



LOCAL ECONOMIC DEVELOPMENT and GREEN JOBS, NEPAL



GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL



APRIL 2008



FOREWORD

The aim of Local Economic Development (LED) is to create and maintain a unique competitive advantage (i.e. dominant market positions) for enterprises and producers in target LED territories. LED processes target competitive and inclusive economic growth, especially for the benefit of hitherto marginalized and disadvantaged groups. The five components of a typical rural LED process are:

1. LED Process Design and Management.
2. Business Development.
3. Strengthening Locational Factors.
4. Creating Synergies with Social Policy/Programmes.
5. Sustainable Development.

By anchoring Sustainable Development as a strategic objective at the core of their LED efforts, LED stakeholders can give their LED effort strategic orientation. The concept of leaving a green footprint for future generations is becoming more important to modern society in this era of climate change and its uncertainties for the future of our planet. Nepal can make great contributions to climate change through promoting green jobs and technologies and increasing investment in afforestation, reforestation, water harvesting and irrigation to contribute to environmental conservation and to better cope with the impact of climate change.

Despite losing half of its forest cover during 1950-1980, Nepal remains rich in forest resources but these are under threat from encroachment, over-grazing and unsustainable harvesting of timber and non-timber forest products. Nepal has made great strides in its efforts to preserve its forest resources through its community forestry programme. People need reasons to preserve and expand forest resources and what better reason than to obtain more socio-economic benefits from them.

The purpose of this publication is to provide development practitioners, enterprises and communities with some such socio-economic reasons to preserve and expand forest resources in Nepal while contributing to the creation of green jobs. This publication is not intended to be an exhaustive, expert list of the socio-economic opportunities associated with the trees, plants and grasses of Nepal and in fact is largely limited to available information rapidly compiled by a couple of concerned development practitioners in respect of the known resources available in the ILO EmpLED project focal LED districts of Dhanusha and Ramechhap. The publication is therefore pitched as a pointer and primer. Development practitioners and communities intending to use this information for development and business purposes should conduct further research, especially focused value chain upgrading analysis including participatory discussions with local communities and government forestry offices.

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NOTE: Corrections, photos and additions for upgrading this publication are welcomed. If this publication has been of assistance in socio-economic development efforts, please also send us some information on what you did and the impact so we can elaborate a future version of the publication with Nepali case studies.

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The GREEN JOBS LIST of TREES, PLANTS and GRASSES of NEPAL

TABLE 1: TREES of NEPAL			
NAME			PRODUCTS & SERVICES
BOTANICAL	NEPALI & MAITHILI	ENGLISH & TRADE	
<i>Acacia catechu</i>	KHAIR, KHAYAR(N&M); KHAAIR (M)	BETEL-NUT PALM, BLACK CUTCH, CATECHU TREE, CUTCH TREE, HEARTWOOD (E); CUTCH TREE, KATH, KATHA, KHERSAL, PEGU CUTCH (T)	<p>PRODUCTS: FOOD: Seeds contain water-soluble mucilage (6.8%); a good protein source but nutritionally incomplete with respect to essential amino acids; FODDER: considered to be a good fodder tree and is extensively lopped to feed goats and at times cattle; for leaf fodder, finger-thick branches are lopped usually before main leaf fall occurs; FUEL: excellent firewood; TIMBER: Comparatively heavy, very strong, durable and resistant to white ants; used for house posts, agricultural implements and wheels; spent chips left over after extraction of katha and cutch can be used for the manufacture of hardboards; TANNIN/DYE: A substance called cutch, which is marketed as a solid extract, can be isolated from the heartwood; depending on the way of processing, several products can be obtained from crude cutch; the dark catechu or Pegu cutch is used to tan heavy hides into sole leather, often in a mixture of tan stuffs; Catechu extract is also used for dyeing silk, cotton, canvas, paper and leather to a dark-brownish colour; wood chips boiled down for tannin and for the red paste eaten with betel leaf; GUM/RESIN: The bark exudes a light gum of very good quality and is one of the best substitutes for gum arabic; POISON: Bark is said to be toxic and contains an alkaloid and both fruit and stem are used in Myanmar to poison fish; MEDICINE: Khersal, a crystalline form of cutch sometimes found deposited in cavities of the wood is used medicinally for the treatment of coughs and sore throat; bark is said to be effective against dysentery, diarrhoea and in healing of wounds; seeds have been reported to have an antibacterial action. OTHER: The tree is a host for the lac insects; catechu extract is also used for preserving fishing nets and ropes and a viscosity modifier in on-shore oil wells; tree is thought to have a powerfully protective mucilaginous juice, one of the most remarkable properties of which is its power of retaining water; well known that fire and even hot metal can come in contact with bare skin without injury, provided the skin is covered with the mucilage.</p> <p>SERVICE BENEFITS: Boundary or barrier or support.</p>
<i>Acacia nilotica</i>	BABUL (N); BABUR (M)	ARABIC GUM TREE, BABUL ACACIA, EGYPTIAN THORN, PRICKLY ACACIA, SCENTED THORN, SCENTED-POD ACACIA (E); BABUL/KAIKAR (T)	<p>PRODUCTS: FOOD: Tender pods and shoots are used as a vegetable; seed kernels can be eaten roasted; air-dried seeds contain crude protein and are eaten raw or roasted in India in time of acute food scarcity; FODDER: Leaves, pods and shoots are used as forage for sheep and goats (pods and shoots said to improve milk in Africa); APICULTURE: The fragrant flowers are popular bee forage; TIMBER: Harvested for boat making, posts/poles, buildings, water pipes, well planking, ploughs, cabinet work, wheels, tool handles, carts, mallets and other implements; it is an attractive wood, good for carving and turnery; FUEL: Valuable source of firewood; FIBRE: From the young bark; TANNIN/DYE: The inner bark contains 18-23% tannin, which is used for tanning and dyeing leather black; young pods produce a very pale tint in leather, notably goat hides; extracts from the bark, leaves and pods are used for dyeing cotton, silk and leather; GUM/RESIN: The gum tapped from the bark is used in manufacturing matches, inks, paints and confectionery; MEDICINE: The gum, bark, leaves and pods are used medicinally.</p> <p>SERVICE BENEFITS: include: (1) reclamation on degraded saline and alkaline soils; (2) soil improver (probably nitrogen fixing); and, (3) boundary/windbreak.</p>
<i>Acrocarpus heterophyllus</i>	KATAHAR (N&M)	Jack fruit	<p>PRODUCTS: FOOD: Jack fruit chips, papad, jam, can be eaten unripe (young) or ripe, and cooked or uncooked, used in curries as a food staple, spicy vegetable, pickle, sweet dishes made with ripe jackfruit, vitamin water sells a jackfruit-guava (b+theanine) beverage, smoked jackfruit-a way of preserving it, to use during non-season in Sri Lanka. May be also available canned in sugar syrup</p>

