

# FRIM NEWSLETTER

THE NEWSLETTER OF THE FORESTRY RESEARCH INSTITUTE  
OF MALAWI

P.O. Box 270, Zomba Tel: 01 524 866 Fax: 01 524 548  
Email: cchilima@gmail.com; willsagona@gmail.com



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ASSISTANT EDITOR: ROMUTHI MKANDAWIRE

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## EDITORIAL

Welcome to the 96<sup>th</sup> edition of the FRIM Newsletter after 4 year unprecedented break. We cannot compensate you for this but please be assured that we will not “go to sleep again”. In this edition we present to you topical issues that are relevant to our present situation particularly in relation to the dilemma of forest management and how trees have come under intense threat from resource users and other plant dependent organisms.

The views expressed in the articles are those of the authors and may not necessarily be those of the Forest Department or the Forestry Research Institute of Malawi.

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### **The Sorry State of the Viphya Plantation** *Clement Chilima\**, *Teddie Kamoto\*\** & *Eric Mbingwani\**

\*Forestry Research Institute of Malawi, Zomba.

\*\*Department of Forestry (Hq), Lilongwe.

The 53,000 hectare Viphya Plantation was once the pride of Malawi, being the largest and best stocked man-made forest plantation in Africa. Not anymore! Today, the plantation is probably one of the most degraded plantation in Africa. Degradation of the Viphya Plantation has been taking place at different rates during the past twelve years, depending on the nature of management and forest operator. Currently, almost 50% of the plantation is deforested with no evidence of significant replanting and protection from fire.

The Viphya Plantation is divided into seven (7) forest management blocks, namely Champhoyo, Chikangawa,

Kalungulu, Lusangazi, Luwawa, Mazamba and Nthungwa. RAIPLY is managing Champhoyo, Chikangawa, most of Kalungulu and parts of Nthungwa forest blocks based on a concession agreement. Total Land Care and AKL Timbers are managing Luwawa forest Block while Timber Millers Union is operating in Lusangazi, Mazamba and parts of Nthungwa forest blocks under Forest Management Agreements (FMA). Other single operators including Cetrifine, Mulli Brothers Ltd, Lizulu Timbers, Alliance One and numerous individuals are operating in parts of the plantation under license.

Participation of the private sector in industrial forest plantations is guided by the forest policy of 1996, the Forest Act of 1997, and the National Forest Program of 2001. With support from the Department for International Development (DfID), Malawi Government developed the Forest Plantation Initiative Malawi (FPIM) through the Malawi Forest Sector Support Program (MFSSP) with the aim of facilitating the privatization of forest plantations. The FPIM recommended that the best model of privatization of plantations in Malawi would be through concessions, based on an open bidding process which should be open to local and international companies. In 2006, Government shelved the whole idea of privatization of forest plantations, citing the performance of previously privatized assets as being “poor and not benefitting the poor Malawians at local level”. This led to the introduction of Forest Management Agreements (FMA) and license agreements which are provided for in the Forest Act of 1997. The arrangement has characterized most of the Viphya Plantation since then.

In January 2015, the Department of Forestry with support from Forestry Research Institute of Malawi (FRIM) conducted a resource survey in the Viphya Plantation to determine its status and quality of forest management by the different operators.

The major findings and conclusions are summarized as follows;

i) Only about 31,000 hectares of the plantation has standing planted trees, about 24,000 hectares of which is comprised of pine species. This is nearly half of the land which is dedicated to afforestation. About 83% of these forested areas are located in Kalungulu, Champhoyo, Chikangawa and Luwawa forest blocks. The rest of the plantation which is under FMA, thus Mazamba, Lusangazi and Nthungwa are largely bare, having been subjected to unsustainable harvesting, with no evidence of significant replanting or protection from fire damage.

ii) In the FMA compartments where Timber Millers Union is operating, there are only about 4,100 hectares of standing trees, 92% of which are young trees below the age of 10 years. It follows that since most pine trees in the Viphya Plantation mature between 25 and 30 years, Timber Union will not be able to access sufficient timber in the next 15 to 20 years from the FMA sites. It can be argued therefore that Timber Millers Union has not been able to manage its allocated forest blocks well enough to ensure sustainable forest cover and supply of timber.

iii) Between 2003 and now, forest cover in the Viphya plantation has declined as presented in the table below;

Forest Block (s)	Main operator(s)	% Cover	
		2003	2015
Lusangazi, Mazamba, Nthungwa	Timber Millers Union	70-90	5-30
Luwawa	AKL/TLC	40-50	40-50
Chikangawa, Champhoyo and Kalungulu	RAIPLY	60-80	60-80

iv) There are about 6,000 hectares of over-mature trees (above 40 years old) in Chikangawa, Champhoyo and Kalungulu forest blocks which are managed by RAIPLY. While over-mature trees play an important ecological role in the plantation, maintaining certain species such as *Pinus patula* beyond optimal harvesting age does not make economic sense as the trees do not grow significantly anymore and this also encourages theft, natural tree death, forest fires, pests and diseases attack.

