

Cypress Aphid Pest Control in Ethiopia



FAO Subregional Office for Eastern Africa (SFE)

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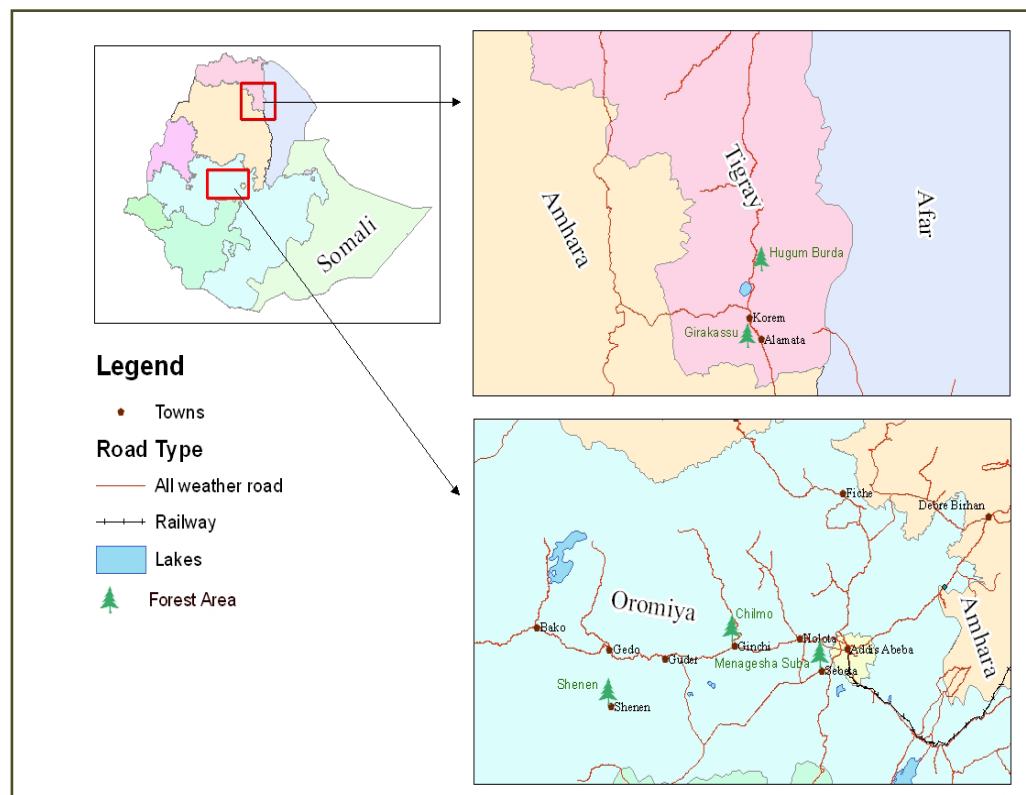
Cypress aphid pest control in Ethiopia

In cooperation with the Government of Ethiopia, the Subregional Office of Eastern Africa (SFE) of the Food and Agriculture Organization of the United Nations (FAO) introduced a parasitic wasp to control a fast-spreading aphid pest infestation threatening to destroy cypress tree plantations in parts of the Amhara and Tigray Regional States in the north of Ethiopia.

The death of cypress trees was first observed in Ethiopia in 2003; aphids kill them by sucking their sap. Traditional control measures such as regular watering and pruning proved ineffective and use of aphicide spray

were not economical. In response, Ethiopian scientists, backed by the FAO Subregional Office in Addis Ababa (SFE), decided to trial this innovative biological control measure in badly damaged cypress plantations in the Amhara and Tigray regions.

An evaluation mission in June 2009 deemed the project a success with evidence of almost complete recovery in plantations where the wasp had been released. Subsequently, SFE plans to conduct a countrywide evaluation of cypress plantations in Ethiopia with a view of releasing more wasps where required.



Sites where the wasp was released in Tigray, Oromiya and Amhara



Pauesia juniperorum – the natural enemy of cypress aphids

The problem

The *Cinara cupressivora* (commonly referred to as cypress aphid) attacks conifer trees causing major damage to plantations and hedges.

The insect was accidentally introduced to Africa from Europe in the 1980s. It was first detected in Malawi in 1986 and quickly spread to other parts of Africa, including: Tanzania, Burundi, Rwanda, Uganda, Kenya, the Democratic Republic of Congo, Zimbabwe, South Africa, Libya and Morocco.

