends.

With the proliferation of new (mostly small) nurseries that we have seen in the last year or so (during Phase II of SPGS), we are increasingly worried by the seedling quality from some

of the nurseries supplying our clients with seedlings. Thus in an effort to raise the standard, SPGS has decided to make it a rule for all contracted clients that starting **from March/April 2012 season, all seedlings planted under an SPGS contract must be from an SPGS/UTGA Certified nursery.** SPGS's clients thus have time to either improve their own nurseries to certified standard or to order (in good time) from a nearby Certified nursery.

To maintain the standards, spot checks on already certified nurseries have been going on too and some nurseries have been 'promoted' with additional stars! We have also received notification that **Quality Forestry Services** in Luwero district has suspended their business and thus our Certificate has now been withdrawn. The latest list of Certified nurseries and their contacts can all be viewed on our website – www.sawlog.ug

COMMERCIAL TREE NURSERY TRAINING

The second SPGS nursery training course took place at Global Woods Ltd-Kikonda near Hoima from 28th-31st March 2011. The major objective of the course was to improve on the skills of nursery operators for them to be able to produce quality seedlings. This very popular course took 26 participants on a first come, first served basis. There was a good mix from big forestry companies who are raising seedlings for their own planting and other small/medium-sized nursery operators. The level of participation and the feedback from participants was excellent. The Plantation Forestry in the Tropics book prize for the overall best performer was won by Ms. **Evelyn Namukasa** of The New Forests Company Ltd., Kiboga. If interest is sufficiently high, SPGS will consider running a similar course later in 2011 again - budget permitting, of course!

NEWLY CERTIFIED NURSERIES

The 2nd round of audits resulted in five new nurseries being SPGS Certified:

ABT Agences Ltd.

[Specioza Kabwegyere 0772-476010]

B.T. Logistics

[Ishanga Patric 0701-420197]

KATE Nursery Beds

[Tumwesigye Alex 0702-601313]

MASCOT Nursery Beds

[Nshemereirwe Justine 0772-422889]

Tropical Foods & Tree Planters

[Jackie Katungi 0701-945653]

Well done to them! Framed Certificates are their way to you all.

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SEED UPDATE

SPGS has been working closely with UTGA to import improved seed of both pine and eucalypt. In May-June, 250kg PCH seed from Brazil was imported as well as 500gm improved *Eucalyptus grandis* courtesy of NCT (South Africa); all this has been sold. We have been offered a further 100kgs Brazil PCH as well as 100kgs of the excellent Australian seed orchard PCH: prices are difficult to predict with the fluctuating dollar here but are expected to be around UGX2 and UGX5m per kg respectively delivered to Uganda. Such is the demand, we urge you to book (and pay for) the seed so we can import ASAP.

Cover Photo: Ugandan participants on SPGS's safari (May, 2011) admiring the efficient eucalypt harvesting operation of a contractor at Peak Timbers' operation in Swaziland.



EUCALYPTUS



by Paul Jacovelli, SPGS Chief Technical Advisor

Eucalypts; Kalitunsi; Gum trees: call them what you like but the genus *Eucalyptus* is truly a remarkable group of plants. With over 800 recognized species, they include tough little bushes (called mallees) up to the tallest hardwood tree in the world – a 101 metre giant *E. regnans* in Tasmania. In between are some species that grow incredibly fast to some which survive in the harshest conditions nature can throw at plants. Over 20 million hectares of eucalypts have been planted outside their original home – largely in the tropics and sub tropics – where they produce the raw material for many commercial industries. Farmers throughout Africa (and in many other regions too) certainly don't need 'sensitizing' to plant eucalypts: they know their value for producing fuelwood, poles and timber.

And yet eucalypts also stir up the opposite passions in some. "Their excessive water consumption is drying up the land" we hear; "their nutrient demand is killing the soil" they say. Interestingly, the same criticisms are not levelled at the intensive agricultural crops planted next door – whether it is sugar cane, maize or (dare I say?) matooke plantations. Of course, whilst some people criticise intensive forestry, it is easy to forget that the production of timber and fuelwood (or maize come to that) has to come at a price in terms of water and nutrients.

Press reports and literature often don't help either, often confusing and repeating unfounded allegations or rumours about eucalypts. Foresters, of course, tend to defend them for all they are worth, whilst critics (who are often better at publicity than mere foresters) want them banned all together. For politicians, they offer an easy answer to changing climatic conditions and poor land management practices. "Eucalypts (and alien pine trees as well whilst we are at it) must be banned" is a periodic cry

heard from various quarters: and this from a country with an ever-widening gap between supply and demand for wood.

So what is Joe (or Jane) Public to think? In this edition of *SPGS News*, we offer some balanced views on the debate. But let me tell you right away where I stand. Uganda – and indeed the wider East African region - is desperate for fuelwood and a timber supply crisis is imminent. Eucalypts can provide part of the solution: no other species grow as fast, produces such usable products and provide such profitable investment as eucalypts. However, eucalypts will only be accepted by the public (and supported by SPGS) if grown on suitable sites and in accordance with recommended management practices.

Farmers throughout Africa (and in many other regions too) certainly don't need 'sensitizing' to plant eucalypts: they know their value for producing fuelwood, poles and timber.

As so often in life, the answer lies in a compromise. Let us put our efforts into educating people to understand that in certain situations, eucalypts offer an excellent solution for providing timber and fuelwood. Where water and soil conditions are suitable, planting eucalypts can be a great investment and sensible management can ensure that they are perfectly sustainable too. In other situations, however, we must accept that eucalypts should not be planted. So we need to plan accordingly.

And now onto other important matters. We have heard some people criticise SPGS recently for favouritism in paying our clients. And we have to admit publically it is true. We 'favour' (as in releasing payments) only those who perform according to their SPGS contract – in terms of areas established to clearly agreed standards.



Anyone got a bigger diameter tape?

Quite simple really. As I have said many times, SPGS's standards are there to help ensure investors have decent crops that stand the best chance of making a profit come harvest time.

SPGS field staff have been travelling around the country recently, inspecting new plantings and advising Clients and their staff on how to improve their practices. Some 3,000 hectares were approved for payment in June alone and indeed, the majority of these have since been paid their 1st SPGS payment of UGX450,000 (US\$180) per ha within days of the team(s) returning from the field. On the other hand, there are a number who didn't make the grade following these recent site visits, and we at SPGS work hard to try to raise these Clients up to the level where they receive the grant. To these Clients we urge you to read carefully the field reports and think seriously about supporting better or training your supervisor: the article on page 25 on common problems might help too. Don't forget the next Clients' field meeting in August too (see page 28), where you can share experiences with many others and interact with SPGS staff.





EUCALYPTUS, WATER & SUSTAINABILITY

by Ian Calder

Approximately half of all plantation forestry in the tropics and sub-tropics is composed of *Eucalyptus* species. Their high growth rates and their ability to grow within a wide range of site conditions make them attractive species for both commercial and social forestry applications. The large-scale planting of such exotic species has worried the local people in many tropical countries, not least in southern India. Here, *Eucalyptus* plantations were thought to cause serious socio-economic problems at the village level, and adverse environmental impacts, particularly in relation to high water use, erosion and nutrient depletion.

In the absence of hard evidence to the contrary, speculation by the press and by some local environmental groups raised the controversy to such a pitch in parts of Karnataka state that farmers ripped out eucalypt seedlings from government nurseries and plantations. Yet other farmers in Karnataka saw eucalypts as a valuable source of income and were keen to plant them on their fields. An article in a UK weekly science magazine "The tree that caused a riot" (*New Scientist*, 18 February 1988) illustrates clearly the uncertainty and the worries that existed at that time.

The position has now changed. As a result of a comprehensive research programme funded by the British Overseas Development Administration¹, in Karnataka, India, hard evidence now exists on the hydrological impacts of the plantations. The research results do not show eucalypts to be the villains

they are often been portrayed, but neither do they show eucalypts to be without hydrological dis-benefits. What they do show is a complex pattern of interactions, some of which may be seen as beneficial and others as adverse. With this new evidence, arguments over whether eucalypts are friend or foe, good or bad, are largely irrelevant and should be seen as questions of the past.

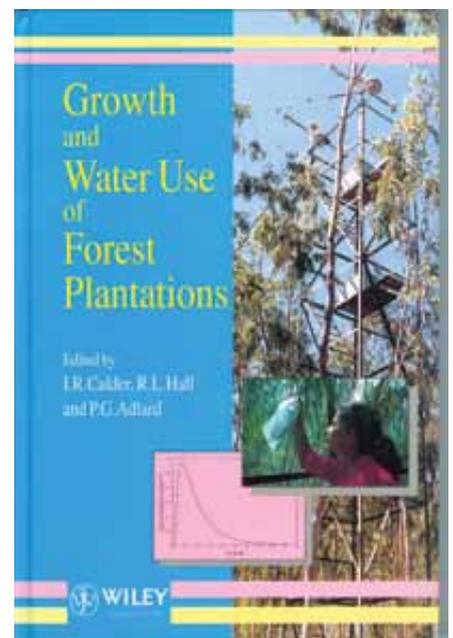
It is now time to recognise that eucalypts have much to offer to India and other tropical developing countries and to confine queries to how adverse effects can best be minimised. Clearly, as providers of a fast-growing source of timber, firewood and pulp they can help to reduce the pressure of the few remaining indigenous forests as wood sources and thus aid conservation efforts. Through saving foreign exchange on the importation of pulp they have obvious economic benefits.

The challenge for the future is to design sustainable forestry systems for eucalypts which minimise some of the adverse hydrological impacts which have been identified and which are also compatible with the social and economic needs of the local people.

This article is the summary of the report - ODA Forestry series No. 6; 14pp. (1994).

Thanks for Peter Massey for sending this report to us. It is one of the clearest short reports that gives a balanced (and scientific) view on this 'hot' topic. We have failed to find it on the internet so have scanned it and have put it on SPGS's web site - Ed.

Research results do not show eucalypts to be the villains they are often been portrayed, but neither do they show eucalypts to be without hydrological dis-benefits.



Readers wanting more scientific information on this topic are directed towards the 1992 publication **Growth and Water Use of Forest Plantations**, Edited by IR Calder, RL Hall and PG Adlard (published by John Wiley & Sons). This important book presents the proceedings of an international symposium held in Banagalore, India in 1991. The symposium was organized by the Karnataka Forest Department, Mysore Paper Mills Ltd., the Oxford Forestry Institute and the UK's Institute of Hydrology.

¹Now known as DFID – Department for International Development - Ed.

GROWING EUCALYPTS THE RIGHT WAY



by Bedijo Nelly Grace & Josephat Kawooya (SPGS –Plantation Officers)



If you want eucalypts like these, just follow SPGS's recommendations. This is a 3 year-old E. grandis planting on RHTC's tea estate in western Uganda, grown for fuelwood.

Are you growing eucalypts or do you have any plans of planting eucalypts in the near future? If you are growing eucalypts now, are you happy with their performance? We see many eucalypt plantations here in Uganda that are very poor and certainly not as good as what we have seen in other countries. So we thought it was important to look into the basics of growing eucalypts successfully.

Eucalypts are one of the fastest growing trees for whatever end products they may be grown for and because of this, it is only logical that one must get right the principles of growing them for this great potential. Remember in forestry, mistakes are costly and are often only realized after a while. Correcting these mistakes would involve sacrificing what has been invested, which can be so painful and that's why some people choose to live with the mistakes over the entire rotation. This, however, does not make sense because you lose a lot in the long run.

In Uganda, eucalypts are largely grown for timber, large transmission poles

and fuelwood, with other products like small poles (fencing and building) as intermediate products from thinnings. In other countries, they are grown commercially for other purposes too, especially pulp for paper making. The rotation for eucalypts in Uganda for timber and transmission poles is 12-15 years and 10 years respectively. However, to get the most out of your crop after these so many years, the trick is simple: plant improved planting materials (seeds or clones) into an appropriate site and carry out timely silvicultural practices.

By improved seed, we mean genetically superior seed from intensively managed orchards. At present, Uganda imports improved eucalypt seed from southern Africa and locally from NEA's Fort Portal seed stand. In addition to that, hybrid eucalypt clones are also available from Uganda Gatsby Trust.

Matching eucalypts to a suitable site is a key consideration to grow them successfully. Trust us: eucalypts will not perform well just anywhere; they are very site specific species. Eucalypts require deep well-drained fertile soils,

and high rainfall (the Mean Annual Rainfall should be greater than 1200 mm) to meet this high growth rate. And they cannot perform in areas infested by termites either (see page 20).

In forestry, just like in any other business, good planning is crucial: you budget and gather the resources you need at hand. Then it is down to correct timing and a sequential flow of operations. In this aspect of eucalypts, the field operations involved are:

Land preparations: this should be done in the dry season preceding the planting season. Depending on the scale of planting and labour available, site preparation should start at least three months before planting. This ensures readiness and planting right away once the rains have settled in. Proper land preparation entails cutting thoroughly all the vegetation, followed by a cool burn where necessary. A pre-plant full cover spray with Glyphosate should be done as close as possible to the time of planting. In summary, site preparation for eucalypts should be done properly, not only to ease subsequent operations but also to facilitate root development which fosters high survival.

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The next task which follows is lining out. Straight lines are important in forestry as they make monitoring of stock, weeding, and all subsequent operations easy to do. Espacement in eucalypts depends on the products in question: if planted for timber or transmission poles, then 3m x 3m is recommended (1111





trees per hectare). However, if one is growing eucalypts for fuelwood, then a spacing of 2.5m x 2.5m is recommended. The planting pits should be dug 25 cm deep and 25 cm wide as for any other species. A cleared spot of one metre in diameter must be maintained around the plant to create a weed-free zone.

Planting: This is an operation which should be done with utmost care, preferably by trained and experienced staff. Planting should start when rains have penetrated at least to a depth of 25cm. If planting *Eucalyptus grandis*, the seedling should be buried well above the root plug and for clones, planting should be done as far as four fingers above the root plug to bury the kink on the stem below the soil. To prolong the planting window (especially when planting on a large scale) then planting can be done using aqua soil; this also buffers against erratic rains. Proper and timely planting ensures high survival which eliminates extra costs for beating up. In case beating up is necessary, then it should be done within two weeks of planting to maintain stand uniformity.

to get the most out of your eucalypt crop, the trick is simple: plant improved planting materials (seed or clones) into an appropriate site and carry out timely silvicultural practices.

Research in many countries has shown that fertilization is very cost-effective when establishing eucalypts. Fertilization should be done within the first three months of planting, placing the granules 15-30cm away from the planted seedling and at a depth of 5-8cm in the soil.

Are you still with us? The journey is getting more involving now and at this stage, there is need to be on guard against weeds by constantly monitoring the crop. Weeding eucalypts is critical; eucalypts are very much intolerant to weed competition. 100% weeding is recommended until canopy closure. Competition from weeds not only



If you want eucalypts like these, ignore SPGS's recommendations about seed, land preparation and thorough weeding.

retards the trees' growth but also results in stress which renders them susceptible to pests and disease attack. Chemical weeding with Glyphosate is the most cost effective and efficient means of weed control.

Depending on the end product, pruning and thinning operations may be carried out. For sawtimber and large transmission poles, thinning is a must: pruning, however, only needs to be carried out for sawlogs. Pruning and thinning are not needed for pulp and fuelwood production. Proper pruning prohibits the formation of dead knots (loose portions) in timber which would otherwise lower timber quality. Some people claim eucalypts are self pruning (naturally shedding their branches) but in commercial forestry where profit maximization is the objective, there is need for pruning live branches to avoid dead knots in the timber.

Timely thinning avoids competition in the plantation thus giving space for the remaining good straight trees to gain volume. Timely implementation of this operation is very important in eucalypts, as delaying it not only leads to loss of volume but also the crop does not respond significantly to late thinning. Thinning in practice should

not only be age-based but rather visible parameters like crown competition should be looked at to tell if a crop is due for thinning. A well thinned crop should have at most 300 stems per hectare after final thinning, where each tree can yield at least 1.5m³ at harvest time. For eucalypts, the thinnings can be sold either as building or fencing poles or fuelwood so money starts to find its way back in the pocket sooner!