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

			<p>pr frozen. MEDICINE: Root extract is used to treat fever and diarrhoea, remedy for skin diseases and asthma, bark is used as a poultice, wood has a sedative property, pulp and the seeds are considered a tonic by the Chinese, one get over the influence of alcohol, starch from seeds is used to relieve biliousness, roasted seeds are said to be an aphrodisiac, burnt residue of jack fruit leaves mixed with burnt corn and coconut shells is used to heal ulcers, good source of vitamin B1 and B2. WOOD: used for production of various musical instruments, in Indonesia it forms part of the <i>gamelan</i> and Philippines soft wood is made into the hull of a <i>kutiyaol</i>, Indian <i>mridangam</i> and <i>kanjira</i>, TIMBER: furniture.</p> <p>SERVICE BENEFITS:</p>
<i>Adina cordifolia</i>	KARMA, HALDU (N); KARMAIN (M)		<p>PRODUCTS: MEDICINE: stem has been evaluated for its antiulcer potential. Enzyme assay-guided fractionation of the chloroform extract yielded 7-hydroxycoumarin as the active constituent which showed interesting H⁺/K⁺ ATPase inhibitory activity. TIMBER: The wood of <i>H. cordifolia</i> is used for house construction (doors, windows, stairs and flooring), boat building, and for furniture, implements and face veneer. It is also suitable for fine turnery work, rulers, pencil slats, bobbins, boxes and piano keys. The wood is reported as acid-resistant and could be suitable for laboratory bench tops and similar uses. Used to make furniture and implements (tool handles, plough shares). FUEL: A source of fuelwood.</p> <p>SERVICES BENEFITS: Intercropping: In Burma (Myanmar) it is used as ground cover in teak (<i>Tectona grandis</i> L. f.) plantations</p>
<i>Aegle marmelos</i>	BAEL (N&M); BEL (M)	BAEL FRUIT, BENGAL QUINCE, ELEPHANT APPLE, GOLDEN APPLE, HOLY FRUIT, INDIAN Bael, INDIAN QUINCE, STONE APPLE (E); BAIL (T)	<p>PRODUCTS: FOOD: Edible fruit; pulp is often processed as nectar; beating the seeded pulp together with milk and sugar makes a popular drink served cool called sherbet in Nepal and India; beverage is also made by combining bael fruit pulp with that of tamarind; mature but still unripe fruits are made into jam, with the addition of citric acid; bael fruit toffee, is prepared by combining the pulp with sugar, glucose, skim milk powder and hydrogenated fat; Indian food technologists view the prospects for expanded bael fruit processing as highly promising. FODDER: leaves and twigs are lopped for fodder; FUEL: Used as fuelwood by Muslims (tree is sacred to Hindus); TIMBER: best utilized for carving, small-scale turnery, tool and knife handles, pestles and combs, taking a fine polish; GUM/RESIN: The gum enveloping the seeds is most abundant in wild fruits and especially when they are unripe commonly used as a household glue and is employed as an adhesive by jewelers; sometimes it is resorted to as a soap-substitute; it is mixed with lime plaster for waterproofing wells and is added to cement when building walls; artists add it to their watercolors, and it may be applied as a protective coating on paintings; TANNIN/DYE: There is as much as 9% tannin in the pulp of wild fruits, less in the cultivated types; the rind contains up to 20% and tannin is also present in the leaves; the rind of the unripe fruit is employed in tanning and also yields a yellow dye for calico and silk fabrics; ESSENTIAL OIL: The essential oil of the leaves contains d-limonene, 56% a-d-phellandrene, cineol, citronellal, citral; 17% p-cyrene, 5% cumin aldehyde; the limonene-rich oil has been distilled from the rind for scenting hair oil; POISON: Leaf extract has been found to have insecticidal activity against the brown plant hopper, an important pest of rice plant in Asia; MEDICINE: The unripe fruit and fruit pulp are used medicinally; for medicinal use, the young fruits, while still tender, are commonly sliced horizontally and sun-dried and sold in local markets (also much exported to Malaysia and Europe); OTHER: The fruit pulp has detergent action and has been used for washing clothes; the shell of hard fruits has been fashioned into pill- and snuff boxes, sometimes decorated with gold and silver; a cologne is obtained by distillation from the flowers; in Hindu culture, the leaves are indispensable offerings to the 'Lord Shiva'; wood also used for making necklace (garland) for religious purposes.</p>
<i>Aesandra butyraceae</i>	CHIURI (M)		INFORMATION PENDING
<i>Agave spp.</i>	HATTIBAR (N)		INFORMATION PENDING
<i>Alnus nepalensis</i>	UTIS (N)	ALDER, INDIAN AL-	PRODUCTS: FODDER: The foliage is of low to moderate value as fodder for sheep and goats; it is