To address the above sorry situation, we make the following recommendations;

i) The Department of Forestry (DoF) should review the performance of the various operators. Where there are major breaches of agreement in terms of sustainable forest management (e.g unsustainable harvesting, low levels of replanting, frequent fire damages and lack of tending), such agreements should be terminated forthwith.

ii) Where agreements have been terminated, government should engage serious long term investors preferably on concession basis to replant all bare sites. Re-planting should be carried out urgently, according to management plans that should be developed by the concessionaires and approved by the Department of Forestry.

iii) DoF should review all management plans (preferably every five years) to ensure compliance with sustainable harvesting, site/species matching, tree planting and tending.

iv) DoF should monitor harvesting operations to ensure strict adherence to the approved plans and non-adherence should lead to automatic termination of the breached agreements.

v) DoF should introduce fast growing and early maturing tree varieties/species in order to reduce rotation age. The current research initiatives by FRIM in this endeavor should be supported.

vi) All operators should provide for research and tree seed production sites that will be jointly managed with FRIM. These will support the re-forestation and forest management efforts.

vii) DoF in collaboration with RAIPLY, should develop a sustainable harvesting plan for all over-mature trees in the Viphya Plantation. The harvesting plan should prescribe gradual harvesting and replanting, taking into consideration tree species, age and site conditions. Based on the plan, all over-mature stands should be harvested. Where necessary, other parties should be invited to participate in the harvesting and replanting activities, based on mutual understanding.

## Miombo forests smoked out in rolled cigarettes

Henry Utula\*, Alois Mandondo\*\*, Laura German\*\* & Ustanzious Nthenda\*

\*Forestry Research Institute of Malawi

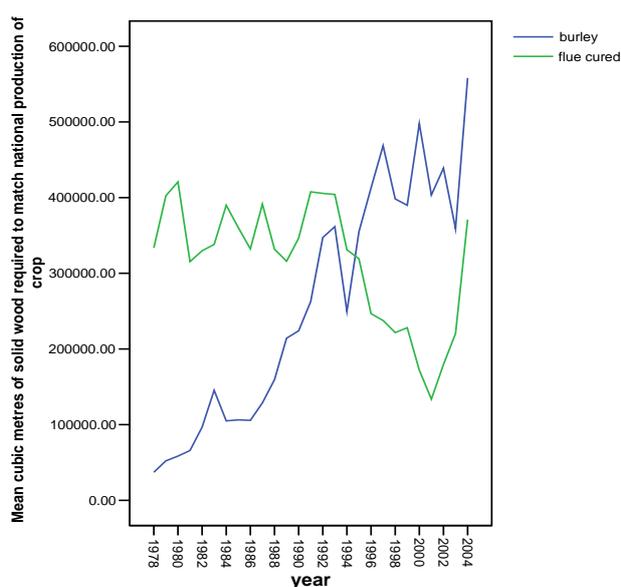
\*\*Centre for International Forestry Research

Undisputable strong links exist between agricultural expansion and forest loss. The Forestry Research Institute of Malawi in collaboration with the Centre for International Forestry Research (CIFOR) based in Indonesia undertook a study to generate data that link tobacco expansion and deforestation in *miombo* woodlands of Malawi. The study was done in order to understand the effects of tobacco expansion on forests. This article summarizes some of the key findings.

Whilst accounting for over 70% of Malawi's export earnings tobacco has thus contributed to one of the highest rates of deforestation in the world. Tobacco alone is estimated to account for 5% deforestation in Africa and 20% in Malawi. The area under tobacco in Malawi expanded by a factor of 2.8 between the 1960s and the turn of the century, with much of the growth representing displacement of woodland than conversion of existing uses. Statistics in terms of impacts engendered in terms of deforestation are so daunting. For instance, in Namwera (Mangochi), *Brachystegia* woodland dropped from 191,000 to 20,000 hectares within a space of 20 years. At national level the woodlands are said to have declined from 45,000 km<sup>2</sup> to 25,000 km<sup>2</sup> between 1972 and 1990, much of it being attributed to the expansion of area under tobacco. At a more disaggregated level, forest on public land declined by 5% at a rate of 0.03% per annum; whilst that on customary and private land declined by a massive 61%, at a rate of 3.4% per annum.