Most eucalypts have the ability to re-grow from cut stumps and these re-growths can be managed by selecting the best performing, well positioned coppices on the stumps and allowing them to grow. Coppice management in eucalypts, however, should be restricted to woodlots for fuel wood but not to timber or large pole plantations because after the final harvest, there will be only a few vigorous stumps to coppice.

To everyone planting eucalypts, the sky is the limit! There is a lot you can reap from your plantation provided you do the right thing at the right time.

For more detailed information on growing eucalypts profitably see SPGS's Tree Planting Guidelines – Ed.

ESSENTIAL OILS FROM EUCALYPTS: An Introduction

by Paul Jacovelli



A pharmacist, Joseph Bosisto, established the first commercial distillation of eucalypt leaves in Victoria, Australia. Bosisto's various eucalypt oils soon became famous.

Hold a eucalypt leaf up to the sun and you will likely see small glands which are filled with oil. Depending on the species, their leaf oil concentration ranges from less than 0.1% (in most tropical species) to 5-7% on fresh weight basis. Whilst most eucalypts possess some oil, however, less than 20 species have been commercially exploited.

Ever since the Aboriginal occupation of Australia some 40,000 years ago, people have been aware of the medicinal value of the leaves of certain eucalypts. Blue gum oil from *E. globulus* was a traditional remedy for infections and fevers and is now used worldwide for relieving coughs and colds, sore throats and other infections. The best known product is Vicks Vapo-Rub™ (as an inhalant or chest-rub), which has been marketed for over 80 years. The main oils harvested in the early years of the industry were these cineole-rich oils, the main constituent being 1,8-cineole and generally the term 'eucalyptus oil' is mostly applied to these cineole-rich types.

Eucalyptus oils broadly fall into three categories depending on the end use of the oil, namely, medicinal, industrial

and perfumery/flavouring oils. The medicinal oils come from species rich in 1-8 cineole, such as *E. globulus*, *E. radiata*, *E. exserta*, *E. smithii* and *E. polyhractea*. China is the world's largest producer of cineole-rich oils, though traditionally the best oils have been produced by Portugal, Spain and Australia. The oil is used in pharmaceutical preparations, household and sanitary products.

The second group of *Eucalyptus* oils have industrial uses (e.g. detergents): the main constituents of these oils were phellandrene and piperitone, being produced from varieties of *E. dives*, *E. elata*, *E. olida* and *E. radiata*. Piperitone oils provide the base material for the manufacture of synthetic menthol, whereas phellandrene is used as a fragrance.

The third group of *Eucalyptus* essential oils are those used in perfumery, notably citronellal from *E. citriodora*, citral from *E. staigeriana* and geranyl acetate from *E. macarthurii*. Citronellal – with its characteristic lemon-scent – also has insect repellent properties, being used in various products – e.g. Mosi-guard™. It is also used in laundry soaps and powders, air fresheners and disinfectants. The main countries producing citronellal from *E. citriodora* are Brazil and China.

Steam distillation is traditionally the most widely used method for the extraction of *Eucalyptus* oils. Freshly harvested foliage (whether manually or mechanically collected) is put in a sealed container and steam passed through for several hours, depending on the type of oil being extracted. In order to be of commercial interest, yields of leaf oil should be at least 1.5-2% based on the fresh weight.

It is almost impossible to accurately quantify production and consumption figures for eucalyptus oils. Often published trade statistics are misleading and inaccurate with *Eucalyptus* oils often being lumped with other essential oils. Of the estimated 3,000 t/yr being produced worldwide, the majority is

cineole-type, with smaller quantities being consumed by the fragrance and flavour industries.

Commercial production of *Eucalyptus* oils in Africa is extremely low. The only commercial operation known by the author to exist today is a small farm in South Africa (near the Swaziland border) but production details are sketchy. The main species are believed to be *E. dives* and *E. smithii*, producing piperitone and cineole-rich oils respectively. The majority of the commercial, oil-bearing species – *E. smithii*, *E. radiata*, *E. dives* etc. – generally prefer cool, temperate conditions to grow well.

Compared to other essential oils, *Eucalyptus* oil is a low price product. In the Western world, however, there is increasing interest in such natural products and *eucalyptus* oils are finding growing – albeit niche – market opportunities. Additionally there are potentially huge markets in countries with rapidly growing consumer demand e.g. India, China and Brazil. Maybe *Eucalyptus* oils will have their time again.

The author is Chief Technical Advisor with SPGS. In his previous life, however, Paul worked with a commercial forestry company in Swaziland (Shiselweni Forestry Company) who cultivated eucalypt species (*E. smithii* and *E. radiata*) for cineole production. The cineole (ca. 75% pure) was exported to Australia for further processing. The oil operation at SFC ceased in the early 1990's with the oil species being replaced by more profitable timber species – viz. *E. grandis*.



Just a few of the products containing eucalypts' essential oils that the author found around his house!



PRODUCTIVITY, COSTS AND TRAINING

by Paul Jacovelli & Charles Odeke

Many of our staff have been extremely busy running our new training courses over the last few months, with no fewer than six courses completed (March to June) and 532 man-days of training completed. You might well have seen us too with our new super-bright vests for the trainers and the participants alike (see photo). At least we won't lose participants in the forest now.

Under Walter Mapanda's expert guidance, colourful vests are not the only change to SPGS's training courses. All the 'old' courses – such as **Plantation Planning & Establishment** and **Plantation Maintenance** have been completely re-vamped to make them more practical and useful for participants. One of the new courses we ran was a separate 2-day one, focussing on **Weed Control** as this is probably the No. 1 area where things are going wrong. Another first was **Forest Investment** course, which we split between two successive week-ends in May, since it was more aimed at those investing (or thinking of investing) in commercial tree planting here. This course was run by UNIQUE Forestry Consultants in conjunction with SPGS. We had to turn away people from The **Nursery Management** course in April, so popular was it.

The visit here of a forestry productivity specialist, Rory McCaughan, couldn't have been timed better either (well, maybe 10 years ago would have been better but then people had not made the mistakes which they can now hopefully learn from). Read Rory's own thoughts on p.24 and his full report will be available on our web-site very soon. Making use of Rory's experience, we contracted him to run a **Contractor Management** course in May also.

Another important change has also occurred under Walter's watch: attendance at SPGS's courses is not enough to pass the course. Participants have to successfully demonstrate their

newly gained skills, whether it be pruning 100 trees, spraying a 100 m strip or planting 50 trees, before they are awarded an SPGS certificate. This ensures that they better understand the jobs that they will be supervising when they return to their various places of work.

How do we know whether this new approach to training is working? Well we hope that Clients see the changes when their supervisors/managers/contractors arrive back at base. Provided they are supported to introduce the changes required, Clients should see an immediate change in productivity and quality of work. If not then please let us know!

In keeping with SPGS's culture of constantly reviewing practices and introducing new ones where appropriate, we also ensure that SPGS staff receive necessary training support too. Consequently a number of staff have received training during the past few months in the Planning and Layout of Species Trials (led by Dr. Colin Smith at Green Resources Ltd., Mayuge), Report Writing and Communication (The British Council in Kampala) and Forest Finance & Economics (Stellenbosch University). Let us hope that you notice the difference.

In order to constantly keep our training courses relevant, we also always ask for feedback from participants themselves. Here is a sample of comments:

"The most interesting part was when we started working as a team and shared resources".

"There is increased interaction of facilitators and participants".



SPGS's Walter & William (yellow vests) demonstrating the best practices for post-plant spraying during an SPGS training course in April, 2011. Raising productivity, reducing costs and getting your trees to grow to their maximum potential are the objectives.

"For SPGS courses one should come dressed for practical work: SPGS courses are about getting your hands dirty".

"Appropriate tools and correct work techniques reduce effort from the worker".

"This course (Forest Investment) should have been presented to us before we started planting trees: We now have the confidence to carry out investment analysis on our own".

Finally, we have also been purchasing the appropriate equipment for these courses, which is now all neatly organized in our new tool storeroom. This has been developed as a demonstration of 'best practice' that Clients may want to follow: so please ask to see the stores when you are next visiting SPGS's office. We will also be talking to our colleagues at UTGA so that they know which tools (and quality) we recommend for growers here, especially as there is some rubbish being sold on the market here.

Training plans for the rest of 2011? We are flexible to Clients' needs, so if you have an urgent need for specific training let us know very soon. Where there is sufficient demand we can run our basic courses again – or tailor-make courses to suit, provided there are the numbers to justify them.

Interviews with Growers

by Francis Ssali, SPGS Plantation Officer (Trainee)



At the last Clients' field meeting, we grabbed hold of a few growers to hear about their experiences with planting trees: some very interesting stories emerged.

Qn: Your name please and briefly tell us about your planting

A: Godfrey Byekwaso planting in Luwero and has planted 28 ha of the contracted 50 ha. I bought the land myself specifically to plant the trees and first did my planting in Oct 2009.

Qn: Your profession

A: I am an Accountant working with FINCA Uganda

Qn: So, the big question, why forestry?

A: I heard from friends who had invested before and while talking to them I found the idea quite exciting and when I did the maths I actually found out that it was a very profitable business with good returns. It also engages you, for example, in retirement when the resources are limited so it is a form of forced savings. In addition you have self satisfaction in that you have something to look forward to.

Qn: How have you found this type of business?

A: This is a type of business that will require investing in money on a regular basis without seeing profits for sometime, but nevertheless the timber business is a very viable one in which one can never go wrong as long as he gets good technical advice. But what I have also realized is that patience and determination is very important in this kind of business. But all in all, like they say: no gain without pain!

Qn: Have you been to any client's meeting before?

A: No, this is my first. Well, it has been an eye opener for me – especially the basic mistakes we make because we rely mostly on our managers so much. I have also learnt many new things

and techniques that I hope to put into practice like the need to buy some of the equipment demonstrated for fire fighting because I now know that they are important if we are to reduce losses in our business. So from now on I will be talking with an informed point of view with my manager. I have surprisingly met colleagues whom I didn't know are also investors like me, we have since shared our experiences and problems faced together with them.

Qn: How has your relationship with SPGS been?

A: The relationship has been very good in that their information is timely, when you call people respond and also someone is there to attend to you: they are also very objective.

Qn: Any advice you would like to give the readers?

A: To those who have not yet planted it's a very good investment, it requires substantial start-up capital and even SPGS is there to assist you financially and technically. People shouldn't wait to get lease from government (you see I even bought my own land) because it will delay them; the earlier they start, the better land is also cheap upcountry. So people should look at forestry as an investment. It's good I have done good fire lines may be that's why I have been spared of the fires.

Qn: Your name please and briefly tell us about your planting

A: Sam Opio Ocheng planting in Apac district Adiaka farm where I have planted 20 ha (of the 30 contracted) but I have been planting since 2005.

Qn: So why did you come to the Clients' Meeting?

A: Well, I needed to know the progress so far and also get more knowledge and information. You know they say the quest for knowledge never ends.

Qn: How has your relationship with SPGS been?

A: I am very happy with what they

are doing, the way they handle us and even if I wasn't funded the support is still good. Through the field inspections we get to know what mistakes we have done and then be corrected. In fact I was there before SPGS and this technical advice wasn't there before.

Qn: Any lessons learnt today?

A: Yeah, I was very much interested in the *Eucalyptus* clones, because they can easily multiply and since *Eucalyptus* is doing very well in my area I picked interest. I also learnt about aqua soil and its application which can be very beneficial in dry areas like where I come from.

Qn: Any advice?

A: People should change their attitudes towards forestry for example people think when you plant trees it takes a lot of time before you realize profits from your investment but I always tell them that even if I am to die the children's future is bright. So I think people's attitudes should change and start thinking long term. The biggest problem that people have is that they don't think about future generations but what they are going to get or eat today, but if our parents did not plan and make investments for us we wouldn't have studied or been able to survive. So my desire is to leave something for my children and hope that they will emulate their father and pass it on to their children as well.

Qn: Your name please and briefly tell us about your area of planting

A: I am Charles Pulle planting in Dokolo district and I have planted 10 ha (of the 45 contracted). My business is called Alit tree planting project. I am a businessman and a farmer.

Qn: When did you become interested in tree planting?

A: Since childhood I have always had a passion for growing trees and I think I got that from my parents. I started planting trees almost 10 years ago

cont'd on p.10



SPGS CLIENTS' MEETINGS: An Outsider's View

by Chidiebere Ofoegbu

The Forestry sector is of high economic importance to the Ugandan economy. Plantation forestry establishment in Uganda dates back to 1960 and 70s when the first set of eucalypt plantations were established for the purpose of providing fuel near administrative centres. However most of these older plantations have since been harvested and unfortunately data on their productivity are very scanty too. Uganda indeed possesses abundant potentials in the production and processing of timber and timber products, but bad governance and politics have not allowed Uganda to fully utilize these potentials. Consequently, the forestry and wood product sector of the Ugandan economy have remained relatively undeveloped.

The scenario is however changing rapidly. The establishment of Sawlog Production Grant Scheme (known as SPGS) in 2004 marked a new milestone in

the history of plantation forestry in Uganda. SPGS is funding and providing technical assistance to private and institution investors in commercial forestry in Uganda. The impact of SPGS has reawakened the interest of the Ugandan public in commercial forestry. Within the six years of her existence SPGS has funded the establishment of over 20,000ha of tree plantations.

One of the outstanding and highly commendable strategies of SPGS that has contributed immensely to her success is her ability to productively manage her numerous clients and integrate them into the forestry business. SPGS



has through provision of technical assistance and contract management helped her clients, most of whom who do not have formal or prior knowledge

of forestry, to integrate well into the forest business.

One of the avenues through which SPGS reaches out to her clients/investors is the interactive session known as 'clients meeting'. I was privileged to attend one of these clients meeting which took place on the 3rd and 4th of March 2011. The clients meeting started with technical training on various best practices in forestry operations. The clients were introduced to various forest operation practices such: new method of lining out and pitting using a 'cross head'; planting with aqua-soil; marking for thinning, and fire prevention and control. The clients meeting also involved a visit to the pole treatment plant of Busoga Forestry Company in Jinja, where the clients were introduced

SPGS has through provision of technical assistance and contract management helped her clients, most of whom who do not have formal or prior knowledge of forestry, to integrate well into the forest business.

to the practicalities of this forest industry operation.

The second day of the clients meeting was an interactive session aimed at improving the relationship between SPGS and

her clients as well as helping to create a viable platform for networking for overall development of commercial forestry in Uganda. The participatory approach of the meeting helped in ensuring that all stakeholders were engaged in decision making with regard to the future of commercial forestry in Uganda.

The clients meeting was indeed a huge success: the impact of the clients meeting on investors' interest in commercial forestry in Uganda cannot be overemphasized. Observation and interaction with participants at such meetings revealed that they are crucial to the clients (investors) ability to manage their forestry investment. SPGS is indeed taking commercial forestry in Uganda to its glorious future. I do sincerely hope that SPGS will serve as a model for other African countries

in revamping the commercial forestry sector of their economies.

Chidi was the recipient of the Commonwealth Forestry Associations' Young Foresters Award 2010/11. He was based at SPGS for 3 months in early 2011 and (along with the other recipient of the Award – Sylvester) quickly became part of the team and contributed considerably. We asked him as an 'outsider' to share his thoughts from the clients meeting - Ed.

From p.9

Interview

(though not on a commercial basis) - like *Eucalyptus*, Musizi, and pines.

Qn: So has the interest increased after today?

A: Oh yes especially on the use of aqua soil since we have very long dry periods in my area it can be very useful for sometime when the rains are a bit scarce. So I hope to find a way of buying and using aqua soil in the future.

Qn: Are you happy with SPGS work?

A: I am so happy with their work, they are very open and I was recommended for 10 ha and also the technical advice I get from them is good also the plantation establishment and maintenance course which I attended in Gulu last year helped me a lot. Now I know how to line out, dig pits and I hope to recruit someone who is educated and come for the trainings.

Qn: Any problems and advice to fellow planters?