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

		DER, NEPAL ALDER, NEPALESE ALDER (E); ALDER (T)	not suitable for cattle; FUEL: Wood dries easily, burns well and is an important source of firewood and charcoal; FIBRE: In the Philippines, kraft pulping of wood of <i>Alnus</i> spp. gives a pulp yield of 47.6%, and bleaching improves the brightness to 76%; it is suitable for the manufacture of high-quality paper; TIMBER: Although not among the best construction timbers it is suitable for boxes, splints and matches, poles, general carpentry, furniture parts, turnery and newsprint; TANNIN/DYE: The bark has been used occasionally for tanning and dyeing. SERVICE BENEFITS: These are: (1) erosion control (gives some stability to slopes that tend to slip and erode: its seeds have been broadcast to stabilize landslides area); (2) reclamation (grows as a pioneer in degraded habitats with low fertility soils, and also planted to improve the stability of slopes liable to erosion and landslides, and for mine reclamation; (3) nitrogen fixing; (4) soil improver; (5) intercropping [cultivation of large cardamom (<i>Amomum subulatum</i>) or <i>Cinchona</i> spp. trees in combination with <i>A. nepalensis</i> is a common practice in the central Himalayas; and, (6) shade or shelter.
<i>Alstonia scholaris</i>	CHHATAVIAN (N); CHHATIWAN, CHHATAUN (M)	DEVIL'S TREE, DITTA BARK, BENGALI CHHATIM NEPALESE CHHATIWON (E)	PRODUCTS: FODDER: Leaves, milky juice and flowers are fed to livestock; FUEL; A source of fuelwood; MEDICINE: The bark is a powerful astringent and yields tonic which is of great medicinal value; the bark is used as a substitute for cinchona and quinine to treat intermittent and remittent fevers in Nepal, and to treat febrifuge, malaria, fever, ulcers, rheumatic, dyspepsia and skin diseases in India and Nepal; the milky juicy has medicinal properties and is used for typhoid and maternity fever.
<i>Annona reticulata</i>	SITAPHAL, AANTA (M)	BULLOCK'S HEART, CUSTARD APPLE, JAMAICAN APPLE, NETTED CUSTARD APPLE, SUGAR APPLE (E)	PRODUCTS: FOOD: In India, the fruit is eaten only by the lower classes, out-of-hand; in central America, Mexico and the west Indies, the fruit is appreciated by all; when fully ripe it is soft to the touch and the stem and attached core can be easily pulled out; the flesh may be scooped from the skin and eaten as is or served with light cream and a sprinkling of sugar; often it is pressed through a sieve and added to milk shakes, custards or ice cream; a sauce is made by blending the seeded flesh with mashed banana and cream; FIBRE: From the young twigs (superior to the bark fiber from <i>Annona squamosa</i>); TIMBER: Wood is used to make yokes for oxen; TANNIN/DYE: The leaves have been employed in tanning and they yield a blue or black dye; POISON: The seeds are so hard that they may be swallowed whole with no ill effects but the kernels are very toxic; the seeds, leaves and young fruits are insecticidal; the leaf juice kills lice; the bark contains 0.12% anonaine; sap cut from cut branches is acrid and irritant and can severely injure the eyes; the root bark has yielded 3 alkaloids: anonaine, liriodenine and reticuline (muricinine); MEDICINE: A decoction of the leaf is given as a vermifuge; crushed leaves or a paste of the flesh may be poulticed on boils, abscesses and ulcers; unripe fruit is rich in tannin (it is dried, pulverized and employed against diarrhea and dysentery); bark is very astringent and the decoction is taken as a tonic and also as a remedy for diarrhea and dysentery; in severe cases, the leaves, bark and green fruits are all boiled together for 5 minutes in a litre of water to make an exceedingly potent decoction.; fragments of the root bark are put around the gums to relieve toothache; root decoction is taken as a febrifuge.
<i>Annona squamosal</i>	SARIFA, RAMPHAL (M)		INFORMATION PENDING
<i>Anogeisus latifolia</i>	BANJHI (M)		INFORMATION PENDING
<i>Anthocephalus cadamba</i> syn. <i>chinensis</i>	KADAMB (N,M); KADAM (M)	COMMON BUR-FLOWER, NEW GUINEA LABULA (E); JABON, KAATOAN BANGKAL, KADAM, KALEMPAYAN (T)	PRODUCTS: FOOD: The fruit is eaten green (pickled) and ripe; FODDER: The fresh leaves are fed to cattle; APICULTURE: The fragrant orange flowers attract pollinators; FUEL: Is a source of fuelwood; TIMBER: wood is easy to work with hand and machine tools, cuts cleanly, gives a very good surface and is easy to nail; is used for plywood, light construction, pulp and paper, boxes and crates, dug-out canoes, and furniture components; yields a pulp of satisfactory brightness and performance as a handsheet; wood can be easily impregnated with synthetic resins to increase its density and compressive strength; TANNIN/DYE: A yellow dye can be obtained from the root bark; ESSENTIAL OIL: Kadam flowers are an important raw material in the production of 'attar',

