FRIM NEWSLETTER

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EDITORIAL

We present to you our dear reader the 98th edition of the FRIM Newsletter in this third quarter of 2015. The forestry sector is set on a path to address the various problems such as forest degradation and yet new challenges such as pest outbreaks keep emerging. The Forestry Department would like to call upon all stakeholders to support efforts that are being invested in order to protect, restore and sustainably manage forests. One notable milestone in this quarter has been the issuing of the first ever charcoal license as provided for in section 81 (2) of the Forest Act to Citrifine Limited which is managing Kawandama Hills Plantation in Mzimba. Although this has raised some controversy among some stakeholders, this is a step in a right direction considering that the issue of resource regulation is key for sustainable forest management. The editorial would like to commend all our readers for the support and positive feedback that you continue to provide to make this Newsletter informative. In this issue we present to you our dear readers articles whose focus is on emerging pests that are destroying *Eucalyptus* species and continue to attack our planted exotic species; alternative species to *Eucalyptus* and lessons from forest co-management.

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

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Red gum lerp psyllid - A notorious *Eucalyptus* pest in Malawi

Gerald Meke, Dave Moyo, Herbert Jenya and Ustanzious Nthenda

Red gum lerp psyllid also scientifically known as *Glycaspis brimblecombei* (Moore) is a new pest in Malawi which was discovered around Zomba Air wing base in May, 2015. It was earlier reported in RSA, Zimbabwe and Kenya in 2013. The red gum psyllid, is a sap-sucking insect that feeds on *Eucalyptus* species with preferences to *E. camadulensis* and *E. tereticornis*. Native to Australia, the red gum lerp psyllid has been accidentally introduced into the USA, Mexico, Chile, and Brazil, and it has recently been detected in Uruguay.

Females of the red gum lerp psyllid lay between 45 and 700 eggs. The eggs hatch in 10 to 20 days and the nymphs will pierce the plant tissue with their stylet (mouthparts) to feed on the xylem. As the nymphs feed they secrete honeydew on which black fungus grow sometimes. The nymphs construct a waxy cover (called a lerp) around themselves which acts as a protective housing. This cover is whitish and conical in shape and shelters the insects until the adult stage. As it grows through five nymph stages it sometimes outgrows the lerp and sheds it off or move to new spot

to construct a new one until it emerges as an adult. In Australia there are two to four generations per year.

Life stages of the red gum lerp psyllid, *G.brimblecombei*: a) colony on heavily infested *eucalyptus* tree; b) adult female; c) adult male; d) lerps on *E. camaldulensis* leaf; e) nymph stages; f) eggs and hatching crawlers; g) newly formed transparent, dome shaped lerp with a first-instar psyllid nymphs underneath.
Source: Stefania Laudonia et al, 2010

It is hypothesized that the increased movement of goods and people between countries across the globe in the last few decades, has enhanced the spread of the pest.

Symptoms of its feeding include dropping of leaves and drying of leading shoots. Infested leaves are covered with waxy secretions and honeydew, on which sooty mould grows. Heavy infestations can entirely defoliate and kill trees. It has been observed that *Eucalyptus* species differ in their susceptibility to attack by the red gum lerp psyllid. River red gum (*E. camaldulensis)* and Forest red gum (*E. tereticornis)* have been highly susceptible and *E. grandis* has been more tolerant.

***Eucalyptus* stand (left) is resistant to *G. brimblecombei* attack while one on the right is highly susceptible**

Source: Dalva Luiz de Queiroz et al, 2012

Forestry technical personnel throughout the country have reported that the general public believe that the lerp is poisonous and that it is killing people and livestock. So far this has not been verified and that what is known is that the pest feeds on sugar rich phloem sap. It filters out the excessive sugars to concentrate amino acids, some of which is used to construct the lerp. In short, the lerp is made up of sugars which can be likened to the Biblical *manna*. However, it should be noted that because of exposure the lerp is unhygienic and not fit for consumption because it attracts fungi and other associated pest that can cause health disorders.

FRIM is once again appealing to the general public to report immediately any tree pest detection to the institute or any Forestry office. Early detection and reporting is critical as it ensures rapid response to avert serious pest damage through timely interventions.

Eucalyptus growing in Malawi: alternative species

Tembo Chanyenga

The continued increase in demand for fuelwood and charcoal as the traditional and most economic source of energy in Malawi necessitates the need for establishment of more fuelwood plantations and communal woodlots throughout the country. In 1979,

Forestry Research Institute of Malawi (FRIM) screened several indigenous and exotic tree species to identify the best adapted and most productive tree species for rural afforestation programmes for cooking, heating and construction purposes. The best adapted and most productive tree species in most tested areas were *Eucalyptus* species followed by *Melia azadarach* (Indiya), *Albizzia lebbeck* (Ntangatanga), *Aziderachta indica* (Neem), *Acacia polyacantha* (Mthethe).