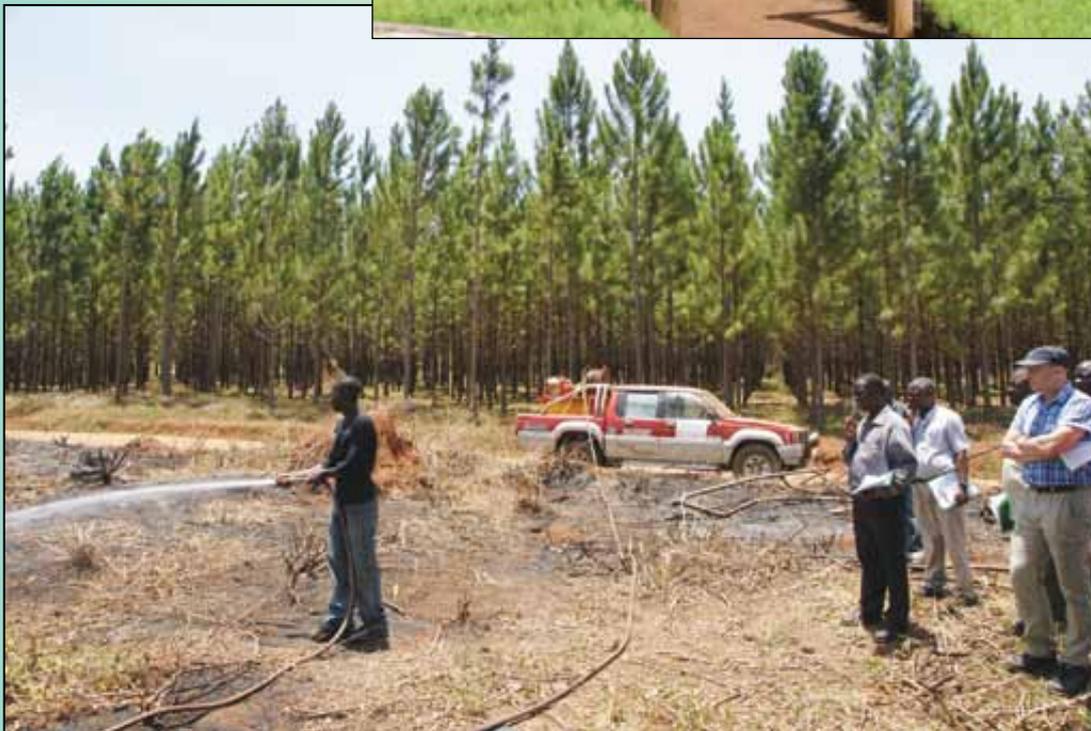
A: I had problems with fires this season and I think it was malice from people and encroachers. My advice is that they should take fires more seriously especially in this dry season that we have experienced.

PHOTO GALLERY I - 1st CLIENTS' MEETING OF 2011



← *The Ministry of Water & Environment's Permanent Secretary, David Obong, addressing SPGS Clients after hearing of the problems Green Resources (and other growers too) is having with illegal encroachment in Central Forest Reserves.*

→ *SPGS TA, Walter Mapanda, talking about seedling quality and also about the SPGS's private nursery Certification Scheme*

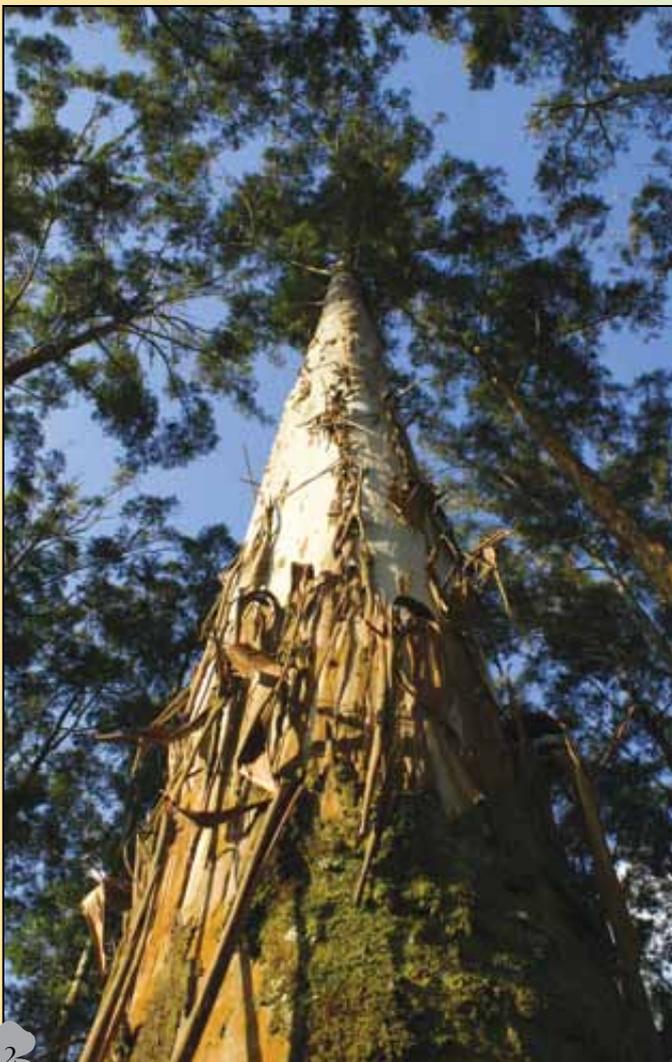


← *Green Resources staff showing participants their fire fighting capabilities: this is a 'bakkie-sakkie', a 500 lt tank (and pump) loaded onto a pick-up truck. A useful 1st attack tool, provided of course, the fire is close to a road.*

PHOTO GALLERY II - EUCALYPTS IN UGANDA



↑ *If only more Clients listened to us (like Ferdult obviously has here) then we might see more plantations like this in Uganda! This fantastic crop is a 3-yr old GU – a hybrid clone of E. grandis x E. urophylla, growing in Lugazi. On the right site and with the correct silviculture, eucalypts will repay your efforts many fold.*



↑ *Eucalypts are an excellent source of domestic and industrial fuelwood, particularly with their fast growth and coppicing ability. Some of the denser eucalypt species can also produce a high quality charcoal.*

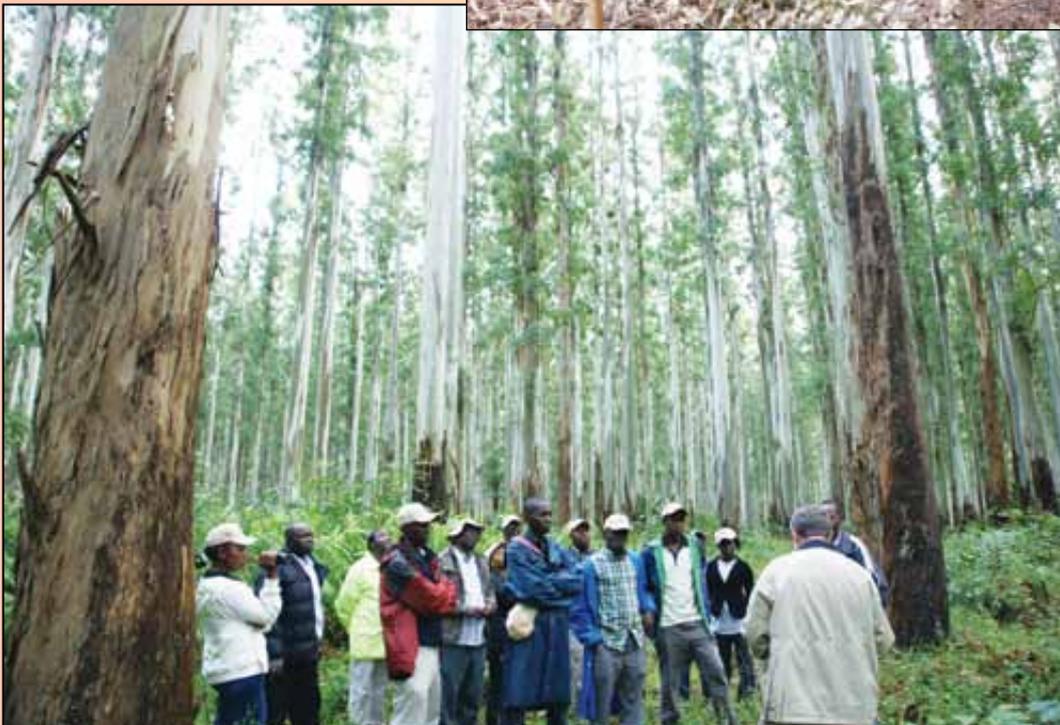
← *A giant E. grandis in the seed orchard in Fort Portal, Western Uganda.*

PHOTO GALLERY III - EUCALYPTS IN SOUTHERN AFRICA



← Contract workers pruning 2-yr old *E. grandis* grown for sawlogs at Peak Timbers, Swaziland.

→ Dr Sam Zaramba, Simon Mugayo and Dr. Peter Ngategize admiring a young *E. grandis* stand being managed for transmission poles at Merensky's impressive operation in Mpumalanga, RSA.



← William Davidson showing the Ugandan team the impressive CCT trial in South Africa. Established over 50 years ago, this trial led to spacing and thinning recommendations for *E. grandis* in southern Africa.



DID U KNOW?

Some Eucalypt facts

Only two eucalypt species do not occur naturally on the Australian mainland. One is *E. urophylla*, found in Timor and on nearby islands in Indonesia. The other is *E. deglupta*, which occurs in Papua New Guinea, Irian Jaya and the southern Philippines.

Common names for eucalypts are very descriptive – e.g. Weeping Gum (*E. maidenii*), Ghost Gum (*E. papuana*), Yellow Bloodwood (*E. trachyphloia*), Silver-leaved Ironbark (*E. melanophloia*), Messmate Stringybark (*E. obliqua*), Blackbutt (*E. pilularis*) and Spotted Gum (*E. maculata*).

The River Red Gum, *E. camaldulensis*, flourishes naturally alongside lowland water-courses, where it is subject to seasonal inundation. It is the most widely distributed eucalypt in Australia.

The eucalypts rank amongst the best honey plants in the world.

Eucalypt oil was probably the first export from Australia. In 1789 a bottle of oil was sent to Sir Joseph Banks in England by the 1st Governor of Australia. The oil was from the so-called peppermint tree (*E. piperita*), and it was claimed that it relieved “all cholicky complaints.”

Identification of eucalypts is often not a simple task and a single characteristic is rarely sufficient for the purpose. The most useful are these are general size and form of the trees, the bark-type, foliage, flowers, buds and fruit.

Eucalypts do not have dormant or resting buds but have “indefinite shoots” of which the delicate growing tips are able to produce an unlimited number of leaf pairs.

Eucalypts are generally much more sensitive than pines to competition from other vegetation during the period immediately after planting out.

‘New’ eucalypt species continue to be discovered: the sub-tropical species - *E. longirostrata*, *Corymbia henryi* and *C. citriodora subsp. variegata* - are all performing well in trials in South Africa over the last 10 years or so.



HeartWood

12 PAGES OF SCIENCE, REVIEWS AND OPINIONS

No. 9 (2011)

Growing Eucalypt in Uganda: Profitability and Plantation Values

by Erling Bergsaker, NORSKOG

NORSKOG and UTGA have made an assessment of eucalypt plantations in Uganda, with the purpose of estimating the values and profitability of eucalypt production. This work was done in January 2011, and shows that eucalypt production done the right way and where the conditions are suitable, most likely is the most profitable growing of wood you could do in Uganda. The main reason for the better profitability of eucalypt, compared to pine, is significantly shorter rotation period and higher demand in the wood market for the products from even early thinnings.

Different production lines.

In our study, we have analysed two different production lines:

1. Production based on *Eucalyptus grandis* with the main purpose of producing saw logs.
2. Production based on hybrid eucalypt clones with the main purpose of producing raw material for treated transmission poles.

The study is based on a description of each of the production lines, all expected silviculture means, costs and income, when they appear, which output we could expect, and what size we demand or expect for the harvested trees at each age. The basic tools for such study is a suitable growth model and economic calculation model for calculation of net present values of each kind of cost or income at any stage (or year) in the rotation period.

The growth model we have used was developed by Alder in 2003, and improved by Unique/SPGS in 2010. This model allows you to calculate from any chosen starting point or number of seedlings planted out, the expected production in total per Ha or mean dimension for the trees for each year in the rotation. We have simulated different production schemes and described what we suggest to be the most profitable way of producing saw-logs from *E. grandis* or transmission poles from hybrid clones.

After the first thinning the production schemes are somewhat different, so you need to know at an early stage what you intend to produce. The main difference is that you only need

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- Timber Market Report.
- *Eucalyptus* and Water Uptake.
- *Eucalyptus* Literature

two thinnings and no pruning for production of transmission poles, whereas you need three thinnings and pruning after each thinning when focusing on saw-log production. Transmission poles demands pretty straight stems. If you do not expect that, saw-logs should be the main product.

For production of sawlogs based on *E. grandis* the following programs are used:

Site index	First thinning		Second thinning		Third thinning		Final felling	
	Age	Trees taken out	Age	Trees taken out	Age	Trees taken out	Age	Trees taken out
34	2	300	5	270	7	200	10	350
30	2	250	5	270	8	200	12	320
26	3	200	6	200	9	200	14	288

For production of transmission poles based on hybrid eucalypt clones the following programs are used:

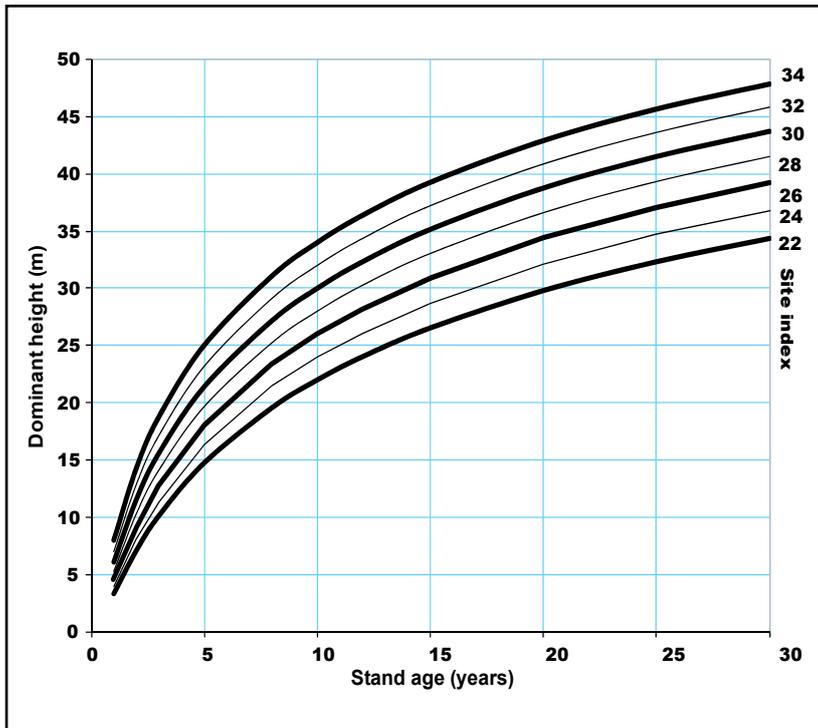
Site index	First thinning		Second thinning		Final felling	
	Age	Trees taken out	Age	Trees taken out	Age	Trees taken out
34	2	200	5	190	8	500
30	2	200	5	220	9	460
26	3	200	6	250	12	430

For the sawlog production we have recommended some higher number of seedlings planted out, as the ordinary seedlings are relatively cheap, the first thinning is profitable and it is good to have more trees to choose from when doing the marking for the first thinning to improve the final quality.

Site quality is crucial.

The site index is a classification of the growth conditions in terms of capacity for wood production. There is a close correlation between the volume production and the tree heights. As the tree heights are the simplest to measure, the site index classification is linked to the tree heights, and is described as the expected heights of the dominant trees at age of 10 years. Height curves are generated for the entire rotation, so we could measure the tree height at any age, preferably older than 5 years, and by knowing the age read out the site index from the curves below.