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

			<p>which are Indian perfumes with sandalwood (<i>Santalum</i> spp.) base in which one of the essences is absorbed through hydro-distillation; POISON: The flowers exhibit slight anti-implantation activity in test animals. Kadam extracts exhibit nematicidal effects on <i>Meloidogyne incognita</i>; MEDICINE: The dried bark is used to relieve fever and as a tonic; an extract of the leaves serves as a mouth gargle; OTHER: Chlorogenic acid (CGA), isolated from the leaves for hepatoprotective activity in vitro and in vivo inhibited lipid peroxidation in liver microsomes (Kapil A. et al. 1995); the alkaloids cadamine and isocadamine are isolated from the leaves of kadam.</p> <p>SERVICE BENEFITS: These are: (1) reclamation (suitable for reforestation programmes); (2) soil improver (sheds large amounts of leaf and non-leaf litter which on decomposition improve some physical and chemical properties of soil under its canopy); (3) intercropping; (4) shade/shelter; (5) ornamental: and, (6) tree is highly regarded religiously and culturally and used to produce leaf plate for marriages.</p>
<i>Areca catachu</i>	SUPADI (N), SUPARI (M)	ARECA NUT (E)	<p>PRODUCTS: FOOD: Edible nuts MEDICINE: Areca Nut is aromatic and astringent and is said to intoxicate when first taken. The natives chew these nuts all day. Whole shiploads are exported annually from Sumatra, Malacca, Siam and Cochin China. In this country Areca Nut is made into a dentrifice on account of its astringent properties. Catechu is often made by boiling down the seeds of the plant to the consistency of an extract, but the proper Catechu used in Britain is produced from the <i>Acacia catechu</i>. The flowers are very sweet-scented and in Borneo are used in medicines as charms for the healing of the sick. In India the nut has long been used as a taenifuge for tapeworm. The action of Arecain resembles that of Muscarine and Pilocarpine externally, internally used it contracts the pupils. Arecoline Hydrobromide, a commercial salt, is a stronger stimulant to the salivary glands than Pilocarpine and a more energetic laxative than Eserine. It is used for colic in horses. Of the powdered nut for tapeworm 1 to 2 teaspoonsful. Of the Fluid Extract of Areca Nut, 1 drachm. Of the Arecoline Hydrobromide, for colic in horses, 1 to 1 1/2 grains. Of the Arecoline Hydrobromide, for human use, 1/15 to 1/10 grains, nut chewing may lessen anemia in pregnant women. Reasons for this finding are not clear, and betel nut chewing may be unsafe during pregnancy, other proven products for dental hygiene, the risks of betel nut may outweigh potential benefits, Schizophrenia-side effects such as tremors and stiffness have been reported, Stimulant-Betel nut use refers to a combination of three ingredients: the nut of the betel palm (<i>Areca catechu</i>), part of the <i>Piper betel</i> vine, and lime. It is believed that small doses can lead to stimulant and euphoric effects, and betel nut chewing is popular due to these effects. Chronic use of betel nuts may increase the risk of some cancers, and immediate effects can include worsening of asthma, high or low blood pressure, and abnormal heart rate. Based on the known toxicities of betel nut use, the risks may outweigh any potential benefits, Stroke recovery-Several poor-quality studies report the use of betel nut taken by mouth in patients recovering from stroke. In light of the potential toxicities of betel nut, additional evidence is needed in this area before a recommendation can be made. TIMBER: stems for ridge pieces in huts and gabled roofs.</p>
<i>Argemone maxicana</i>	KATAIYA (M)		<p>PRODUCTS: FOOD: Edible parts-leaves MEDICINE: Alterative, Analgesic, Antispasmodic, Antitussive, Demulcent, Emetic, Expectorant, Hallucinogenic, Purgative, Sedative, Skin and Warts. The whole plant is analgesic, antispasmodic, possibly hallucinogenic and sedative. It contains alkaloids similar to those in the opium poppy (<i>P. somniferum</i>) and so can be used as a mild pain-killer. The fresh yellow, milky, acrid sap contains protein-dissolving substances and has been used in the treatment of warts, cold sores, cutaneous affections, skin diseases, itches etc. It has also been used to treat cataracts and has been taken internally in the treatment of dropsy and jaundice. The root is alterative and has been used in the treatment of chronic skin diseases. The flowers are expectorant and have been used in the treatment of coughs and other chest complaints. The seed is demulcent, emetic, expectorant and laxative. An infusion, in small quantities, is used as a sedative for children, but caution is advised since the oil in the seed is strongly purgative. The seed has also been used as an antidote to snake poisoning. The pounded seeds, mixed with mustard oil, are ap-</p>

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

			plied externally to treat itchy skin. The oil from the seed is demulcent and purgative. It has been used externally in the treatment of skin problems. Caution is advised in the use of this oil, prolonged ingestion produces toxic effects resembling those occurring in epidemic dropsy. ESSENTIAL OIL: A semi-drying oil is obtained from the seed, used for lighting, soap etc. A medicinal fixed oil (essential oil?) is obtained from the seed.
<i>Artocarpus lakoocha</i>	BADAHAR (N&M)	MONKEY JACK (E); LAKUCH (T)	PRODUCTS: FOOD: The fruits and male flowers are eaten raw, boiled, steamed or roasted; FODDER: In Nepal it is highly valued as a fodder tree in the lower foothills of the Himalayas; the leaves contain about 16% crude protein and one tree produces between 60 and 200 kg fresh fodder in a year; it is fed to lactating animals and considered one of the most important milk producing forages; TIMBER: High-value hardwood used in heavy construction, poles, beams, furniture boats, wood based material, plywood and implements; FUEL: Important source of firewood; FIBRE: From the young bark; LATEX/RUBBER A sticky latex is present in all parts of the tree and has many uses; TANNIN/DYE: The tree bark (containing 8-9% tannin) is chewed like betel nut; the wood and roots yield a lavish colour dye; LIPIDS: The fat extracted from the seed is a light yellow liquid, viscous at room temperature; MEDICINE: The root is an astringent and is used as a purgative; when macerated it was used as a poultice for skin ailments. The bark is used to treat headache. SERVICE BENEFITS: include: (1) shade/shelter; (2) soil improver (tree can be used to provide mulch); and, (3) intercropping (an important component of traditional agroforestry systems).
<i>Arundinaria falcata</i>	NIGALO (N)		PRODUCTS: FOOD: Young shoots – cooked. Used as a vegetable. They are also fermented and preserved in Nepal to form a dish called tama. Tama is sour and has a very strong flavour, it is sometimes mixed in vegetable curries. OTHER USES: Basketary, Soil stabilization and weaving. The canes are used for making hats, baskets, rods etc. The culms are not very straight, and they have rather swollen nodes, which make them not very suitable as a weaving material. Nevertheless, they are still widely used for this purpose in the Himalayas. They are also used in construction. They are about 2cm in diameter. The plant is used as a very effective soil stabilizer in Nepal
<i>Azadirachta indica</i>	NIM (N&M)	ARGOSA TREE, BASTARD TREE, BEAD TREE, CORNUCOPIA, INDIAN CEDAR, INDIAN LILAC, MARGOSA TREE, NEEM TREE, PERSIAN LILAC (E); NEEM (T)	PRODUCTS: FOOD: Fruits are eaten fresh or cooked, or prepared as a dessert or lemonade-type drink; the young twigs and flowers are occasionally consumed as vegetables; FODDER: The leaves, though very bitter, are used as a dry season fodder; fruit is an important source of food for some wildlife, especially birds and bats, although they digest only the pulp, not the seed; FUEL: Charcoal made from <i>A. indica</i> wood is of excellent quality and the wood has long been used as firewood; its oil is burned in lamps throughout India. TIMBER: is a species of the mahogany family, and although it has some of the characteristics of a cabinetry wood, its grain is rough and does not polish well; the wood is, nevertheless, used to make cart wheels, implements, wardrobes, bookcases and closets, as well as packing cases because its insect repellent quality helps to protect the contents from insect damage; the main stem of the tree is also widely used to make posts for construction or fencing because the wood is termite resistant; GUM/RESIN: An exudate can be tapped from the trunk by wounding the bark; this high-protein material has potential as a food additive and is widely used in Southeast Asia as 'neem glue'; TANNIN/DYE: Tree bark contains 12-14% tannins; this compares favourably with conventional tannin chemicals; OIL: oil has long been produced in Asia on an industrial scale for soaps, cosmetics, pharmaceuticals and other non-edible products; the seed oil yield is sometimes as high as 50% of the weight of the kerne; POISON: Azadirachtin has been identified as <i>A. indica</i> 's principal active compound; extracts can be made from leaves and other tissues, but the seeds contain the highest concentrations of the compound; in India, there are several neem-based pesticides (it acts as an insect repellent, inhibiting feeding, and disrupting insect growth, metamorphosis and reproduction – formulations based on <i>A. indica</i> do not usually kill insects directly but alter their behaviour in significant ways to reduce pest damage to crops, and reduce their reproductive potential; Azadirachtin affects insect physiology by mimicking a natural hormone; It has been shown to affect egg production and hatching rates; Azadirachtin can

