



Karuri Primary School children, in Thika, in their medicinal tree stand. (Photo: KEFRI)

Appreciating medicinal trees

KEFRI involves schools in the domestication and conservation of healing plants

By Francis Gachathi

Throughout human history, plants have been the most important source of medicines for both humans and other animals. There is evidence of herbs having been used in the treatment of diseases in the Chinese, Greek, Egyptian and Roman civilisations. The Bible mentions over 40 plant medicines that include aloe, myrrh and frankincense.

Today, plants are still a significant component of sustainable medical care, particularly for the majority of rural populations in developing countries. Plants contain active ingredients that are used to treat a wide range of common diseases. If properly developed, medicinal plants could be used to complement the existing systems for the provision of health care needs.

However, more important is that, unlike synthetic drugs, plant medicines can be grown in the garden or harvested from the wild, and are easily prepared at home, just like a cup of tea. In addition, they could serve to increase the level of people's participation in conservation of biodiversity.

Threats to medicinal plants

Despite these perspectives, there remains a fundamental lack of conservation of medicinal

plants, which makes continued utilisation of these natural resources uncertain. Few researchers have examined the availability of these wild sources, the quantities in which they are used and threats to the species and habitats in which they occur.

Demand for herbal medicine is increasing while populations of medicinal plants are on the decline. Forests are being depleted to expand agriculture and for human settlement. External trade in medicinal plants is also putting pressure on the resources, leading to destructive harvesting methods and eventual death of medicinal plants. Scarcity of medicinal plants results in marketing of substitutes, adulterated as well as fake products, undermining the health reputation of the entire herbal therapy system.

Domestication and conservation effort by KEFRI

In response to this vital health and environmental concern, the Kenya Forestry Research Institute (KEFRI) carried out a survey on plants used for human medicine in the country. The survey aimed at identifying species that are in need of conservation. Twenty five forest-dependent medicinal plants were found to be under pressure from over-

exploitation and habitat loss, hence requiring conservation and protection (Table 1).

Urgent measures were taken to sensitise the local communities on the fast disappearing vital heritage of medicinal plants. KEFRI did this by setting up demonstration plots in KEFRI centres and medicinal groves on farms of selected herbalists. And to involve the youth, KEFRI planted medicinal plants in public school compounds. The aim was the introduction and domestication of popular medicinal plants into the agricultural systems and conservation of the remaining wild stocks for sustainable supply of authentic medicinal extracts.

Schools medicinal plants project

For successful introduction of medicinal plants into the prevailing agricultural systems in different ecological zones, it was important that the public be made aware of the identity, ecology and habit of these vital plants.

This entailed growing and labelling medicinal plants with the local and botanical names, and the health conditions for which they are known to be effective. The plants needed to be at sites accessible to the public. It was against this background that public school grounds were chosen as ideal for creating public awareness and sites for

Table 1: Some overexploited forest dependent medicinal plants

Species name	Forest type	Parts used
<i>Warburgia ugandensis</i> (East-African greenheart, muthiga)	Dry upland	Bark, leaves, fruits
<i>Warburgia stuhlmanii</i> (mkaa)	Coastal evergreen	Bark, fruits
<i>Zanthoxylum gillettii</i> (African satinwood, muchagatha, sagawoita)	Wet montane	Bark, fruits
<i>Elaeodendron buchananii</i> (mutanga, sawanet, mulundu)	Dry upland, riverine	Bark
<i>Olinia rochetiana</i> (kaptonengit, mwathathia, museset)	Dry upland, hilltop	Bark, roots
<i>Pittosporum viridiflorum</i> (munyamati, kaluma, olengararia)	Dry upland, riverine	Bark
<i>Trimeria grandifolia</i> (mbani, chepkarelyon, muhindihindi)	Dry upland, riverine	Roots
<i>Harungana madagascariensis</i> (mbura, mbonobono, mukokotsaka)	Moist	Roots, bark
<i>Vismia orientalis</i> (mugwe, mpera, mukasibila)	Coastal lowland	Roots
<i>Bridelia micrantha</i> (jajab, mdudu, mukoigo, kuomo-mutereriet)	Riverine	Roots, bark
<i>Croton macrostachyus</i> (mukawisa, kitundu, mutundu, tebeswet)	Moist	Roots, leaves
<i>Prunus africana</i> (red stinkwood, mueri, muiru, mutimailu)	Moist	Bark
<i>Hagenia abyssinica</i> (hagenia, mumondo, bondet, omukunakuna)	Montane	Bark, flowers
<i>Rhamnus prinoides</i> (mfunganungu, zambizi, mukarakinga)	Montane	Roots, stems
<i>Rhamnus staddo</i> (gale, muthunthi, mubura, kuisitiet)	Dry upland	Roots
<i>Toddalia asiatica</i> (kikombe-cha-chui, maluia, mururue)	Dry upland	Roots, fruits
<i>Maytenus undata</i> (cheptoya, muriakitu, muthuthi, kapluguet)	Moist upland	Bark
<i>Pappea capensis</i> (pika, mongowa mbule, mubaa, ngonyat)	Dry upland, riverine	Bark, roots
<i>Lannea fulva</i> (lumubumbu, gorot, lolotwo)	Dry upland, riverine	Bark
<i>Ozoroa insignis</i> (garri, msangasanga, mugadi, lemejwet)	Hilltop, riverine	Root, bark
<i>Pistacia aethiopica</i> (musaa, muhehete, kibirirgorokiet)	Dry upland, hilltop	Root, bark
<i>Embelia schimperi</i> (matinda ariithi, kibogunit, ol sani-onyukie)	Upland, evergreen	Roots, seeds
<i>Maesa lanceolata</i> (boria, mundonge, omoterere, lisebesebe)	Upland moist	Roots, seeds
<i>Rapanea melanophloeos</i> (rapanea, mugaita, situtua, sitotwet)	Dry upland, hilltop	Roots, bark, fruits
<i>Strychnos henningsii</i> (kara, muteta, mase, olduyesi)	Dry upland, hilltop	Stems