Site index curves for *Eucalyptus grandis* in Uganda



The site quality shows the potential of the local growth conditions, including fertility of the soil and rainfall. Production of eucalypts should be limited to areas where you have at least 1200 mm of annual rainfall and site quality of 30 or better.

Costs and income

The costs and income during the rotation period are estimated from experience from eucalypt growers in Uganda, supported with figures from abroad. For production of transmission poles we have the following cost and income scheme.

Operation	Year	Net income or cost (-)
Preparation for planting	1	-310
Annual land lease	1 - 9	-22
Planting, beating up	1	-500
Termite fighting	1	-200
Weeding	1	-480
Weeding	2	-240
Overheads and general management costs	1 - 9	-300
Thinning (1)	2	200
Thinning (2)	5	320
Final felling	9	33,810

Values per ha of *Eucalyptus grandis* plantations

The value of a plantation will grow with the forest. The estimated value at each age is shown in the figure opposite. The value will also significantly depend of the growth conditions, described as site quality.

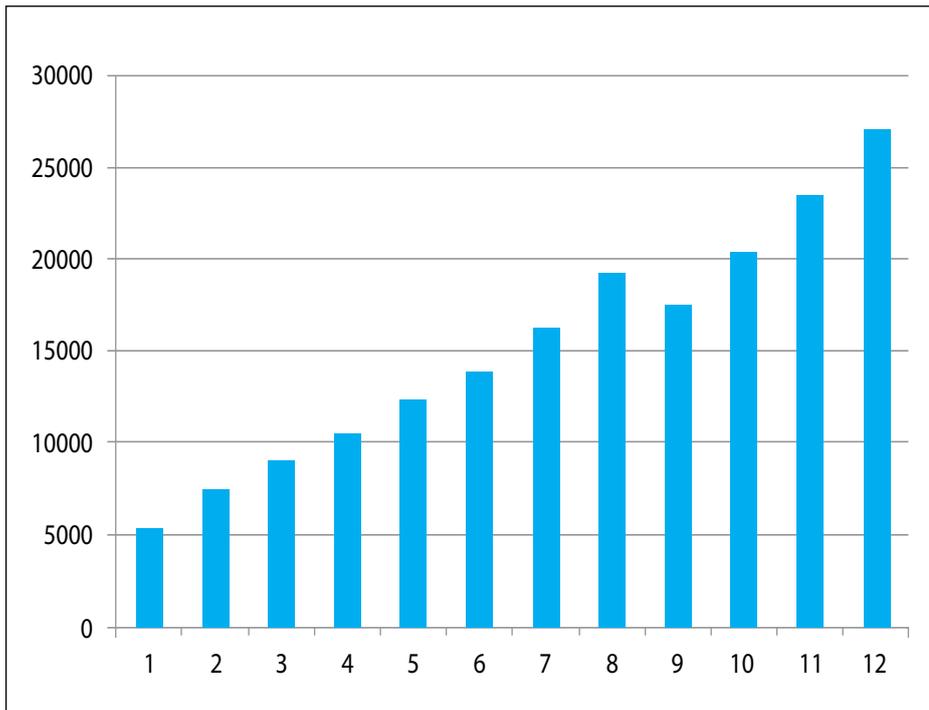
The values especially for the young forest, will strongly depend on the chosen demand for rate of return. The graph above shows the value based on a demand for 14 % real rate of return, which adjusted for an inflation rate of 5 – 7 % corresponds with rate of return from a bank account or investment in the stock market at 19 – 21 %, which could be considered to be pretty high, but there is a risk aspect in eucalypt plantation which should be paid for. The level of risk could however be significantly reduced by competence and relevant measures. No taxes nor SPGS grants are included in the calculation.

If we increase the demand for rate of return to 20 %, the value year one will be close to the production cost at that stage, which indicates we are close to

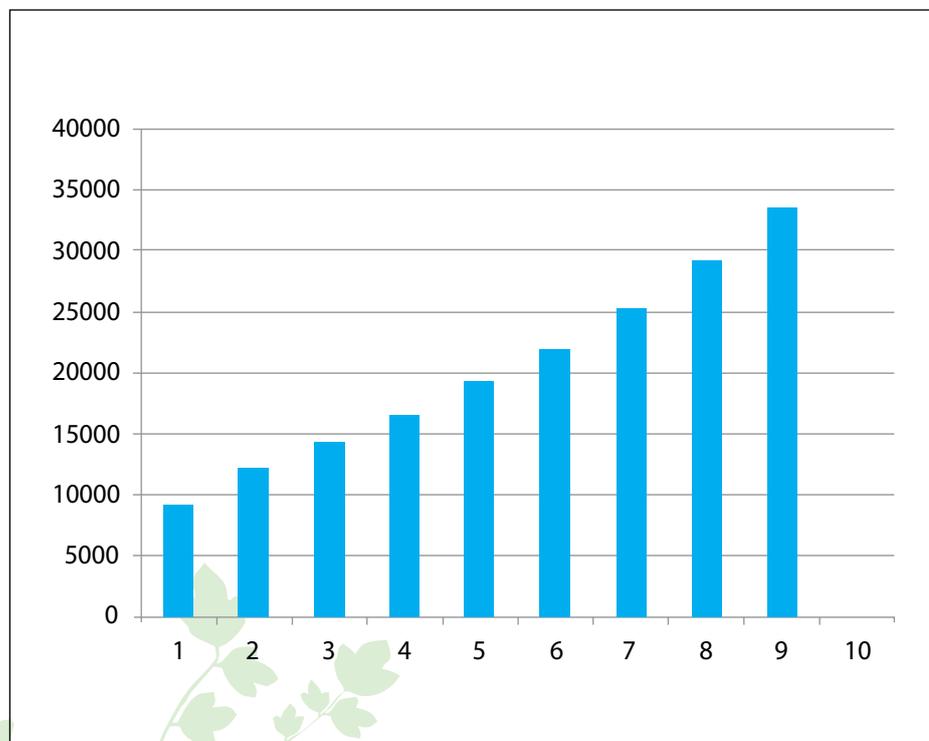
the level of internal rate of return (real and before taxes), or profitability of this production at a medium site quality. SPGS grants will contribute to improve the profitability, but the taxes will reduce the profitability to the same extent, and the final profitability after SPGS grant and taxes will approximately be the same as before if we include these two factors.

Values per ha of plantations for transmission pole production based on *Eucalyptus* hybrid clones.

Similar calculations are made for plantations for production of transmission poles from hybrid eucalypt clones. This production show some higher value and profitability.



Default value development of a plantation standing at a medium site class (30). Values per ha. given in 1000 UGX for each year in the rotation period and demand for rate of return at 14 % pa. (real). The calculated values are only for the standing stock. The value of the ground is not included. Similar calculations are made for different site indexes and demands for rate of return.



Value of 1 ha of a forest plantation based on hybrid clones of Eucalyptus, mainly meant for transmission pole production at medium site quality, calculated from a demand for rate of return at 14 % (real). The values are given in 1000 UGX.

Some conclusions and considerations

The work done has given the following conclusions:

- On the good sites eucalypts are more profitable and generate higher plantation values than pine.
- Pole production based on eucalypt hybrids gives the best economic results where they are suited.
- Stick to pine on the poor sites.
- Production of eucalypt is overall some more risky than pine production, especially due to termites and other possible insect-diseases.

For valuation of a plantation keep in mind that the study shows results of calculations based on norms and standards for costs and income. If the conditions of a plantation in any aspect are better or worse than the norm, this should be reflected, and changes done. When working with the net present value it is necessary to keep in mind that it is only parameters for the future that should be considered. What the actual costs have been is irrelevant. The demand for rate of return should be considered. There is no final objective answer to the level of demand for rate of return. Only the market could tell.

About the Author: Erling Bergsaker is a Norwegian national and a professional forester with a Masters degree in Forest Management and Economics. He is currently Head of the Department for consultant services of NORSKOG, and part of the NORSKOG team cooperating with UTGA. He has more than 30 years of experience of working in many countries. For the last 15 years the experience in addition to Scandinavia and Uganda, is mainly from Russia, the Balkan region and Indonesia. The work experience is covering a wide range of management and economy subjects, like forest valuation, taxation issues, forest inventories, profitability analyses and overall forest management.

Overview of Uganda's Clonal *Eucalyptus* Programme

by Abubakar Mwima¹

Abstract

Clonal forestry has been used to provide large quantities of superior planting materials in many countries including South Africa, Brazil and China. The technology on clonal *Eucalyptus* was introduced in Uganda in 2000. This was due to the increasing demand to meet Uganda's wood crisis, caused by the overwhelming need for firewood in rural communities where 80-90% of the population depends on it for 96% of their energy needs. The low and declining forest cover remains an intractable problem as efforts to meet the increasing wood demands to match the population increase in the country.

The Uganda clonal *Eucalyptus* programme aims at providing fast growing plantlets to meet this demand. Presently, the programme supplies one million clonal *Eucalyptus* plantlets in a public-private partnership to small and medium sized tree growers. These clones have been selected for adaptation and performance after trials in different ecological zones across the country. Over a period of 3 years, the programme has enabled supply of 2.1 million clonal plantlets. It is expected that by 2012, the programme will have the capacity to produce 4-5 million clonal *Eucalyptus* plantlets across the country per season.

Background

The project opportunity was brought to Gatsby (UK) in 1995 by International Centre for Acquisition of Agro-biotech Applications (ISAAA), and was based on ISAAA's exposure to clonal technology at the University of Natal and Mondi Forest Industries in South Africa. It was attractive to the Trustees of Gatsby since a core objective of their Africa programme was support for the introduction of specific technologies which could benefit small farmers. Thus this opportunity ran in parallel to the major support which the

Foundation gave to the dissemination of new varieties of key food crops. Gatsby was not looking at the forestry sector as a whole in order to establish the kind of support which might be given from first principles. Once it became clear that introduction of the technology would be supported and back stopped by Mondi Forests there was a clear case for going ahead. It was a 'supply' drive approach – which has frequently been the case with 'green revolution' type innovations which have nonetheless proved successful, as has already been established by the Tree Biotechnology Project (TBP) in Kenya, Uganda and Tanzania.

TBP phase two commenced in May, 2006 and lasted for three years. It succeeded phase one which was carried out from 2002 - 2005. The aim of phase one was to transfer and test the clonal technology in Uganda and to build capacity in clonal forestry technology. Gatsby Charitable Foundation (GCF) provided funding to the National Agricultural Research Organization (NARO) to implement the project using superior clonal plantlets of 11 *Eucalyptus* hybrid clones and one pure *E. grandis* clone imported from Mondi Forests Limited, South Africa. NARO in turn mandated the National Forestry Resources Research Institute (NaFORRI) to implement the project on its behalf. Phase one registered the following achievements:

- Successful transfer and field testing of the 12 clones at 15 sites;
- A mini-clonal nursery constructed at Kifu, in Mukono for clonal forestry back-stopping;
- Hands-on training of 3 technicians;
- Matching clones to specific sites in Uganda Agro-Ecological Zones ;
- Majority of clones were resistant to insect pests.

Funded by Kilimo Trust, Uganda Gatsby Trust (UGT) implemented the programme for phase 2. Other partners included NaFORRI, NFA, SPGS and Gatsby Clubs. The

objectives and activities of phase 2 were much wider in scope than those of phase one, covering nearly all aspects of clonal forestry – namely: to continue to monitor the performance of the clones in the trials, operationalization of the Kifu clonal facility, mass production, distribution, commercialization of the technology/ deployment and capacity building, and skills development.

Steps made to test the Technology

The chosen technology was clonal inter-specific *Eucalyptus* hybrids based on *E. grandis* crossed with *E. camaldulensis*, *E. tereticornis* and *E. urophylla*. The clonal material was generously made available free and without reservation by Mondi. The clones provided to Uganda were selected as being appropriate for a range of purposes and specifically to be used by small farmers. Against this, the selection was, of course, not done directly under Uganda conditions.

The approach the steps followed may be summarised as:

- a) Bring in selected clonal *Eucalyptus* material from Mondi;
- b) Create central facility for propagation and build capacity through training attachments, mentoring and study tours;
- c) Test selected clones over a wide range of sites in each country;
- d) Support the development of private nurseries to propagate and make available clonal material;
- e) Encourage the widespread planting of clonal material by estates and especially by small farmers for commercial purposes and domestic use;
- f) Install functioning capability in the country through which the benefits from clonal forestry can be continuously improved and made widely available for use in appropriate situations leading to improved income-streams and enhanced public good.

¹Uganda Gatsby Trust, P.O. Box 7062, Kampala, Uganda



Following the success of the Kenya project which started in 1997, a request was made to ISAAA from the forestry research centre in Uganda (NaFORRI) for a similar initiative to be undertaken there. The project, which started in 2002, included Mondi as the provider of technical support and clonal material with Gatsby funding. A central propagation facility was established at NaFORRI headquarters at Kifu, similar to but far less sophisticated than at Karura - Kenya.

Twelve clones of *E grandis* X *camaldulensis* (GCs) and *E grandis* X *urophylla* (GUs) were imported into Uganda with due regard to quarantine requirements. These were multiplied up and trials established on a range of sites in Uganda in 2002 and 2003, in many cases on farmers' land, with an agreement that the farmers would not cut trees without agreement from NaFORRI. Sixteen trials were laid out to a standard design with four replications and all included *E. grandis* as a control plot. One trial was destroyed by fire, leaving 15. Tending was not always adequate and no fertiliser was applied although most trials have matured reasonably if somewhat more slowly than might have been the case with more intensive treatment.

Outputs and Outcomes

Three functional regional nurseries have been established and have a combined production capacity of 1,500,000 clonal plantlets per annum. Adoption and cultivation of the high valued clones has taken root; 607 farmers have planted clonal *Eucalyptus* totaling to 1900 ha (2.1 million plantlets rolled out so far). These include 37 women and 570 men. These farmers are distributed in 45 districts of Uganda (60% distribution by districts). The project established linkages with SPGS and The Uganda Timber Growers Association (UTGA), the main organizations involved in commercial forestry in Uganda. The project has also produced plantation guidelines for tree planting materials using the information generated from the trials. With assistance from NaFORRI scientists and SPGS, stakeholders are being progressively introduced to *Eucalyptus* clonal forestry. Specifically the following are the outcomes of the project: the project initiated 16 Gatsby Club Nurseries as an entry point to scaling out the technology to the private sector. There is growing interest in nursery business and the club nurseries have so far produced 1.12 million plants.

Potential Uptake

Based on the trials, some guidelines are provided which are enabling the programme to focus more on the commercialization phase. It is important to realise that growth rates are strongly correlated with site potential. Selected clones planted in low rainfall areas will not have the productivity of plantations in the wet highlands but they seem to outperform slow growing species such as *E. camaldulensis* and *E. tereticornis* on such sites. The main areas where the clones will be useful are:

- Areas with rainfall in excess of 1,000 mm but where the temperature regime is too hot for *E grandis*;
- Areas with rainfall of 600 to 1,000 mm with high temperatures. There are indications that GU hybrids do not survive well at lower rainfalls, under perhaps 800 mm. Better results are likely to be achieved with higher rainfall than this;
- Limited potential in areas where rainfall is less than 600 mm, stem form will be very important as it is the straightness that is most desired. Kenya results suggest that where the rainfall is less than 400 mm, clones are outperformed by better provenances of *E camaldulensis*.

In making clonal material available, it is important to note that the number of clones available is small and the testing is far from complete. Farmers taking up clones are already asking for specific clones, only one or two usually, and seem unaware of the risks.

Challenges

The greatest challenge to success of this Programme is the negative publicity associated with *Eucalyptus* growing. The proponents of this debate argue that eucalypts are harmful to the environment, because of their high water use. They thus make the streams and rivers to dry up, thus endangering survival of the human population. The Programme is countering this negative publicity with evidence-based publications in the print media, and also participating in radio talk shows, as well as organizing Round Table discussions about trade-offs involved in *Eucalyptus* growing.

Another challenge is the blue gum chalcid (BGC) pest - *Leptocybe invasa*, which the programme is addressing using

silvicultural practices as well as through biological control using natural enemies. Some clones like GC540 and GC784, are highly susceptible to BCG.