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

			<p>inhibit moulting, preventing larvae from developing into pupae; many foliage-feeding species avoid plants treated with neem compounds or cease eating after ingesting the neem; it has proven effective as an antifeedant on about 100 insect species; thus the extracts work especially well to protect plants from defoliation without affecting beneficial pollinating insects like honeybees; crudely produced neem extracts can also provide excellent control on caterpillars and beetle larvae; A traditional agricultural practice involves the production of 'neem tea'. The seeds are dried, crushed and soaked in water overnight to produce a liquid pesticide that can be applied directly to crops; crushed seed kernels are also used as a dry pesticide application, especially to control stem borers on young plants.; MEDICINE: Neem has proved effective against certain fungi that infect humans. In a laboratory study, neem preparations showed toxicity to cultures of 14 common fungi; the tree has suppressed several species of pathogenic bacteria, including Salmonella typhosa and Staphylococcus aureus; various parts of A. indica have anthelmintic, antiperiodic, antiseptic, diuretic and purgative actions, and are also used to treat boils, pimples, eye diseases, hepatitis, leprosy, rheumatism, scrofula, ringworm and ulcers; leaf teas are used to treat malaria; people use the twigs as toothbrushes, and dentists find twigs effective in preventing periodontal disease; neem oil is a powerful spermicide and can therefore be used as an inexpensive birth control method; a neem oil-based product, Sensal, is being marketed in India as an intravaginal contraceptive; neem oil has been used traditionally as a topical treatment for skin symptoms in both humans and livestock, but it should not be ingested orally.</p> <p>SERVICES: These are (1) erosion control (being drought resistant with a well-developed root system capable of extracting nutrient from the lower soil levels, it is a suitable tree for dune-fixation); (2) soil improver (farmers in India use neem cake as an organic manure and soil amendment); (3) intercropping; and, (4) shade or shelter.</p>
<i>Bauhinia vahlii</i>	MALU (N)	CAMEL'S FOOT CLIMBER	Santhal tribes in India are worn as finger rings. These rings are also used as charms against dropsy.
<i>Bauhinia variegata</i>	KOIRALO (N); KACHNAAR (N&M)	BAUHINIA, CAMEL'S FOOT, MOUNTAIN EBONY, NAPOLEON'S HAT, ORCHID TREE, PAPER MULBERRY, POOR MAN'S ORCHID (E); KACHNAR (T)	<p>PRODUCTS: FOOD: The leaves, flowers and flower buds are eaten as vegetables; FODDER: Leaves make good fodder and are greedily eaten by sheep, goats and cattle (average annual fodder yield per tree is 15-20 kg of dry matter); APICULTURE: It flowers in winter and spring; FUEL: good for firewood and charcoal; FIBRE: bark yields a suitable fibre; TIMBER: wood is moderately hard and used for agricultural implements; GUM/RESIN: The tree yields a gum; TANNIN/DYE: The bark produces tannins, used in various shades of brown; OIL: The seeds are made up of 20% endocarp and 80% kernel and yield 16.5% of a pale yellow, fatty oil on extraction with petroleum ether but only 6.1% in an hydraulic press; MEDICINE: The bark decoction is used for diarrhoea control, as an astringent alternative and for treating scrofula, skin diseases and ulcers.</p>
<i>Berberis aristata</i>	CHUTRO (M)	INDIAN BARBERRY (E)	<p>PRODUCTS: FOOD: The flowers and fruit raw or cooked, fruit taste with a blend of acid, though there is a slight bitterness caused by the seeds. Children much like fruit contain about 2.3 % of protein, 12% sugars, 2% of ash, 0.6 % tannin, 0.4% pectin. Flower buds - added to sauces. MEDICINE: The dried stem, root bark and wood are alterative, antiperiodic, deobstruent, diaphoretic, laxative, ophthalmic and tonic (bitter). An infusion is used in the treatment of malaria, eye complaints, skin diseases, menorrhagia, diarrhoea and jaundice. Berberine, universally present in rhizomes of Berberis species, has marked antibacterial effects. Since it is not appreciably absorbed by the body, it is used orally in the treatment of various enteric infections, especially bacterial dysentery. Fruit and leaf juice is applied for diarrhea and dysentery; bark and root decoction is used for jaundice and fever. There is 4.6mg vitamin C per 100ml of juice. It should not be used with Glycyrrhiza species (Liquorice) because this nullifies the effects of the berberine. Berberine has also shown antitumour activity. TANNIN/DYE: A yellow dye is obtained from the root and the stem. An important source of dyestuff and tannin, it is perhaps one of the best tannin dyes available in India. FUEL: The wood is used as a fuel. FENCE: The spiny branches are used for making fencing around fields.</p>