Table 2: Schools in the project

SCHOOL	DISTRICT	ECOLOGICAL ZONE
Msabaha Primary	Malindi	Coastal region
Matsangoni primary	Kilifi	Coastal region
Nderi Primary	Kiambu	Highlands E. of Rift Valley
Nduuma Primary	Kiambu	Highlands E. of Rift Valley
Karure Primary	Thika	Highlands E. of Rift Valley
Kiriko Secondary	Thika	Highlands E. of Rift Valley
Londiani Boys Primary	Kericho	Highlands W. of Rift Valley
Londiani Secondary	Kericho	Highlands W. of Rift Valley
Kataret Primary	Bomet	Highlands W. of Rift Valley
Chulaimbo Primary	Kisumu	Lake region
Aboge Primary	Kisumu	Lake region
Hospital Hill High School	Nairobi	Highlands E. of Rift Valley
Ndarugu High School	Thika	Highlands E. of Rift Valley

model medicinal plants gardens. In addition to their medicinal value, these trees were also to be used for education and aesthetic purposes and act as conservation stands for future seed or vegetative propagation materials of these endangered species. It was also an ideal approach to promote planting of a wide range

of trees in public schools for conservation of biodiversity and for the betterment of the environment. It is particularly essential to instil in the youth, the understanding and appreciation of what medicinal plants are and what they can contribute to the present and future generations.

Location of the project and choice of schools

Thirteen schools in eight districts that cut across the country representing different ecological zones were selected for the project (Table 2). The schools were those easily accessible from KEFRI's regional research centres. Area local foresters (extensions) were involved particularly in the selection of the suitable schools and also planting. Factors that were considered included area (size) of the school ground and the commitment of the teachers to the project. Sites selected were those most unlikely to be used for construction, steep slopes, next to pit latrines, along perimeter fence or areas where trees would be useful as windbreak, erosion control or shade. First planting was done during the long rains in 2003.

Impact of the project on education and conservation of medicinal plants

In a recent survey conducted in schools in the project within the central highlands, teachers expressed their satisfaction with the project. In Karure Primary School in Thika, for example, where trees were planted on an eroded bare ground, erosion had been controlled and the ground is covered by grass. Students and teachers have made this medicinal grove a recreation site, resting or reading under the trees, particularly during the hot weather.

It is also emerging that scientific names of these medicinal plants are generating a lot of interest among teachers and students. They want to know scientific names and uses of many other trees and have requested for naming and labelling of all trees in their school compounds. As most of these medicinal plants are already bearing fruits, flocks of birds are attracted to these gardens. After feeding on the fruits, they effectively disperse the seeds into the neighbouring farms, some several kilometres away. This is especially evident regarding *Prunus africana*, *Rapanea melanophloeos*, and *Rhamnus prinoides* species which, according to elders from these areas, had disappeared years ago, but are now being found in some farms. A number of farmers and/or parents have occasionally requested for these medicinal tree seeds from the schools.

Farmers particularly want to plant *Warburgia* and *Prunus* as shade trees in their homesteads. This trend makes domestication and conservation of these medicinal trees very promising indeed.

The writer is Principal Research Officer, Kenya Forestry Research Institute (KEFRI)
Email: gachathif@yahoo.com