Gatsby future strategy

The programme has transferred the technology and commercialized it. Currently there is market development and indications are that the market potential is big. Gatsby has already laid a foundation for expansion through ensuring that most clones that have shown good potential in the trial are available. Some of these could initially not be rooted. However there are limitations with kind of technology that is being used is mass production is the way forward. Gatsby is seeking ways of upgrading the technology without necessarily hiking the prices of the plantlets. In addition there are plans to set up two more regional nurseries; one in the north and another in central Uganda.

Conclusions and Recommendations

The Uganda Clonal *Eucalyptus* programme is a living example of how technology can be acquired from different African countries and how this transfer can contribute to improve livelihoods. The work also shows how innovation such as tunneling has enabled easier use of the technology by nursery operators. The programme will continue to counter negative publicity and overcome other challenges such as the Chalcid threat. The programme will continue to refine growers' guidelines in order to increase technology adoption.

About the Author: Mwima Abubaker is the Assistant Project Manager, Gatsby Tree Biotechnology Project, which he joined in 2007. He holds a B.Sc. (Hons) Degree in Forestry from Makerere University, Kampala. He has had various on-job trainings from which he has acquired vast knowledge and skills. Mwima Abubaker worked with NEA as a Sector Manager. Before that, he had worked with Uganda Tea Growers Corporation as Tea Development Officer in charge of promotion of Clonal Tea Nurseries.

TIMBER MARKET REPORT -Q1 2011

by Bahizi Peter

Table 1: Current retail prices for selected timber species and sizes

Specie	Size (inch x inch x foot)	Average Price (UGX)
Eucalyptus	Poles 4-6 inches	2,200
Eucalyptus	4 x 3 x 14	15,000
Pine	12 x 1 x 14	35,000
	6 x 2 x 14	18,500
	4 x 2 x 14	14,000
Mahogany	12 x 2 x 14	70,000
	8 x 2 x 14	60,000
Mahogany(Congo)	12 x 1 x 14	55,000
Mahogany(Uganda)	12 x 1 x 14	45,000
Mvule	12 x 2 x 14	65,000
	8 x 2 x 14	45,000
	6 x 2 x 14	35,000
Nkalati	12 x 2 x 14	55,000
	12 x 1 x 14	40,000
Kirundu	12 x 1 x 14	5,000

Kampala retail prices, 1st quarter 2011 (Source: SPGS)

Table 1 shows average timber prices as stated by timber dealers in Kampala city in the first quarter of 2011. In general the prices of the different species slightly increased in relation to the increase in the 4th quarter of the previous year.

Figure 1-3 show the price trends of major species traded in Uganda in the recent years based on dealers' retail prices in Kampala city.

All the traders cited the rise inflation rate (currently at 14.1% and still going up!) being the contributory factor that led to the overall increase in prices. In specific they decried the high fuel costs that had forced some of the traders to run out of business hence closing their timber stalls.

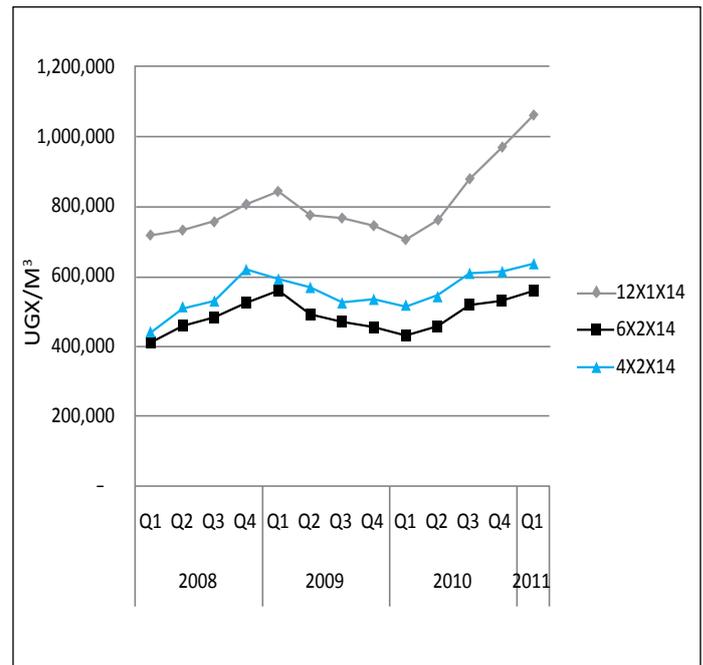
Pine prices increased: the increase was partly attributed to the increasing scarcity of the species and partly to the rise in the levels of inflation. Most of the traders pointed out that their sources of the species (Central Forest Reserves) had run out and the scarcity would persist hence anticipating a further increase in prices.

Prices for eucalyptus timber remained constant due to the low demand: this was attributed to the slowdown in the construction industry, political uncertainties coupled with the high inflation rate.

Notably the prices for small pieces of pine and eucalyptus species did not have a big upward shift, the traders were able to point out that the scarcity in machine sawn timber was being countered by the supply of hand sawn (pit sawn) timber that was being source from small stands or individual trees in farms.

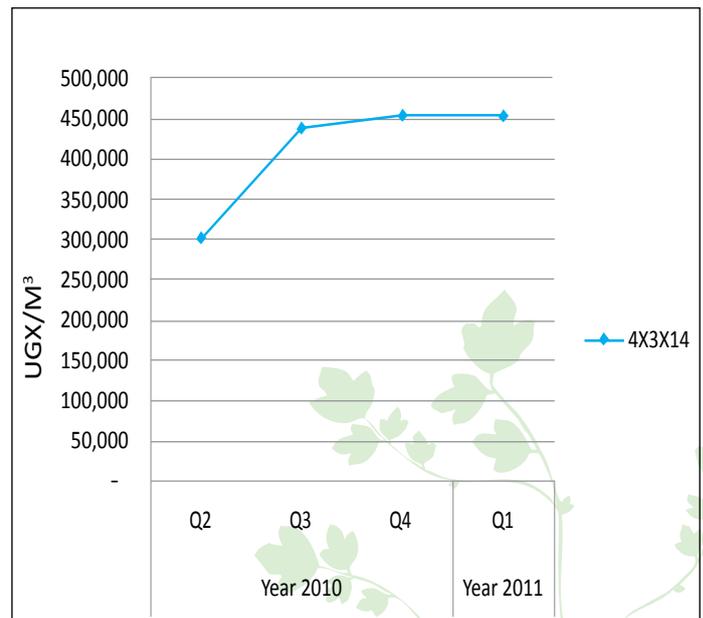
Other than the price for Mahogany (*Khaya* spp) the most favoured genus, the prices for imported timber notably Mvule (*Milicia* spp), and Nkalati (*Afrosesalicia cerasifera*) remained constant. The stagnation in the price was attributed to a slight gain in the shilling against the dollar and to the decline in demand of the different species due to a slowdown in the construction industry. Though the scarcity of these species is still pronounced the prices had not varied.

Fig 1: Price trend for pine

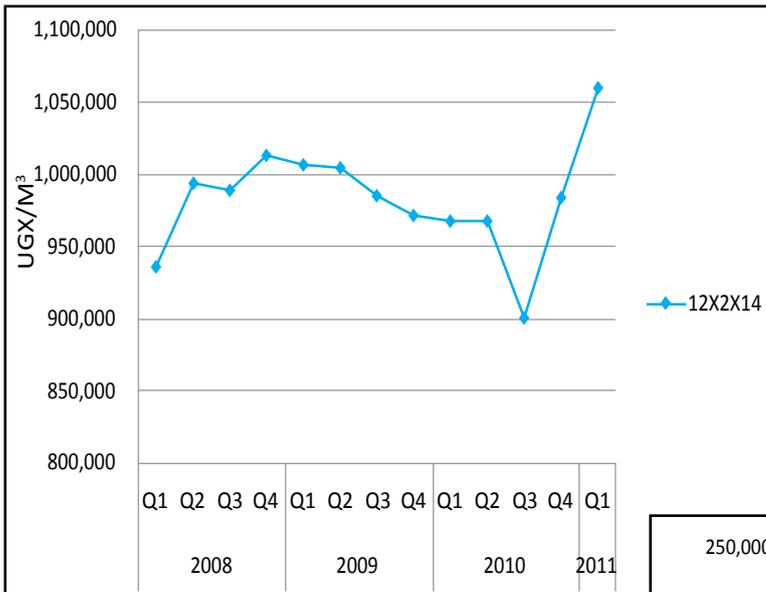


(Source: SPGS)

Figure 2: Price trend for Eucalyptus



(Source: SPGS)

Figure 3: Price trend for Mahogany


(Source: SPGS)

EUCALYPTUS POLES MARKET

Table 2: Current retail prices for treated and untreated *Eucalyptus* poles for different sizes

Size (Metres)	Price(Seasoned) (UGX)	Price(Treated) \$
10	120,000	160
11	135,000	185
12	170,000	209
14	230,000	265

(Source: SPGS)

*\$ =UGX 2,395 @ 13/05/2011

Table 2 shows the current prices for seasoned poles and the selling prices for treated poles as reported by the different pole treatment plants operators.

Figure 4 shows the price trends of eucalypt poles in Uganda over the past three years. The prices have had no significant increase through the first quarter of 2011. Not only has the current political and economic situation slowed down business but also made traders do business with a lot of caution, both the supply and demand and supply of transmission poles has been low. Most traders decried high transport costs and scarcity of the poles from nearby sources - yet the prices at the treatment plants remained constant.

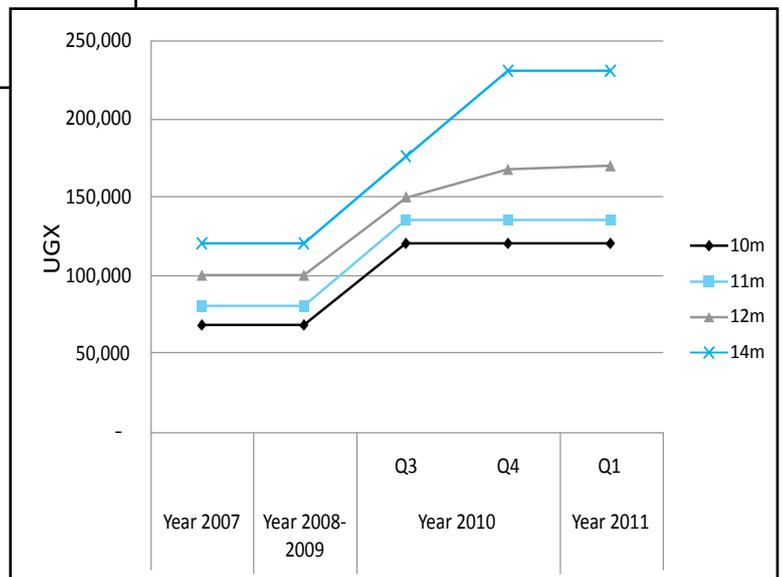
The treatment plants operators pointed out the scarcity of the 14 metre long poles which are in high demand. They also noted that the number of poles being rejected at the pole treatment plants had increased due to lack of conformity with their specification: cases of wet poles (above 50% moisture content) and premature poles had been cited as significant reasons for rejection.

As the industry grows its necessary to observe the specifications set by the processing plants (pole treatment plants).

Before one gets into the tree growing business there is need to research on the market need to act as a guide for decision making, to be able to plan the silvicultural operations i.e. spacing, thinning regimes and harvest time.

For those with poles ready for sale, the places to trade them include:

- Busoga Forest Company – Pole treatment Plant in Jinja
- Nile Ply- Pole treatment Plant in Nakasongola
- New Forest-Pole treatment Plant in Mityana
- Ferdult-Pole treatment Plant in Mukono
- Uganda Electricity Distribution Company LTD (UEDCL) – Pole treatment Plant in Kampala

Figure 4: Price trend for *Eucalyptus* poles


(Source: SPGS)

Timber Stories from Around the World

TANZANIA'S TEAK EXPORT TO INDIA

The Indian market buys Tanzanian plantation teak mostly for door frames with lengths of 7" / 7 1/2". Even shorter lengths are sourced for window frames and furniture. Besides length, good color is the major determinant in sales of teak for doors, windows and furniture. Tanzanian plantation teak imports to India include sawn wood, but the majority are boules due to the lower import duty imposed by India. Boules are assessed in India for duty as round logs.

Teak supplied from Tanzania is from old plantations, some of them reaching 80 years old. The colour of heartwood is good with some occasional black stripes. However, the major defect in Tanzanian teak is that it has many knots and thus good quality logs are only available in short lengths.

Source: ITTO Tropical Timber Market Report - www.itto.int/

EUCALYPTUS AND WATER UPTAKE: Dispelling the Myths & Misconceptions

by Zainabu Kakungulu & Josephat Kawooya (SPGS)

Eucalypts: friend or foe?

The vast majority of the genus *Eucalyptus*'s 800-plus species come from Australia, where they are found in a wide variety of ecological zones and occupy some of the most important catchment areas. Many species of eucalypts grow quickly and produce large quantities of wood when grown in well managed plantations.

Eucalypt planting has been said to have both advantages and disadvantages. Some of the advantages of eucalypts include quick provision of benefits associated with fast growth – especially short rotation plantations for production of fuelwood and farm timber and producing high yields of fibre for pulp and paper industries. Eucalypts can also grow well over a wide range of ecological conditions and sites. On the other hand eucalypts have been said to have their disadvantages - in particular their high water use and their impact on soil fertility. In some circumstances, eucalypt plantations may also not provide good soil protection against erosion and may not provide good habitats to support wildlife.

The most often repeated allegation against eucalypts is that they consume large amounts of water, thereby reducing soil moisture and also lowering the ground water. There are even claims that their presence on the landscape is causing the drying of water sources, rivers and springs. In Uganda such criticisms have led some people into re-thinking about further planting of eucalypts in certain areas, though the arguments are generally not scientifically based. The role of fast growing eucalypts on soil water balance is clearly a controversial subject and we do not wish to take sides here but rather bring forth a balanced debate about the subject.

Water uptake and biomass production: comparing eucalypts and other crops:

Regarding the claims concerning *Eucalyptus* and water, it might be instructive to

compare water use by *Eucalyptus* with other tree and or crop species, to see if it has a higher demand per unit of biomass fixed. There are many research results that have concluded that eucalypts are highly efficient water users. For instance, Davidson (1989) reported that on a "leak-proof hectare" at Nekemet (with annual rainfall of 2158mm), *E. saligna* and *E. grandis* could produce 46.6m³/ha/yr without drawing on water reserves (rainfall only) compared to 16.4, 16, 12.4 m³/ha/yr biomass production by the coniferous, acacia and broadleaf species, respectively. These figures reveal that for the same amount of water consumed, eucalypts produce significantly higher amount of biomass which is economically profitable and acceptable.

Most eucalypt species need on average 785 liters of water /kg of biomass produced as opposed to cotton/coffee/banana (3200), sunflower (2400), field pea (2000), cow pea (1667) soybeans (1430), potato (1000), sorghum (1000) and maize (1000) liters/kg biomass produced (Davidson 1989). This also shows that eucalypts species are efficient water users.

According to Foley and Bernard (1984), whether *Eucalyptus* plantations will affect the water table depends greatly on the hydrology and physical properties of the soil. It is also determined by what kind of vegetation it replaces. If the previous crop was a water hungry one, the water level may actually rise. If however eucalypts are planted to replace slow growing shrubs in an area with sensitive hydrology, it is quite possible that the water level may fall. As is the case with other aspects of the eucalypt controversy, the strong views against eucalypts invariably emanate from piece-meal observations made without due consideration of the context or settings under which these impacts are observed.

It is therefore worth noting that each catchment has its own peculiarities and buffering mechanisms (nature and permeability of the geological substratum, soil depth, slope, and natural vegetative cover etc). This means that the response

to eucalypts growth by each catchment should be judged separately. The effects of eucalypts on the water balance will depend on the species in question, the local climate, surface soil conditions, nature of rock substratum, vegetative cover, slope gradient and length, tree growth stage and tree density, crown depth and leaf density, amount of rainfall and soil moisture conditions and rooting depth.