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

<i>Berberis asiatica</i>			PRODUCTS: FOOD: Fruit – raw MEDICINE: The roots contain the alkaloids berberine, oxyacanthine and umbellantine. They are antibacterial and are used in Vietnam in the treatment of diarrhoea, dysentery, ophthalmia and dyspepsia. Berberine, universally present in rhizomes of <i>Berberis</i> species, has marked antibacterial effects. Since it is not appreciably absorbed by the body, it is used orally in the treatment of various enteric infections, especially bacterial dysentery. It should not be used with <i>Glycyrrhiza</i> species (Licorice) because this nullifies the effects of the berberine. Berberine has also shown antitumour activity. TANNIN/DYE: A yellow dye is obtained from the root.
<i>Bombax ceiba</i>	SIMAL (M)	SILK COTTON TREE (E); SAMUEL MUSLI (T)	PRODUCTS: FOOD: flowers sometimes used for making pickle; TIMBER: wood used for making minor furniture; OTHER: Seed floss used for pillow filling.
<i>Caesalpinia bonduc</i> (<i>Caesalpinia decapetala</i>)	KANDAA (N); KARKARE (M)	THORNBUSH (E)	PRODUCTS: MEDICINE: Anthelmintic, Antiperiodic, Astringent, emmenagogue, Febrifuge, Laxative, Purgative The leaves are emmenagogue and laxative. They are applied externally to burns. The root is purgative. TANNIN/DYE: The bark is a rich source of tannin. TIMBER: due to its doubtful hardness it is not a good candidate for this use in Britain. Wood - moderately hard. SERVICE BENEFITS: Plants are often grown as field boundaries in Nepal. An excellent hedge plant Dry, thorny fencing.
<i>Carica papaya</i>	MEWA (N); PAPITA ARARNEWA (M)	BISEXUAL PAWPAW, MELON TREE, PAPAYA, PAWPAW TREE (E)	PRODUCTS: FOOD: Ripe papaya is a favourite breakfast and dessert fruit that is available year-round; it can be used to make fruits salads, refreshing drinks, jam, jelly, marmalade, candies and crystallized fruit; green fruit is pickled or cooked as vegetable or as a substitute for applesauce. About 60% of the ripe fruit is edible. LATEX/RUBBER: In some countries, <i>C. papaya</i> is grown in sizeable plantations for the extraction of papain, a proteolytic enzyme present in the latex, collected mainly from green fruit; Papain has varied uses in beverage, food and pharmaceutical industries; in chill-proofing beer, tenderizing meat, drug preparations for digestive ailments and treatment of gangrenous wounds; It is also used in bathing hides, degumming silk and softening wool; the latex yield can be about 70-130 kg of papain/ha per year; MEDICINE: Carapine, an alkaloid present in papaya, can be used as a heart depressant, amoebicide and diuretic; the fruit and juice are eaten for gastrointestinal ailments; a fresh leaf poultice is used to treat sores; the fresh root with sugarcane alcohol can be taken orally or as a massage to soothe rheumatism; a flower decoction is taken orally for coughs, bronchitis, asthma and chest colds; in some countries, the seeds are used as an abortifacient and vermifuge.
<i>Carissa congesta</i> syn. <i>carandas</i>	KARONDA (N); KARAUNA, KARONA (M)	BENGAL CURRANT, CHRIST'S THORN (E)	PRODUCTS: FOOD: The unripe fruit is sour and astringent and is used for pickles; when ripe it is sweet and is used for tarts, puddings and jellies; the syrup has been successfully utilized on a small scale in soft drinks; FODDER: leaves are fodder for the tussar silkworm; FUEL: used as fuel-wood; TIMBER: hard, smooth and useful for fashioning spoons, combs, household utensils and miscellaneous products of turnery; TANNIN/DYE: fruits have been employed as agents in tanning and dyeing; POISON: A paste of the pounded roots serves as a fly repellent; MEDICINE: The unripe fruit is used medicinally as an astringent; the ripe fruit is taken as an antiscorbutic and remedy for biliousness; the leaf decoction is valued in cases of intermittent fever, diarrhoea, oral inflammation and earache; the root is employed as a bitter stomachic, vermifuge and an ingredient in a remedy for itches; OTHER: The roots contain salicylic acid and cardiac glycosides causing a slight decrease in blood pressure; also reported are carissone; the D-glycoside of B-sitosterol; glucosides of odoroside H; carindone, a terpenoid; lupeol; ursolic acid and its methyl ester; also carinol, a phenolic lignan; bark, leaves and fruit contain an unnamed alkaloid. SERVICES: These are: (1) boundary or barrier or support: and, (2) ornamental.
<i>Cassia fistula</i>	RAJBRIKSHA (N&M); ARGHON, BANGLORI (M)	GOLDEN SHOWER, INDIAN LABURNUM, PUDDING PIPE TREE, PURGING CASSIA, PURGING FISTULA	PRODUCTS: FOOD: Flowers are consumed by Santal people of India; fruit for traditional medicine (cash crop); FODDER: Leaves for goats; APICULTURE: Flowering species for bees; FUEL: It is used as firewood (and also illegally in brick kilns); TIMBER: suited for cabinetwork, farm implements, inlay work, posts, wheels and mortars; TANNIN/DYE: bark has been employed in tanning; MEDICINE: The drug "C. fistula", a mild laxative, is obtained from the sweetish pulp around the seed