Following the outcome of this research, *Eucalyptus* tree species in general were promoted for planting countrywide and today approximately 50% of tree population on farmers' fields are of this species. However, there are many kinds of enemies for trees ranging from pests and diseases to man. *Eucalyptus* tree species are exotics (introduced from Australia). There are not too many absolutes in biology, but one that comes closest to certainty is that exotic plantations will be attacked by pests of one kind or another. Many times pest attacks result from severe stresses caused by the conditions that often occur where the exotic trees are grown. With changing climatic conditions (Malawi's projected declining rainfall of 1 to 18% and increasing temperature of 0.6°C – 3.8°C), most sites are increasingly becoming unsuitable for most exotic plantation species such as *Eucalyptus* and most likely this is making them more susceptible to insect attacks. Of late, *Eucalyptus* trees in Malawi are facing serious *Leptocybe invasa* and *Glycaspis brimblecombei* (Red Gum Lerp Psyllid) insect attacks. These two insects are naturally found in Australia which is the origin of *Eucalyptus* species. There is expressed fear that these insects will wipe out the tree species if action is not taken and the country will face wood deficit in not a distant future. In the absence of immediate economical control measures of the two most devastating insect pests in history of *Eucalyptus* growing in Malawi, FRIM is therefore, recommending to the general public to grow the following indigenous species as a solution to pest problems:

Azaderachta indica (Neem)
Neem grows on a wide range of neutral to alkaline soils but performs better on shallow, stony, sandy soils or in places where there is a hard calcareous or clay pan. It grows best on soils within a pH of 2.7 - 6.0 range. The species is usually managed on short rotation for fuel and poles since not much timber is produced. It has a high calorific value of about 29,000 kJ/kg. The density of the wood is 720 - 930 kg/m^3 at 12% moisture content (MC). It is mostly found in low lying areas that receive 400 – 1200 mm annual rainfall with a mean annual temperature of 40°C.

Melia azedarach (Indiya)
Melia azedarach is a deciduous tree that grows up to 45 m tall; up to 30 - 60 (maximum 120) cm in diameter, with a spreading crown and sparsely branched limbs. It is highly adaptable and tolerates a wide range of conditions (altitude of 0 - 1800 m asl; mean annual temperature of 23 - 27°C; mean annual rainfall of between 350 - 2000 mm; deep, fertile sandy loam soils). Fuelwood is a major use of *M. azedarach*. The species has a calorific value of 5,100 kJ/kg.

Albizia lebbeck (Ntangatanga)
Albizia lebbeck prefers well drained soils with a wide range of pH from acidic to alkalinity. It does well in areas that receive 1300 – 1500 mm annual rainfall with an annual mean temperature of 18.7°C. It can grow up to 30 m in height and 50 cm in diameter at breast height (dbh). It is an excellent fuelwood species with a calorific value of 5,200 kcal/g.

Acacia polyacantha (Mthethe)
Acacia polyacantha is an indigenous species that occurs on a wide range of environments in Malawi. With a calorific value of 5,128 kcal/kg, it is one of the fastest growing *acacias* which have shown great potential for fuelwood and charcoal production in Malawi.

It is clear from the information on alternative species' growing conditions requirements provided above that successful tree establishment calls for prudent species – site matching. Tree growers are reminded that these alternative species are being advanced with the objective of diversifying the forest resource base in order to spread the risks in the event of pest and disease outbreaks like what the country is going through at the moment. It should be borne in mind that *Eucalyptus* trees have saved and are still saving the nation from serious wood deficit by providing 80 – 90% of the fuelwood and pole wood requirements.

Illegal timber harvesters and co-management

Gerald Meke

Forest reserves though predominantly regarded as conservation and productive areas have become central to the livelihoods of forest reserve peripheral communities around these resources. However, the Government's overriding policy objective remain that these areas continue to be under forest cover in order to maintain their essential environmental services. As a way of promoting participatory forestry management and to reduce conflicts between resource users and resource stewards, the Forestry Department through the 1996 policy introduced co-management arrangement where forest peripheral communities co-own, co-manage and co-utilize the resource in a sustainable manner without negatively altering the original objectives for establishing the reserves. The outcomes of the arrangement so far do not truly reflect the intended objectives of maintaining forest integrity and sustaining the livelihoods of the forest peripheral communities. The prevailing access to forest reserves is in a way contributing to rapid depletion and further leading to resource scarcity and catchment degradation. In order to improve implementation of co-management arrangement various studies have been undertaken. In this article some of the findings from an indigenous timber harvesting stakeholder analysis undertaken in the Zomba-Malosa Forest Reserve between 2013 and 2014 are presented.

Small sized round wood of less than 10 cm being loaded for pit sawing on Zomba-Malosa Plateau

Reports of project implementation show that there has been stakeholder analysis which focused much on establishing what stakeholders use from the forest reserve. No effort was made to do a thorough analysis of the groups that operate in there, how they organize themselves, their power and interests and the processes or channels of production. Using a mixed methods approach (forest inventories, satellite image analysis, focus group discussions, workshops, meetings and questionnaire survey) and employment of several conceptual theories, a grounded methodology was used to understand the role of indigenous timber harvesters in sustainable management of the reserve.

The results so far show that historically most of the high value indigenous timber was harvested during the colonial period and soon after independence in 1964 to provide timber for construction. The high rate of deforestation later forced government to suspend issuing of indigenous timber sawing licenses as there were no high value timber trees to harvest. This in turn forced the sawyers to go underground as illegal harvesters. As an illegal industry, the timber sawyers have not been properly integrated into the co-management arrangement yet they hold enormous power and amongst them are also various stakeholders that even include those that double as legal harvesters in a regulated setup. Ironically, illegal harvesters often organize themselves to market their products as a grouping with the full knowledge and support of the legal set up at times.

This then calls for revisiting the resource governance arrangement and allow for an inclusive arrangement where even the illegal clusters are accommodated in the co-management governance structures by allowing them to hold office in the local resource governance structures. At the same time there should be room to start extending the plantation management approaches to indigenous forest management to allow for a paradigm shift where tested provisions such as concessions are given to clusters and establish mixed plantations of high value species in ecological areas where they do well.