Eucalypts and excessive water loss through transpiration:

As in other aspects of the eucalypt controversy, there is as much hard data suggesting that eucalypts cause heavy transpiration losses, as there is evidence that they don't. However, the fact is that several species of eucalypts have the ability to adjust to different ranges of habitats. If eucalypts are grown in areas where there's excessive ground water, they will make use of the water for their growth. At the same time if they are grown on moisture lean soils they adapt themselves to that habitat. Some research has also suggested that *Eucalyptus* hybrid plantations are even better utilisers of water resources and their effects on soil moisture are comparable to other tree species advocated as being ecologically superior to *Eucalyptus* by environmentalists.

Given the above facts, eucalypts seem to behave as any other tree plantation or natural forest cover with respect to the soil water dynamics and with respect to the water balance. Considering the dynamics of water use by trees, eucalypt plantations can have both positive and negative effects on the water quality and quantity like any other managed vegetation and the net effects may be negative or positive depending largely on management practices.

Ref. Davidson J, 1996. *Ecological Aspects of Eucalyptus plantations*. Proc. FAO Regional Expert Consultation on *Eucalyptus* Vol. 1 (Asia Pacific Region); 35pp.

FURTHER READING ON EUCALYPTS

As befits a genus as economically important as *Eucalyptus*, there is a lot written about them. There are, however, surprisingly few general text books and some of those that have been published are very outdated. Many of the important scientific papers on eucalypts are found in various conference proceedings, which are difficult (and often very expensive) to get hold of. Anyway, we have done some of the hard work for you, the reader, and over the next few pages we have listed (and in certain cases summarized) many of the key publications. Those that can be found in SPGS's library are marked thus * and where they are on the web, we have given the digital address. Those highlighted in shaded boxes come strongly recommended by SPGS's CTA, Paul Jacovelli. We would love to hear from readers of any important works that we have overlooked.

of 112 species and has sections on 92 countries with significant eucalyptus plantings. It has many interesting photos and very useful illustrations of eucalypts' buds and fruit, by which the different species can be identified. Overall this is still an important reference work and of great interest historically. However, it is badly outdated now for practical use, especially with so many silvicultural and utilization advances over the last 30 years.

GENERAL

Ball JB, 1995. *Development of Eucalyptus Plantations – an Overview*. Proceedings of the Regional Expert Consultation on *Eucalyptus*, Bangkok, Thailand. 1993; Vol. 1, pp.15-27.

Boland D et al, 2006. *Forest Trees of Australia*. 5th edn; CSIRO Publishing, Melbourne.

Doughty RW, 2000. *The Eucalyptus: a Natural and Commercial History of the Gum Tree*. The John Hopkins University Press.

Review: a very readable book aimed at the layperson but too general for those of a more scientific persuasion.

FAO, 1980. *Eucalypts for Planting**. FAO Forestry Series No. 11. FAO, Rome.

Review: for many years this was the definitive reference source for the most commonly cultivated eucalypt species. The 1st edition of this book came out in 1955; this edition was largely the work of Dr Jacobs, a renowned eucalyptologist. It gives details

Poynton RJ, 1979. *Tree Planting in Southern Africa Vol. 2 – The Eucalypts*.

Review: A huge tome but packed with masses of information on the early introductions of eucalypts to the region.

Pryor LD, 1976. *The Biology of Eucalypts**. The Institute of Biology's Studies in Biology No. 61.

Review: The best, short botanical description of the genus: essential for anyone wanting to understand their silviculture and breeding.

Schönau APG (Ed.), 1991. *Intensive Forestry: The Role of Eucalypts*. Proceedings of IUFRO Symposium, Durban, RSA, Sept. 1991. Southern African Institute of Forestry, Pretoria (2 vols).

South African Institute of Forestry, 2000. SA Forestry Handbook; 2 Vols.

Turnbull, J, 1999. *Eucalypt Plantations*. New Forests, 17, 37-52.

Turnbull J, 2003. *Eucalypts in Asia*. Proc. of International Conference in China; ACIAR Proceedings No. 111.

SILVICULTURE

Eldridge K, Davidson J, Harwood C & van Wyk G, 1993. *Eucalyptus Domestication and Breeding**. Oxford University Press.

Review: an important work written by experts on both eucalypts and tree breeding. It has sections on the main commercial species, including E. camaldulensis, E. grandis and E. urophylla. It also has information on selection and breeding, including seed production and mass vegetative propagation.

Florence RG, 1996. *Ecology and Silviculture of Eucalypt Forests*. CSIRO, Australia.

ICFR, 2009? *Eucalypt Fact Sheets. Best Management Practices*. Available from Forestry South Africa?

Wattle Research Institute (now ICFR), 1972. *Handbook on Eucalypt Growing*.

EAST AFRICA INTEREST

Gil L et al, 2010. *Eucalyptus Species Management, History, Status and Trends in Ethiopia**. Proceedings of a Conference, Addis Abbaba, Ethiopia, Sept. 2010.

Mutiti KE, Mwangi L, Otieno B & Minjire M, 2008. *Pests and Diseases Associated with Eucalyptus in Kenya*. KEPFRI Research Note No. 7.

Oballa PO, Konuche PKA, Muchiri & Kigomom BN, 2010. *Facts on Growing and Use of Eucalyptus in Kenya**. KEFRI (Kenya Forestry Research Institute), Nairobi, Kenya. Available free at www.kefri.org/pubs/html

Review: Discusses the main species grown in Kenya – including the hybrid clones - and gives basic silvicultural recommendations. Environmental concerns and the economics of growing eucalypts are also discussed.

ENVIRONMENTAL ISSUES

Abassi SA, Ramesh N & Vinithan S, 2004. *Eucalyptus: Enduring Myths, Stunning Realities*. Discovery Publishing House, New Delhi.

Review: The views for and against eucalypts have become so polarized that at times, the criticism or appreciation is solely based on prejudice than on balance consideration of facts. In this book, the authors attempt to give a balanced view of the arguments and counter arguments concerning eucalypts. The studies described in this book emphasise that it is not eucalypts per se which cause

ecological damage but the way we exploit their virtues that does. Establishment of fast-growing plantations is undoubtedly one way of relaxing the pressure on native forests for timber exploitation so, in this sense, these plantations are beneficial. However, they should be properly planned and managed to minimize negative impacts on the environment. An interesting work.

Calder IR, Hall RL & Adlard PG, 1992. *Growth and Water Use of Forest Plantations*. John Wiley & Sons.

Review: This book contains the proceedings of the International Symposium at Bangalore, India, in Feb. 1991. The first half of the book deals with social and economic aspects of commercial forestry (largely eucalypts) and primarily from India. The second half focuses on water use and has many scientific papers that have added greatly to our understanding of the water use of eucalypts. A must for those who want to delve deeper into the subject.

Calder IR, 1994. *Eucalyptus Water and Sustainability: a Summary Report**. ODA (now DFID) Forestry Series No. 6; 14pp.

Review: This is good starting place for those interested in learning more about the great 'eucalypt debate'. It highlights the obvious benefits from eucalypts and also addresses the environmental concerns. The author sensibly notes that "it is now time to recognize that eucalypts have much to offer to tropical developing countries and to confine queries to how the adverse effects can be best minimized, than heavily criticizing the species."

Davidson J, 1996. *Ecological Aspects of Eucalyptus plantations**. Proc. FAO Regional Expert Consultation on *Eucalyptus* Vol. 1 (Asia Pacific Region); 35pp.

Review: This is probably the definitive paper on the subject, presenting a very balanced and scientific picture of the key issues. Read this if nothing else to get a good understanding of the subject, complex though it may be.

FAO, 1988. *The Eucalypt Dilemma**. FAO. 26pp. A popular version of Poore & Fries's 1985 FAO publication.

FAO, 2007. *Forests and Water.* Special Issue of *Unasylva*; Vol. 59; No. 229. Available free from www.fao.org/forestry/unasylva/8707/en/

Review: Not specifically on eucalypts but many interesting case studies highlighting the important balance between forests, water conservation/protection and water use.

FAO, 2011. *Eucalyptus in East Africa: Socio-economic and Environmental Issues** by Dessie G & Erkossa T. Planted Forests and Trees Working Papers FP46/E, Forest Management Team, Forest Management Division, FAO, Rome. Available to download (free) from www.fao.org/docrep/014/am332e/am332e00.pdf

Review: this was the key position paper for the 2010 Conference on Eucalyptus in Ethiopia (see Gill et al ref. in East Africa section above). We haven't fully digested it yet (it is hot off the press) but it appears of considerable interest at a first glance. The Ugandan section is, however, not up to date, quoting 1975 figures.

Forest Ecology and Management (Elsevier – www.sciencedirect.com) Special Issue on *Forests and Water* ; Vol. 251, 2007.

Review: presents scientific case studies from Brazil, South Africa and Australia – plus an excellent Editorial entitled: Planted Forests and Water in Perspective.

Poore MED and Fries C, 1985. *The Ecological Effects of Eucalyptus* *. FAO Forestry Paper No. 59; 87pp.

EUCALYPTUS OILS

Boland DJ, Brophy JJ & House APN, 1991. *Eucalyptus Leaf Oils: Use, Chemistry, Distillation & Marketing.* ACIAR/CSIRO, Australia. 252pp.

Coppen JJW & Hone GA, 1992. *Eucalyptus Oils: A Review of Production and Markets.* Natural Resources Institute Bulletin No. 56. 45pp.

Jacovelli PA, 2002. *Cultivation and Production of Eucalypts in Africa – with special reference to the leaf oils* *. pp.216-238 - In: Coppen JJW (Ed.),

Eucalyptus. Medicinal and Aromatic Plants – Industrial Profiles; Vol. 22. Taylor & Francis; 450pp. Available from the author at SPGS.

UTILIZATION

Hillis WE and Brown AG (Eds), 1984. *Eucalypts for Wood Production.* CSIRO Academic Press, Melbourne.

Review: this major work highlights the various aspects of growing eucalypts for wood production. With emphasis on Australia, the first sections deal with silviculture and plantation management. The real value of this book, however, is with the later sections on utilization, with chapters on drying and processing eucalypt logs for a wide range of end products. A valuable book and still very relevant.

Xiaomei J et al (Eds.), 2007. *Plantation Eucalyptus: Challenge in Product Development* *. Proceedings of International Conference on Plantation Eucalyptus, Zhanjiang, China, 2005. NB. This publication will be reviewed in SPGS News No. 33 – a special issue on *Timber Utilization and Markets* – Ed.

And not forgetting....

SPGS, 2009. *Tree Planting Guidelines for Uganda.* Chapter 10 is a practical guide to growing eucalypts for fuelwood, poles and timber. Comes highly recommended!

Send us your articles or reviews on any topic of relevance to tree planting in Uganda

“Learn from each other’s experiences. There is no need to make the same mistakes as the past”



COMING UP IN SPGS NEWS & HEARTWOOD LATER IN 2011

NO. 33 – SPECIAL ISSUE ON UTILIZATION: FROM THE FOREST TO THE SHOP

Including the following topics:

- Timber Markets: in Uganda and beyond.
 - Harvesting and transport.
 - Sawmilling in the 21st Century.
 - Adding value: the key to success.
- The challenge of small diameter material.
 - Bioenergy.

Send to Deputy Editor, Nelly Grace Bedijo –

Email : nellyb@sawlog.ug

Deadline for articles – Friday August 19th, 2011.



NO. 34 – SPECIAL ISSUE ON THE SOCIAL & ENVIRONMENTAL ASPECTS OF COMMERCIAL FORESTRY

Including the following topics

- Commercial forestry's contribution to national development.
- Social benefits e.g. jobs and community development.
- Climate change, Carbon sequestration and C-funding.
 - Corporate Social Responsibility
- Plantations, Natural Forests & the Environment
 - Forestry Worker Health & Safety issues.

Send to Deputy Editor, Zainabu Kakungulu -

email: zainabuk@sawlog.ug

Deadline for articles – Friday 11th Nov., 2011.

And don't forget the offer of a superb brand-new laptop will be awarded to the best article or feature in 2011's four SPGS News issues. This will be decided by an independent judge once issue No. 34 is out in Nov. 2011.



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DID U KNOW?

Some Eucalypt facts



By the 2nd World War, 149 eucalypt species had been established in South Africa, according to Poynton's 1979 *magnum opus*, *Tree Planting in Southern Africa*.

In southern Africa by far the most important, commercial eucalypt species is *E. grandis*. It is favoured because of its ease in the nursery, rapid early growth, good form and wood properties suitable for many uses.

The classification of eucalypts has kept taxonomists busy virtually since they were first discovered in the 18th Century. By 1970, some 500 distinct species were recognized; today there are over 800, including numerous varieties and hybrids.

In 1995, two taxonomists, Hill and Johnson, published a review of the Bloodwood group of eucalypts, which resulted in 80 eucalypt species being reclassified in a new genus, *Corymbia*. Acceptance of the division has been slow, however, especially since the differences between *Eucalyptus* and *Corymbia* are very subtle.

The word eucalypt is from the Greek, meaning "well covered", referring to the trees' buds being covered by an operculum.

A best-selling novel by Australian author Murray Bail, called *Eucalyptus*, was published in 1998. A farmer who had planted hundreds of gum trees on his land, declared that whoever could name every species (down to the last tree) could marry his 19-year old daughter. You will have to read it to find the outcome!

Eucalypts were first introduced to Africa by settlers, missionaries and government officials in the early 19th Century. The first recorded introduction was in 1828 when *E. globulus* seedlings were brought from Mauritius by the Governor of the Cape Colony.

However, common names can be misleading, e.g. Blue Gum could be *E. saligna*, *E. grandis*, *E. tereticornis* or *E. globulus*, depending on where you are and who you speak to.

Eucalypts are thought to have been introduced to Uganda in 1912 when they were established to supply the fuelwood for railways and administrative centres.

SPGS NEWS 31



We are a bit behind on our prize giving so ... time to catch up and give away some digital cameras to those who earned them! The Winner of SPGS News 30's competition was **CHARLES BAGUMA**. Charles is a community development specialist who is currently working as a Director with Support center for Civil Society Organizations. He is also a Senior Consultant with Thara Consulting Ltd, which consultancy firm focuses on business support services to small and medium enterprises. He is engaged in commercial tree growing in Itwara CRF near Fort Portal.

SPGS News 31's competition proved to be a tougher challenge altogether. Photo 1 was a close-up of a eucalypt seed capsule – as you can see from the enlarged view. Photo 2 was a close up of a pine cone: obvious now isn't it? And the easy one was Photo 3, which showed a lady tending a beautiful bonsai pine tree.

Only four of our many entries got all the three answers right. They all entered into the hat for the draw, and **NYOMBI HERBERT** came out as the overall winner. He has just finalized his Bachelor of Science degree in Forestry from Makerere University. In the same draw, **Matovu Geoffrey** and **Niwagaba Bruce** (both third year B.Sc. Forestry students at Makerere University) emerged the 1st and 2nd runners up respectively. They will both receive SPGS "goody bags" of books and other gifts. A good showing from Makerere students: Congratulations to all of them!



Charles Baguma receiving his prize from Josephat.



Celia gives Nyombi Herbert his prize.

New Competition

As eucalypts are the flavor of the month (well in News 32 anyway), tell us the following:

1. How many different species of Eucalyptus are mentioned within SPGS News 32?
NB. Just give us a number and not a list of them all.

2. How many different products and/or uses of eucalypts are referred to in News 32?
NB. here we need a list.

A shiny, new Sony digital camera awaits the winner, with shirts, caps and books for two Runners-up. Deadline for entries is **Friday 26th August, 2011**. Send email answers to info@sawlog.ug or drop off your reply at SPGS's office in downtown Bugolobi.