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

		(E); INDIAN LABURNUM, RAJBRIKH (T)	fresh, while seed, root, leaves, flowers and pulp have multiple uses in traditional medicine. SERVICE BENEFITS: Ornamental.
<i>Castanopsis tribuloides</i>	KATUS (N)		PRODUCTS: FOOD: Seed - raw or cooked. The seed is up to 14mm in diameter, small but a good flavour. No more details are given, but the flowers are very small and produced in catkins. The catkins have an unpleasant hawthorn-like smell to attract midges for their pollination. TIMBER: hard. Used for construction, fencing, fuel etc. SERVICE BENEFITS: Scented Plants. Flowers: Fresh
<i>Cedrella toona</i> (<i>Cedrella sinensis</i>)	TOONI (N)		PRODUCTS: FOOD: Young shoots and leaves – cooked. This is a highly esteemed food in China. It is said to resemble onions in flavour and is usually boiled. Rich in vitamin A, the leaves also contain about 6% protein, 1% fat, 6.6% carbohydrate, 1.5% ash. The leaves can be used as a tea substitute. No further details are given. Edible parts-fruits, leaves for tea. MEDICINE: Astringent, Carminative, Febrifuge, Ophthalmic, Styptic. The bark is astringent, carminative, febrifuge, ophthalmic and styptic. A decoction is used in the treatment of diarrhoea, chronic dysentery, flatulence, loody stools, seminal emissions, leucorrhoea, metrorrhagia and gonorrhoea. TIMBER: Wood - very durable, easily worked, takes a good polish. It is a very valuable timber, resembling mahogany, and is used for making furniture, window frames etc. SERVICE BENEFITS: The wood is delicately scented and is burnt in temples as incense. The long panicles of white flowers diffuse a powerfully sweet scent. The wood has an incense-like perfume.
<i>Choerospondias axillaris</i>	LAPSI (N)		PRODUCTS: FOOD: Tree bearing sour fruit used in pickles or made into chutney. MEDICINE: leaves, bark etc have variety of uses including antiseptic and medicinal. FODDER: The leaves are collected as fodder for goats. TIMBER: Trunk is used for furniture and burned firewood.
<i>Cinnamomum camphora</i>	KAPOOR(M)	CAMPHOR LAUREL, CAMPHOR TREE, JAPANESE CAMPHOR (E); CAMPHORA TREE, KAPUR (T)	PRODUCTS: TIMBER: excellent working qualities; ESSENTIAL OIL: Fractionation of the camphor-free oil rich in safrole (80% or more), usually called Chinese sassafras oil, a well-known chemotype; on distillation, the wood from different groups of trees may yield camphor, linalool, safrole or cineole as the major chemical; use as a source of leaf oil has expanded in recent years, and it is now an important source of natural linalool (which is still preferred over the synthetic form for some fragrant applications); crude oil obtained by primary distillation of the chipped wood is fractionated to remove camphor and provide safrole-rich oil; a large proportion of the world's camphor is now produced synthetically from pinene, a turpentine derivative, or from coal tar; Camphor is used in the manufacture of celluloid, in disinfectants and chemical preparations and has a wide range of medicinal uses; Safrole, produced from the residual oil after camphor extraction, is used in soap and perfume manufacture. SERVICE BENEFITS: include: (1) intercropping; and (2) ornamental (in Nepal, the tree is not planted for camphor production, but is mainly planted in gardens and at the entrances of houses for religious reasons, and as an ornamental tree, though the wood is valuable).
<i>Cinnamomum tamala</i>	TEJ PAT DALCHINI, SINKAUILI (N)	INDIAN CASSIA, LIGNEA (E)	PRODUCTS: FOOD: The leaves are used extensively in northern India as a spice – Tejpat; in Kashmir they are used as a substitute for paan (betel leaves); ESSENTIAL OIL: Leaves yield an essential oil with a specific gravity of 1.025, it is soluble in 1.2 volume of 70% alcohol; the oil resembles cinnamon leaf oil and contains phellandrene and 78% eugenol; the essential oil from the bark is pale yellow, and contains 70-85% cinnamic aldehyde; the oil is used in perfuming soap and in medicine; however, trade in cassia oil has declined appreciably with the advent of synthetic cinnamic aldehyde; POISON: Four essential oils of <i>C. tamala</i> screened for fungicidal activity against <i>F. moniliforme</i> (<i>Gibberella fujikuroi</i>), a postharvest fungal pathogen of cereal crops were effective in inhibiting fungal growth; activity of the four oils increased with concentration; <i>C. tamala</i> essential oil exhibited fungitoxicity against <i>A. flavus</i> and <i>A. parasiticus</i> at 3000 ppm and 1000 ppm, respectively; the fungitoxic property of the oil was not affected by temperature, autoclaving or storage; MEDICINE: Leaves of are used in colic and diarrhoeal preparations; leaf extracts produce a hypoglycaemic effect in experimental rats; hydrodistilled essential oils of <i>C. tamala</i> screened for their anti-fungal activity against Trichophyton mentagrophytes and Microsporum microsporum audouinii