Although cultivation accounts for much of the loss, the extraction of wood for tobacco curing (mostly flue) and for construction of barns (mostly burley) also contribute significantly to forest loss. The former, is acknowledged to exert higher demand on woodlands than the latter. Even though burley consumes less wood, its share of national production by far outweighs flue cured tobacco, with projected demands of wood required for the crop being comparable to or exceeding wood requirements for flue cured tobacco. Overall, the projected picture in 2005 suggested a gradual increase of 2% per annum that was likely to reflect trends in production for the foreseeable future, given that then, "there was no demand constraint for Malawi tobacco". However, the trend now with the UN anti-smoking lobby and the decline in floor prices, is somehow distorted and not straight forward as projected. Meanwhile, projections of wood demand for flue cured

tobacco exhibit stability throughout the colonial and single party era, when flue cured tobacco production was an exclusive preserve of elite growers. Wood demand declined steeply with the onset of liberalization in the mid-1990s, presumably signifying the collapse of many small and medium estates under the pressure of competition ushered in by liberalizing reforms. The post-2000 projection for flue cured tobacco represents a sharply increasing picture that presumably mirrors "grow flue-cured tobacco campaigns" intended to revive production of the crop.



Projected tobacco wood demand from 1978 to 2004

Tobacco industry expansion affects forests not only by direct land cover change, but also through the use of fuel wood for curing. Tobacco also affects forest dependent people through other means that may lie beyond forests *per se*. Nonetheless, efforts by tobacco growing giants have increased lately and more trees are being planted to ensure continued supply of wood for the industry.

## Managing insect pests of Eucalyptus trees in Malawi

Dave Moyo, Gerald Meke & Clement Chilima

Eucalyptus tree species are widely promoted and planted in Malawi to supply fuel wood, poles and various other wood products at both industrial and subsistence levels. Apart from other reported problems such as diseases, slow growth and excessive water use, insects are the biggest problem associated with eucalyptus trees in Malawi. In this article, we list some key insect pests that threaten eucalypts in Malawi.

### Termites

Termites are probably the most prominent insect pest of Eucalyptus trees in Malawi. It is estimated that up to ninety percent of trees that are planted, are killed by termites in the

first three years. This means that tree growers have to continuously replant or use expensive chemicals in order to establish eucalyptus woodlots or plantations. There are various termite species which attack different parts of the Eucalyptus tree at various times. It is those species that attack roots or girdle the stem of young trees at ground level that cause the most serious damage, as this usually results in death of entire trees. In Lilongwe for example, close to 100% death of young trees has been recorded, resulting from termite attack. In the past, aldrin and diedrin (both organochlorine insecticides) were successfully and extensively used to control termites in Eucalyptus plantations. When these pesticides were banned due to human toxicity concerns, Marshal suSCon (carbosulfan) was introduced to replace them. But carbosulfan is not popular due to high costs. To a limited extent, some farmers currently use dursban to control termites, especially in the nursery. Other choices that are available are planting at high density to ensure that at least some trees survive; planting under a cover crop; and planting tolerant or resistant species or provenances. The success of these choices has not been evaluated.

**The Bronze Bug (*Thaumastocoris peregrinus*)**

*Thaumastocoris peregrinus* is a sap sucking insect that feeds on eucalyptus leaves and is native to Australia. In Malawi, this pest was first spotted in Ntcheu and surrounding districts in 2008. So far, we have not been able to determine the economic damage caused by this insect pest in Malawi, but in other countries there are records of tree deaths and economic impact on tree growth rates. In Malawi, the pest makes Eucalyptus trees and plantations look miserable and when one walks through infested trees, the insects cause irritation on the skin. Currently, there is no known control measure but studies are underway in South Africa, Kenya and Zimbabwe to identify an efficient biological control agent.



**Bronze bug (left) and Eucalyptus plantation infested with bronze bug (right)**

**The Gall Wasp (*Leptocybe invasa*)**

*Leptocybe invasa*, also known as the Blue Gum Chalcid wasp, is of Australian origin, and has recently become a very serious pest in Malawi. It was first reported in South Africa, Kenya, Tanzania and Mozambique before it was detected in Malawi. It causes galls on growing shoots of saplings, seedlings and coppices. The galls are so severe that the attacked plant stops growing followed by death of the whole plant. Entomologists are currently working towards identifying a biological control agent and at the same time tree breeders are working towards developing resistant and tolerant strains of various eucalyptus species. The best way to manage this pest currently is physical, through destroying infested seedlings and ensuring that only clean (pests-free materials) are transported to the field for planting.



**A gall wasp on a leaf of Eucalyptus (left) and an infested Eucalyptus plant (right)**

**Eucalyptus Long-horned Borer (*Phoracantha semipunctata*)**

The Eucalyptus Long-horned borer scientifically known as *P. semipunctata* is a common pest on stressed eucalyptus or recently felled trees. The adult lays eggs on trunks which hatch and then the larva bore into the bark. The larvae bore into the wood as it grows hence weakening it and also reducing its value in the process. To lessen damage of this pest it is advisable to avoid planting trees in areas where they will be stressed and to remove the bark of trees as soon as they have been felled to reduce breeding sites. As a biological control measure, an agent was released in Chipata, Zambia but to date FRIM has not identified the agent in the country, yet it is believed that it has spread into Malawi.



**The borer on the bark of Eucalyptus tree**

*This article will be continued in the next issue..... where we shall make general recommendations and also bring up the complex topic of "water consumption" by eucalyptus trees.*