PHOTO GALLERY VII - NURSERY TRAINING AT GLOBAL WOODS



↑ *We are seeing far too many poor quality seedlings going to the field. Remember if you are a paying customer, you are fully entitled to reject poor seedlings from which ever nursery you bought them from. How else are we together going to raise quality standards?*



↑ *Trainees showing off their sign-boards during the training course.*



PHOTO GALLERY VIII - 2011 SPGS SAFARI DOWN SOUTH



↑ *The 2011 SPGS team – along with our hosts at Peak Timbers in Swaziland.*



↑ *Hybrid pine cuttings being placed in trays for rooting at York Timbers' modern nursery in Sabie.*

↓ *Walter dwarfed by a truck loaded with wattle (Acacia mearnsii) pulpwood destined for Richards' Bay in Kwa-Zulu Natal, RSA This was at Montigny Investments operation in southern Swaziland, which has been a highlight of the trip over the past few years. They add value to every piece of wood that comes into their yard.*



← *Eucalypt fencing material being unloaded after creosote treatment at Montigny in Swaziland.*

SPGS's 2011 Safari to South Africa & Swaziland



Paul Jacovelli (SPGS's Chief Technical Advisor) – ably accompanied by Walter Mapanda (Plantations TA) - has just arrived back onto Uganda soil after the annual SPGS study-tour of commercial forestry in South Africa and Swaziland. Here are Paul's first thoughts.

What a great safari this was. They are definitely getting better and better with each visit, thanks largely to our fantastic hosts and the eagerness of the Ugandan team to learn. I suppose too that we are also maturing (like our trees) and starting to focus better on how to build a sustainable and profitable forest industry here in Uganda.

We had a great mix of youth and experience onboard this time - large and small scale growers and new SPGS staff - but all enthusiastic to learn what they could and bring back ideas to Uganda. We had a number of recent forestry graduates (with SPGS, UTGA, Global Woods and Green Resources all represented) with the majority being (as always) small and medium-sized clients of SPGS. We even had a team doctor this time – Dr. Sam Zaramba - though thankfully his professional services were not required other than to comment on forestry practices.

The visit proper started in the Sabie region of Mpumalanga, where York Timber's Dave Malloch-Brown arranged an interesting day's programme, involving a sawmill, nursery and various contracted silvicultural operations. Near Graskop, we witnessed Merensky's impressive eucalypt operation with Chris Boschhoff before heading south to the beautiful Kingdom of Swaziland. There we visited Peak Timbers' enthusiastic team (under Dale Nortje's command) who showed us brilliantly how to grow high quality eucalypts

for poles and timber trees. Given that Peak's plantations had largely gone up in smoke in 2007, they have done a remarkable job of replanting.

At Montigny Investments in Nhlalango, southern Swaziland, Coen Bardenhorst left everybody in no doubt as to how to add value to trees of all shapes, sizes and species. We were all impressed by their use of eucalypt wood, in particular.

Then we headed into Kwa-Zulu Natal, arriving in Richard's Bay just in time to watch Manchester United beat Chelsea which was a good start to the week (unless you support Chelsea or Arsenal

we gave such a prize that is) with their highly professional and very friendly team lead by Dean da Costa. We will, however, award Mondi with the prize for the best lunch, with their fantastic finger lunch!

Then finally it was NCT – a highly successful co-operative that primarily markets its members' timber. Rob Thompson's presentation stimulated so many questions that I had to remind the team that they wouldn't have time for shopping in Durban if they carried on in this manner.

And so another successful study-tour was completed. We requested early on in the trip (but actually needed little encouragement) for the team to tease out lessons that could be taken back to Uganda and they soon organized themselves into four thematic groups – namely:

- Nurseries.
- Silviculture and protection.
- Harvesting, utilization and generally adding value.
- Policy and planning.



York Timbers' Dave Malloch-Brown showing the Ugandan group around their sawmill at Sabie, Mpumalanga.

of course - but most SPGS Clients know better than that by now). Around Kwambonambi, William Davidson had organized a great variety of large and small operations for us to see – including the family farm (Zenith Estate, with 300 ha of eucalypts), Mondi's eucalypt clonal nursery, Craig Spark's small sawmill producing eucalypt doors amongst other products, and one of NCT's highly successful small growers. Along the way we saw lining out and pitting, water-planting, harvesting and severe *Leptocybe* (chalcid wasp) attack.

Then we headed down (as you look at the map that is) to Pietermaritzburg, where Mondi made a serious attempt to win the prize of our best hosts (if

Their reports are on our web-site – www.sawlog.ug - along with a gallery of the best photos from the tour. With similar groups visiting every year since 2004, that represents quite a number of people here who have now been exposed to the mature commercial forestry industry down south and hopefully, making it easier for us to sell the vision to the many in Uganda who haven't experienced forestry's potential for development and as a business opportunity too.

And finally, on behalf of SPGS, I would like to sincerely thank our hosts who really did go beyond the call of duty to make this such a memorable trip. We really meant it when we invited you to head north sometime to see what we are up to.



Pests & Diseases of Eucalypts

by Andrew Akasiibayo (SPGS Plantation Officer), Dr. Grace Nakabonge & Assoc. Prof. Philip Nyeko (both Makerere University)



*Severe *Leptocybe invasa* infestation of a GC clone seen on the recent safari to RSA (May, 2011). Interestingly the adjacent clone was hardly affected.*

Pests and diseases are a major challenge to the productivity of *Eucalyptus* species globally. Whereas some pests and diseases have long been associated with the genus, several new ones have emerged in the last decade especially in countries where eucalypts are exotic. One of the main factors attributed to the recent upsurge of the pest and disease problems is the extensive monoculture planting of eucalypts. As eucalypt plantations continue to expand, aspects of its pests and diseases require careful consideration at the plantation planning, establishment and management as well as the products utilization chains.

In Uganda, a number of pests and diseases of eucalypts have been reported in nurseries and plantations in the recent past. This article however focuses on the description and management of three main pest and disease problems on eucalypts which are widespread and severe in the country - viz., the blue gum chalcid wasp (BGC), termites and stem cankers.

Blue Gum Chalcid (*Leptocybe invasa*)

Description

BGC is a newly described wasp, of Australian origin, that has spread globally in the last decade. It is a major pest of eucalypts in nurseries and young plantations. In South Africa's Kwa-Zulu Natal Province, for example, the wasp is causing such severe damage that forest companies such as Mondi are considering stopping raising some of the highly susceptible GC clones. In Uganda, BGC occurs throughout the country although its

infestation is most severe in low altitude and drier zones of the country.

The adult of BGC is a small black wasp with average length of about 1.2 mm. It lays eggs in the leaf midribs, petioles and soft tissues of twigs. The eggs develop into adults within the host plant resulting into bump-shaped structures called galls. Severely attacked trees show crooked appearance, stunted growth, and dieback. Although most infested trees do not die, other stress factors such as prolonged dry spell and weed competition may aggravate the problem, leading to massive mortality.

Control

No universal control package currently exists for BGC. Some control measures that can be applied include.

- Application of insecticides: Systemic insecticides such as acephate (Acephate), imidacloprid (Confidor), thiamethoxam (Actara), acetamiprid (Mospilan), aldicarb (Temik) and chlopyrifos (Tricel) can reduce infection. Application is more feasible in nurseries and during first year of field establishment than in older plantations.
- Good nursery practices: avoid establishing nurseries near eucalypt stands infested by the wasp. Do not carry forward seedlings to the next planting season as this exposes them to more risk of *L. invasa* infestation. No *L. invasa* infested seedling must be released for field planting without proper treatment.
- Good silvicultural practices: These should be aimed at minimizing stress to planted seedlings and saplings. Examples include proper site-species matching; planting only healthy and robust seedlings and especially good weeding.



*Typical damage of *Leptocybe* on *E. grandis* in eastern Uganda.*

The most sustainable approach to the management of *L. invasa* lies in biological control and selecting and breeding host (eucalypt) resistance, but these options are long-term and are yet to be fully exploited.

Termites

Description

Termite damage on trees varies depending on the termite species involved. Some species (e.g. *Pseudancanthotermes* and *Odontotermes*: 'naka' and 'ogwee' in Luo) only damage seedlings and dry outer bark while others particularly *Macrotermes bellicosus* (aripo/riipo in Luo, angerep in Ateso, mpawu in luganda and kiwawu in Lusoga) is damaging to all age categories. Common symptoms and signs of termite infestation include cutting of roots and stems near the base, ring debarking at the tree base, tunneling up into the stem of mature trees hollowing it out and filling it with soil. Earth tubes on the ground and/or on tree stems are also common in termite infested areas. Termite infestation is generally most severe during dry periods. Severe termite infestation can cause up to 100% tree mortality.



Typical severe termite damage to a eucalypt seedling.

Control

The following practices may help to minimize their damage:

- Application of insecticides: several insecticides, including fipronil (Regent or Termidor), imidacloprid (Confidor, Kohinor or Premise) and chlorpyrifos (Tricel, Dudutox) can be successfully applied as soil drenching, sprays or mound poison to control termites. NB. Workers must be properly trained, supervised and protected (PPE) before handling all chemicals and the manufacturers' recommendations must be carefully followed.
- Physical queen removal: this is feasible for mound-building species but labour intensive and might not be practical in large plantations.
- Good silvicultural practices: this include practices that minimize stress on trees such as planting healthy and vigorous seedlings, timing of transplanting (best during frequent and heavy rainfall), adequate weeding and proper site species matching.

Canker diseases

Cankers are among the most destructive and hard-to-manage problems of woody plants including many eucalypt species. *Botryosphaeria* and *Kirramyces* (*Coniothyrium*) stem canker are common canker diseases of eucalypts, but *Botryosphaeria* canker is the most widespread and damaging to *Eucalyptus* plantations in Uganda.

Botryosphaeria canker disease

Description

Botryosphaeria canker disease is caused by fungi in the genus *Botryosphaeria* and their anamorphs. The disease is commonly associated with cankers and dieback on a wide range of hosts. Stem cankers are dead patches of bark which occasionally extend into the underlying sapwood. Infections in *Eucalyptus* spp. can also result in the massive death of tree tops (tip dieback), stem cracking and discoloration of the stem core which can extend throughout the tree due to accumulation of Kino exudates. This greatly reduces the structural integrity of the wood, making it unsuitable for its use. *Botryosphaeria* spp. are known to be saprophytic, endophytic and opportunistic pathogens, causing

damage on trees stressed by drought, frost, water logging and insect damage.



In Uganda, *Neofusicoccum parvum* and *Neofusicoccum kwambonambiense* have been isolated from eucalypt hybrids. The level of pathogenicity of *Botryosphaeria* species has also been confirmed to vary. This implies that the threat of the disease can be told from the species identified in the area. Reports have also shown that *Eucalyptus* clones/hybrids have varying tolerance to the disease.



Botryosphaeria canker on *E. grandis* in eastern Uganda.

Management

The most feasible management strategy of the disease is through proper matching of species and provenances to climatic and edaphic factors and evasion of stress through good silviculture. In plantations grown for sawlogs or transmission poles, those trees severely affected with canker should be removed during routine thinning operations. For clonal plantations it will be necessary to conduct extensive clonal trials, prior to release of clones to farmers, to ensure that trees are relatively resistant to the pathogens.



EUCALYPTUS TIMBER MATTERS

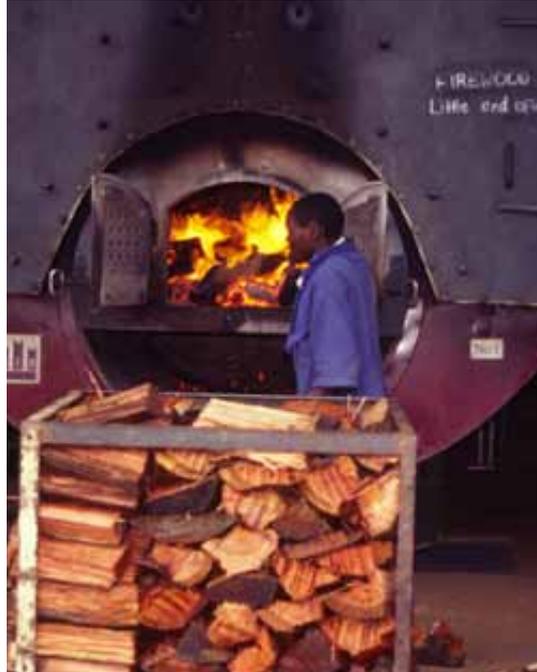
by Bahizi Peter, SPGS Plantation Officer

Eucalypts are the amongst the most widely cultivated forest trees in the world. The genus *Eucalyptus* comprise of more than 900 species and various hybrids and varieties. In Uganda the main species grown is *Eucalyptus grandis* (both local seed from Fort Portal seed orchard and improved seed from RSA) and a range of clones from Gatsby's programme. They are mostly grown in areas with deep soils and reliable amounts of rainfall, though many have planted them 'off-site' and wonder why they struggle.

For a long time the eucalypts have been cultivated in Uganda due to their fast growing tendency, their ability to re-sprout when cut and the straightness of the stem. Needless to say the wide range of products such as firewood, charcoal, building materials, fencing posts, transmission poles, pulpwood, timber and plywood obtained from eucalypts has made the genus very attractive to commercial forestry investors and small tree growers alike.

Fuel wood

About 90% of Uganda's population heavily relies on wood as a source of fuel. Due to the outstanding properties of many eucalypts (i.e. high wood density, lignin content and high calorific value), the genus has played a leading role in the provision of fuelwood. Notably the wood is used extensively in industries such as the tea estates, brick-making and sugar factories. Many institutions such as schools, prisons and hospitals – as well as many homesteads – also rely on eucalypts as a source of fuelwood. The poles of between 2 - 4 years are recommended for these purposes. In Uganda where eucalypt plantations and woodlots have been established, the first thinnings have been widely used to serve these markets.



With the high growth rates and coppicing ability, eucalypts can produce very high fuelwood yields for domestic or industrial use. This is E. grandis wood (dried for 6 months) being used to fire the boiler in one of RHTC's tea factories in western Uganda.

Small poles

These are normally trees ranging from 3-4 years with a thick end diameter of less than 25 cm and a minimum diameter at the base is about 7cm. The poles are targeted for the construction industry where they are used for fencing poles, scaffolding and construction of semi-permanent structure thus the need for poles with a straight form. In the use for scaffolding the poles are not debarked.

For fencing, the poles are normally debarked and treated with preservatives such as creosote or CCA or on-farm treatment such as used engine oil or carbonizing the base to ensure they are useless as food for termites.

Transmission poles

A very high demand for eucalypt transmission poles has emerged in Uganda and there is currently a widening gap between supply and demand: hence poles have been imported in the recent

past from as far away as South Africa. This has been attributed to the growth in the number of pole treatment plants (five in number to date) and the adoption of rural electrification programmes by the Government of Uganda. For those who engage in this lucrative and promising business, it is paramount to adhere to strict silvicultural practices – especially thinning and weed control - to achieve the desired quality of poles.

Pole class	Pole length (metres)	Min Top end diameter (mm)
light	10	170
	11	190
	12	200
	14	220
stout	10	180
	11	199
	12	210
	14	220

The quality issues include but not limited to:

- Height: the pole should be atleast 11 metres
- Branches should be flush trimmed with the pole.
- Bend: the poles should have less than 5cm deviation from a straight line.
- The poles should have less dead knots and below 5cm by size.
- Less than 1 cm deep mechanical injury on the pole.
- Well seasoned to a moisture content of below 35%.
- The pole should not have any insect attacks.
- No splits and cracks (NB. to reduce the impact of end splitting, conversion should not be done soon after harvesting, it should be after seasoning preferably for 3 months. End plates of gang nails can also reduce the splitting).
- The lengths and diameter must be as per the table below.



Treated E. grandis poles in UEDCL's Kampala yard.

as gum is less forgiving in terms of recovery from growth retardation.



One of the main problems with fast-grown eucalypt sawlogs is their tendency to split and the planks to warp soon after cutting. The classical approach was to dry the logs as much as possible before cutting them. To avoid this, logs would only be split or sawn when they were dry. The modern approach, however, is to cut the logs as soon as possible after felling using specialist saws (with double blades to reduce the stress across the log) and then carefully dry the timber - often a combination of carefully controlled air and kiln drying.

For a long time in Uganda, sawn timber has been converted from eucalypt logs using circular saws (e.g. Kara or Lucas) or cut manually by pit sawyers. Both methods can produce reasonable timber but are wasteful in their recovery %. Chainsaws are certainly not recommended as they are even more wasteful. Eventually we hope to see modern, efficient, fixed sawmills in Uganda, capable of producing good quality timber and a high recovery from eucalypt logs: but this is in the future.