The presence of cypress aphids in Ethiopia was first detected in

Cypress trees:

- Provide wood and thus financial resources to the country
- Play a positive environmental role in conservation of soils and water and stabilizing micro climates
- Provide soft wood which are excellent for construction and furniture production
- Are a living fence and wind-break for rural and urban dwellers
- Are used as ornamental trees for beautification of recreation sites and roads



Damaged cypress hedges – by sucking the plant's sap, the aphid causes cypress to dry and die

Addis Ababa in 2003 and by 2005, had caused over US\$10 million worth of damage to plantations across the country.

The solution

A natural enemy of the cypress aphid—scientists identified *Pauesia juniperorum* as a safe bio-control agent for the pest and the best means of stopping it from causing further devastation. The female wasp lays its eggs in live cypress aphids and the eggs hatch into larvae that feed on the pest's internal organs, eventually killing it.

The wasps were imported from Kenya to Ethiopia to be reared by

the Arsi Forest Enterprise (AFE). Experiments were undertaken to ensure that the release of the wasps would have no negative effects on the Ethiopian environment nor create any problems for humans, animals or beneficial insects. Once it was ascertained the wasps could not lay their eggs in honey bees, silkworms, spiders or ladybird beetles, the wasp was

“FAO promotes the most sensible and affordable but reliable science to address agriculture and natural resource issues.”

Mafa Chipeta, FAO Subregional co-ordinator for Eastern Africa.



Cinara cupressivora –caused over US\$10 million worth of damage to Ethiopian cypress plantations

released in aphid affected forests, hedges and trees in November 2008.

A survey showed that nearly all cypress plantations, hedges and homestead trees in areas covered by the evaluation (i.e. Addis Ababa to Mekelle, Addis Ababa to Gonder and its surrounding areas, Addis Ababa to Bako including Shenen and Chilimo State Forests, and from Addis Ababa to Menagesha Suba State Forest) were affected by cypress aphids with different damage categories. Cypress plantations requiring urgent interventions were identified as those located between the

Hugum Berda State Forest and the Deni Grakassu area in the Ti-gray Region; between Hike Town and Kombolcha Town as well as plantations located in the area be-

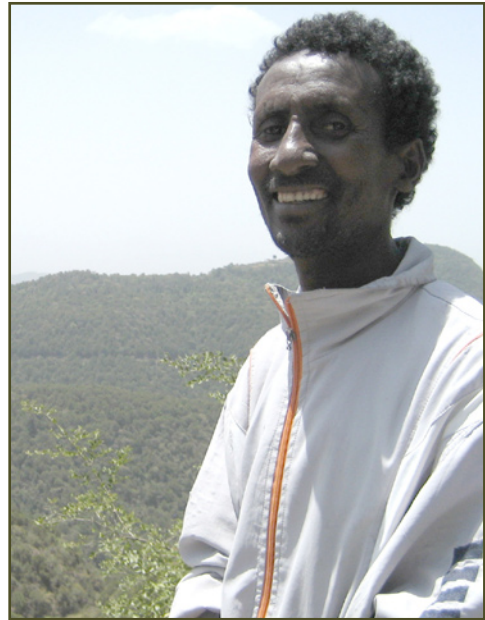
“Ethiopia’s forests are precious environmental and economic assets already under siege from encroachment and climatic factors. Successful, cost-effective pest control measures are fundamental to maintaining the country’s healthy forests.”

Mafa Chipeta *FAO Sub-regional co-ordinator for Eastern Africa.*

tween the Amanuel Youth Association up to the previous Sheno Agricultural Research Centre in the Amhara Region.

Within three months, the released wasps had successfully spread to most parts of the targeted plantations as well as neighbouring cypress hedges and patches. In June 2009, FAO conducted a monitoring and evaluation mission which found that almost all of the target hedges and trees had since recovered and had resumed good growth. The recovery of the cypress trees in Hugem Berda forest of southern Tigray was particularly successful.

As a result of the excellent performance of *Pauesia juniperorum*, rearing activities will continue in AFE and in light of the success observed in Amhara and Tigray,



A forestry officer in Hugem Berda forest, southern Tigray described the results of the release as “amazing”.

SFE now plans to conduct a countrywide evaluation of cypress plantations in Ethiopia.



A forest technician releases the wasp in Kombolcha



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