Sawlogs

The highest demand for eucalypts logs has been mainly in the construction industry and a medium demand in the plywood processing plants (only two are in existence in Uganda). In Uganda, the logs for timber are attainable within 12-15 years but this is highly dependent on the management during the crop's life: strict silvicultural practices have to be adhered to achieve sawlogs at this age; careful planning and implementation of silvicultural practices such as effective weed control, pruning and thinning regimes should be observed



Technology now exists to process, dry and manufacture Eucalyptus sawlogs efficiently. This is Montigny's double band-saw in Swaziland, which reduces internal stresses that exist in fast-grown E. grandis logs.



SPGS's Edith Nakayiza admiring a fine E. grandis tree at Merensky's plantations near Graskop in South Africa. Just what Uganda needs!

As the industry takes a step ahead, there is need to adopt innovative methods of sawlog conversion which will take into account the inherent problems of the nature of the resource while allowing the production of high value products. Increasingly eucalypt sawmillers are adding value to the timber by such novel approaches - in particular by utilizing small pieces and joining them together - to make a number of products. This gluing and laminating process can produce many different products, even giant load-bearing beams that can replace steel in buildings. This technology is successfully working in many countries, including South Africa and Swaziland.

This article just scratches the surface of the vast topic of eucalypt utilization. However, given the importance of eucalypts in Uganda and their crucial role in meeting the country's shortfall in timber supply, we will return to the subject in future Newsletters. We would be very interested to hear from readers about their experience or ideas about the utilization of eucalypts too – Ed.



How to Improve Worker Productivity

by Rory McCaughan (Private Consultant)



Despite his camouflage gear, we still found Rory McCaughan in-field as he taught SPGS's William Mawenu how to carry out work (or time) study in May, 2011.

Following a successful visit last year, SPGS invited back Forestry Productivity specialist, Rory McCaughan, to provide further training to SPGS personnel and also to provide further guidance to private contractors working for SPGS Clients. We asked Rory to share with us his initial findings before he headed back to Ireland to write his final report.

Together with SPGS's Charles Odeke and William Mawenu, we visited one of SPGS's larger growers, where we performed time studies on a variety of jobs. "What is time study?" I hear you cry. Well, in a time study, the studyman follows a worker and armed with a stopwatch, records how the worker spends his working day and his production. From this data it is possible to calculate the expected output of a labourer working at a specific job, and thus how many mandays per hectare it will take to perform the work.

This information is vital for any professional forestry contractor or business, and is sadly lacking for most operations conducted in Ugandan conditions. Mandays are used to calculate the amount of labour to perform a specific job in specific

conditions. A professional contractor should thus vary the daily task set to his workers according to the conditions in the field, which is the fair way of working.

Knowing the mandays required for a job will also assist the Contractor in negotiating fair payment per hectare for work done. SPGS hopes to provide Ugandan workstudy figures, but is a long and involved process. The biggest factor upsetting productivity is that of the length of the working day. Start times varied greatly, with labourers turning up for work when they saw fit, and leaving early. Please note that although the studies were conducted in one plantation, we believe the situation is the same all over Uganda!

Random start and finish times are no way to run a business. How can you predict how much work your team can do? How can you guarantee to a client that a job will be finished in agreed time? We recommend a working day

of 8 hours. We found that all labourers were paid on a simple piecework arrangement, with no minimum output required by their employer. While this makes it easy to calculate pay, it does not encourage workers to be productive, and again makes predicting the output of the team difficult.

The SPGS team also looked at a spraying team. Using workstudy techniques, they calculated that the team spent about 50% of their time not actually spraying. Although the spraying operation went well when it was actually happening, far too much time was being wasted filling the backpacks. There was a shortage of measuring equipment for dispensing the chemical and there was also a shortage of buckets for dispensing water. We can suggest a number of improvements here: for instance, the operation could have been improved dramatically by having filled backpacks provided to the team, rather than have the whole team stop work whilst the pumps are refilled.

Of course it is easy to criticize, but we would encourage all contractors to have a look at their own operations, and see where improvements can be made. Is a loose hoe-head causing a worker to stop work every 10 minutes to fix? The time spent doing this is time not spent working. Is a blunt saw slowing a pruner down so much that he cannot be expected to achieve a good day's work, even though he is working hard?

Random start and finish times are no way to run a business. How can you predict how much work your team can do? How can you guarantee to a client that a job will be finished in agreed time?

In summary, we would encourage Contractors to insist on their workers working for 8 hours per day, set minimum acceptable levels of production, and do their best to help the workers achieve that production.

Nb. Rory's final report will soon be available on www.sawlog.ug once it is finalized – Ed.

2011 Field Inspections – Frequent Problems



Following the round of inspections in June 2011, all SPGS field staff were asked to compile a list of the most frequent issues they encountered, that caused Clients to miss out on the planting grant. Here is their summary table.

KEY ISSUES OBSERVED	REMARKS
Planning and timing of activities	<ul style="list-style-type: none"> • Land preparation often delayed and done haphazardly in a rush and often no pre-plant spraying being done. • Post plant weeding delayed. • No compartmentation prior to planting; scattered plantings being done.
Low fire preparedness	<ul style="list-style-type: none"> • No fire lines in place. • No proper roads in some places linking to the planting sites. • Many people have not yet invested in fire fighting tools like Fire beaters, Knapsacks, Bakkie sakkie etc. • No fire lookout points built onsite. • No sensitization of surrounding communities on the dangers of fires to forests.
Use of untrained/ unskilled workers	<ul style="list-style-type: none"> • Spray drifts scorching planted seedlings. • Shallow planting. • Use of dirty water to mix chemical • Use of inappropriate nozzles for spraying operations especially post plant spray • Low productivity
Misinformation from other sources	<ul style="list-style-type: none"> • Planters seek advice from various sources, who sometimes give conflicting (i.e. wrong) advice.
Poor quality seedlings	<ul style="list-style-type: none"> • Those with their own private nurseries are not sorting out bad seedlings before planting out. • Clients buying overgrown seedlings from nurseries outside the SPGS list of certified, private nurseries. • Poor seedling handling during transportation and in field.
Environmental issues	<ul style="list-style-type: none"> • Kaveera often left scattered within the plantation. • Glyphosate containers left within the plantation.
Contract performance	<ul style="list-style-type: none"> • Some clients are reluctant about meeting their contractual obligations by 2013. • Low planting plans - different from plans specified (and agreed) in the Forest Management Plans.



COMMONWEALTH FORESTRY ASSOCIATION

YOUNG FORESTERS AWARD 2010/11



SPGS agreed with CFA in 2010 to host their 2011 Young Forester Award (YFA) winners for 2010/11, without really realizing what we had let ourselves in for. Any concerns we might have had, however, quickly evaporated when the two guys – Chisika Sylvester from next door (Kenya) and Chidiebere Ofoegbu from Nigeria – arrived in early February, 2011 and quickly joined in the team's activities. They soon were both contributing to the cause too, with some great ideas to improve the way we at SPGS work. Before we knew it their three months was up. Sylvester's thoughts are summarized below. Both of them wrote an entertaining diary (known as a 'blog' nowadays) on CFA's web site makes excellent reading too – so visit www.cfa-international.org/ soon.

Sylvester: The first time I got wind of Commonwealth Forestry Association was in 2009 during an informal conversation with a close friend who happens to be an old member of the association. I was informed that CFA promotes professional development of the next generation foresters and sponsors young foresters below 35 years of age to acquire skills and knowledge in professional forestry by hosting short designated placements in a commonwealth country other than their country of citizenship. This information swept me off my feet and prompted my submission of application for membership and the young forester award.

Six months down the line after the application I was contacted as one of the winners of the YFA Award. Finally, the D-day of placement with SPGS became a reality on 2nd February 2011 when I landed at Entebbe International airport. After a few weeks of integration with SPGS community which was made smooth by the leadership of two shrewd principals Paul Jacovelli, the Chief Technical Advisor and Allan Amumpe, the Project Manager, life at SPGS was worth calling for more. The professionalism, office etiquette as well as the open and sincere communication between seniors and juniors was worth

noting. Ms Celia Nalwadda, a Senior Plantation Officer with SPGS who doubles as the CFA Youth Officer was also instrumental in making sure that I had a comfortable stay in Uganda.

I participated in most activities being undertaken by SPGS including taking part in practical training courses, monitoring the performance of contracted clients as well as general routine office work.



Sylvester – waving goodbye or maybe impressed with the growth rates of eucalypts in Uganda?

It was very exciting to be part of this dynamic team. The SPGS initiative has revolutionized the way Ugandans look at the private sector. They can now fully appreciate that empowering the private sector to engage in commercial forestry has had a huge impact on the social, economic and environmental status of Uganda by stimulating the creation of additional rural jobs, industrial growth as well as opportunities for further

financing of the initiative from carbon markets. All these successes attest to the fact that the populace and especially the private sector in Uganda has received the message being passed to them by SPGS that money grows on trees. The results have been admirable, with over 20,000 ha of serious commercial plantations established by over 250 contracted clients. Cheer SPGS!!

Throughout the placement I kept on reflecting about the applicability of lessons drawn from the success of SPGS to Kenya and the rest of Africa, despite the fact that we are unique in aspects of geography, climate and infrastructure. Let me highlight for instance Kenya where large scale commercial forest plantations are owned by the government and there is minimal involvement of the private sector. Land for forestry development on private lands is also limited due to the competing uses for land especially a fast rising population (currently 38 Million). All has not been lost yet due to these challenges, replicating efforts such as SPGS community support in Kenya is one of the effective way of enticing the private sector into commercial forestry.

Provision of a mix of incentives whether direct grants or indirect such as free seedlings coupled with regular follow ups backed with technical advice, has the potential of revolutionizing private sector involvement in commercial forestry in Kenya.

Overall, I would like to express my sincere thanks to CFA, The Commonwealth Foundation and SPGS for their unwavering support during our 13-week placement. You have immensely contributed to my career development. You have just sparked of my full participation in development of forestry. I envisage transforming the existing community forest associations into vibrant institutions with the full capacity for petitioning the government to provide incentives for development of commercial forestry in Kenya.

Chisika Sylvester

PESTS & DISEASE UPDATE



Pine Wilt

The phenomenon we call 'pine wilt' has been causing a number of growers concern around Uganda for a few years now. We were first called to identify the deaths of isolated trees and as well as groups of pines, in the very early years of SPGS – around 2005. We failed to clearly identify the causal agent then, though in *SPGS News* No. 10 (2006) we did make a stab at it, which might have been correct.

Our suspicions have been confirmed (well almost) by Makerere University's Dr Grace Nakabonge, who recently carried out an initial study for SPGS on the matter. Grace sensibly told us that before we can think about controlling 'pine wilt', we need to first identify the causal agent. Samples were duly collected from seven plantations, representing a pretty good sample of SPGS's Clients' plantings. Samples were collected from roots, stumps and stems of dying trees as well as soil samples.

The samples were then cultured on various media to see if the most likely culprits could be isolated – these were *Armillaria*, *Phytophthora*, *Pythium* and *Pseudomonas*. Root and soil samples were also examined for the presence of pathogenic nematodes. And guess what? Grace concluded that "it was highly possible that *Armillaria* root rot is responsible for the wilting that is causing decline in the PCH plantations investigated." She does note, however, that DNA sequencing analysis will be required to confirm the identity of the fungi and thus the samples have been sent to our friends in FABI at the University of Pretoria.

This is not very good news. *Armillaria* are a group of fungi that occur throughout the world and are associated with some serious root diseases as well as contributing to wood decay. The host range of *Armillaria* is very wide, with reports of the disease on pines from Ethiopia, South Africa and Kenya. In Uganda the tea estates in western



Typical 'pine wilt' symptoms like these have been seen in plantations around the country (though not often as severe as this picture shows). We need to urgently research more into this matter.

Uganda know the fungus well, where it spreads to kill tea bushes from the stumps of old indigenous trees. It was first reported in Uganda on *P. radiata* in 1975. As Grace notes: "the soil borne nature of *Armillaria* makes control extremely difficult".

So where does this leave us? Grace recommends carrying out pathogenicity tests. She also says that the long term solution (assuming that *Armillaria* is the causal agent) will be to screen planting stock for resistant varieties/species. There could also be silvicultural measures that could be adopted to reduce the impact of the pest – see more of this on SPGS website.

P&D Training

Assoc. Prof. Philip Nyeko and Dr Grace Nakabonge were contracted by SPGS in early July, 2011 to conduct a practical training course in Pest & Disease Identification and Management. 19 participants can testify that the 5-day course in Jinja and Mayuge surpassed expectations. Thanks to our hosts at NilePly and Busoga Forestry Co. for the field part and laying on lots of pests and diseases for the trainees to see!

Termites & *Leptocybe*

We are planning to commission studies later in 2011 into the other major threats to our Clients' trees – namely, termites and *Leptocybe invasa* (the chalcid wasp). Members of our COMFORT Steering Group (who met in April, 2011) were clear that these two pests - along with pine wilt - are the major concerns at present and should be our priorities for research. With regard to termites, the focus will be on evaluating control methods for their cost-effectiveness. With *Leptocybe*, we will hopefully start looking at introducing and evaluating biological control agents, some of which appear to be showing promise in South Africa. Watch this space, as they say.

Congrats Jolanda!

Prof. Jolanda Roux has just been awarded the Commonwealth Forestry Association's Queen's Award for Forestry for her sterling work in the field of tree pathology. Jolanda works for FABI in RSA and has been to Uganda a number of times, most recently in May, 2010 when she collaborated with SPGS to organize the very successful IUFRO Workshop on Pests and Diseases of Tropical Plantations and Forest Trees.

NEW SPGS PUBLICATIONS

In the last few weeks we have produced two new brochures – one is a general, 8-page booklet entitled **Who we are; What we do**. It explains in summary what SPGS does and is meant to be a simple introduction to the project for those who do not know about us. The other is entitled **Woodlots** and summarizes our woodlot initiative, which seems to be taking off after a slow start in 2010. Please collect copies from SPGS's office to help spread the word: both brochures can be viewed (and downloaded if required) from our web site.

www.sawlog.org

Don't forget to regularly check our web site, which gets frequently updated and has a lot more information than we can squeeze into our Newsletter. Recent additions include the reports and photos from the recent Southern Africa safari and the latest details of SPGS's Certified nurseries.



COMPETITION

-see Page 16.

Hoped
you enjoyed this
tasty issue!



STOP PRESS!



The **New Forests Company** signed a major forest concession agreement on 19th July 2011 with the Government of Rwanda, which will give the company access to around 12,000 ha of planted timber and around 4m tonnes of mature wood. The mature plantations were planted in the '70's as a buffer around Nyungwe National Forest in the southwest of the country. NFC has plans not only for a series of processing plants but also bioenergy production. NFC will replant the land under a lease agreement, which last for 49 years. [Source: NFC press release 19/07/11]

Green Resources' Katchung Forest Project became the company's first CDM project to be registered by the UNFCCC on 27th June, 2011. The project was only the 5th A/R CDM project to be registered in Africa and is the first registered large-scale CDM project in Uganda. The project has the potential to sequester 494,000 tCO₂e over a 20-year period. [Source GRL press release 5/7/11; see www.greenresources.no]

LOOKING FOR A CERTIFIED NURSERY?

visit www.sawlog.org

CLIENTS' FIELD MEETINGS AUG. 2011

The 2nd (and last) field meeting of 2011 is scheduled to take place over two weeks – **17-18th August** and repeated **24-25th August, 2011**. Remember ALL Clients are expected to attend one of these meetings – and NOT your Managers or Supervisors! These are important gatherings to share experiences from other growers and to hear from SPGS the latest information on various matters. They are also great fun socially too. Your invites have hopefully already been sent out for whichever week your Cluster is pencilled in for. Remember, you only have to attend one as the 2nd meeting is a repeat of the first. We have to run two consecutive meetings now due to the sheer numbers of Clients in Phase II. Even fitting in 130 people in up-country hotels here is a challenge, to say the least so we don't want to even try for 260 at one go!



Readers' contributions welcomed.

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