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

			causing ring worm diseases in animals and humans exhibited fungicidal or fungistatic toxicity and were more effective than the synthetic antifungal agents, clotrimazole, griseofulvin or nystatin; plant parts are used in many ayurvedic preparations e.g. sudarshan, choorna and chanderprabhavati; bark powder is applied in astringent and controlling nausea; bark extract is used in treatment of intestinal disorder; OTHER: The leaf extracts are used as clarifiers in dyeing procedures with myrobalans or kamala. SERVICE BENEFITS: These are: (1) erosion control (protects surrounding soil from erosion; and, (2) shade or shelter.
<i>Citrus Spp.</i>	NAMES: Nibua (N), Nemo or Nebo (M), Kagati (N&M), Thulo Nibua (N), Sankha Drab (M), Jyamire (N), and Jameri nebo (M).	LEMON LIME, Pomelo (E), Citron (E),	PRODUCTS: FOOD: Edible fruits (eaten ripe, or pickled or juiced for vinegar.
<i>Coccinea grandis</i>	TILKOR (M)		PRODUCTS: FOOD: Edible parts-fruit and leaves. Young leaves and long slender stem tops - cooked and eaten as a potherb or added to soups. Young and tender green fruits - raw in salads or cooked and added to curries etc. Ripe scarlet fruit - raw. Fleshy and sweet. The fruit is up to 5cm long. MEDICINE: Hypoglycaemic, Laxative, Miscellany, Ophthalmic, Poultice, VD. The juice of the roots and leaves is considered to be a useful treatment for diabetes. The juice of the stem is dripped into the eyes to treat cataracts. The leaves are used as a poultice in treating skin eruptions. The plant is laxative. It is used internally in the treatment of gonorrhoea. Aqueous and ethanolic extracts of the plant have shown hypoglycaemic principles.
<i>Cocus nulifera</i>	NARIWAL (N); NARIYAL, NARIAL (M)	COCONUT PALM (E)	PRODUCTS: FOOD: Edible fruits and nuts Sap - raw or cooked. A very sweet taste, it can be used as a refreshing drink, concentrated into a syrup or fermented into a wine. The tree is felled and the crown removed, the sap then begins to flow and, providing a thin section of trunk is removed daily, the sap will continue to flow for several months. Yields of over 400 litres of sap can be obtained from a tree. Fruit - candied and used as a sweetmeat. The fruit is about 5cm in diameter. Seed - raw or cooked. A pleasant nutty flavour raw, they are also used in sweetmeats. The seed is about 5cm in diameter. EDIBLE OIL: Edible oil is obtained from the seed. OTHER: The leaves are used to make baskets, brushes and for thatching. Fibres from the plant are used as a stuffing material for mattresses etc. A paper is made from the fibres in the trunk. Palm leaves used as cooking fuel, leaves used for making hand brooms.
<i>Coroton Spp.</i>	KAROTAN (M)		INFORMATION PENDING
<i>Dalbergia latifolia</i>	SATISAL (M)	BLACK ROSEWOOD, BLACKWOOD, BOMBAY BLACK WOOD, EAST INDIAN ROSEWOOD, INDIAN PALISANDRE, JAVA PALISANDRE, ROSETA ROSEWOOD (E); BOMBAY BLACKWOOD, EAST INDIAN ROSEWOOD, INDIAN ROSEWOOD, ROSEWOOD (T)	PRODUCTS: APICULTURE: Like other member of the genus Dalbergia, its honey is dark amber and strong flavoured; TIMBER: The wood is fragrant, very hard and difficult to work because of its high density; Rosewood has exceptional dimensional stability, and retains its shape very well after seasoning; used to make premium-grade furniture, paneling, veneers, and interior and exterior joinery; secondary uses of the wood include knife handles, musical instruments, agricultural implements calico-printing blocks, cart wheels, mathematical instruments, and boat keels and screws; fine furniture, decorative veneer, specialty items, joinery, bedroom suites, figured veneer, living-room suites, office furniture, tables; MEDICINE: Medicines are made from the tannins in the bark, for diarrhoea, worms, indigestion, and leprosy; these tannins also produce an appetizer. SERVICE BENEFITS: These are: (1) Nitrogen fixing; (2) soil improver (leaf litter decomposes slowly releasing nutrients gradually and it is used as a mulch); (3) intercropping and, and (4) shade or shelter.
<i>Dalbergia sissoo</i>	SISAU, SISAM (N); SISAU, SISO (M)	BOMBAY BLACKWOOD, INDIAN	PRODUCTS: FODDER: Young branches and foliage form an excellent fodder with a dry-matter content of 32.46%, crude protein 2.7-24.1%; the foliage has normally been used as emergency feed

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

		ROSEWOOD, SISSO, SISSOO, SISSAM (E); SHISHAM, SISSOO, (T)	<p>when other fodder sources fail; APICULTURE: A useful source of honey but the flowers are only lightly attached to the flower branch and fall easily; bees are therefore not able to take full advantage of the large number of flowers; the honey produced is dark amber with a strong flavour; FUEL: The species is fast growing, hence suitable for firewood; FIBRE: Sulphate pulp from wood is used in producing writing and printing paper; TIMBER: one of the most useful timber species; extremely durable and is one of the timbers least susceptible to dry-wood termites; excellent for turnery, takes a good polish and finishes to a smooth surface; it is used for high-quality furniture, cabinets, decorative veneer, marine and aircraft grade plywood, ornamental turnery, carving, engraving, tool handles and sporting goods; root wood is used for tobacco pipes; in village industry, <i>D. sissoo</i> is popular for doors and windows; TANNIN/DYE: sissoo pods contain 2% tannin; OIL: Heartwood yields light brown, viscous, non-drying fixed oil (5.35%), suitable as a lubricant for heavy machinery; POISON: reported to have pesticidal properties; aqueous extracts from the leaves, stems and roots inhibit the reproduction, growth and development of the insect pest <i>Utethesia pulchella</i>; mixed with <i>Azadirachta indica</i> oil cake, sawdust from <i>D. sissoo</i> reduces egg laying and increases larval mortality in <i>Melodogyne javanica</i>; methanol extract from the roots has insecticidal properties, especially against <i>Diacrisia obliqua</i>, <i>Spodoptera litura</i> and <i>Argina cubrania</i>; MEDICINE: Oil obtained from the seeds is used to cure skin diseases; the powdered wood, applied externally as a paste, is reportedly used to treat leprosy and skin diseases; the roots contain tectoridin, which is used medicinally.</p> <p>SERVICE BENEFITS: These are: (1) reclamation (due to its vigorous reproduction through suckers, it is useful for stabilizing eroding sites; it is therefore found in a variety of wastelands, like in south Asia, where it is known as a colonizing species); (2) nitrogen fixing; (3) soil improver (heavy litter fall decomposes to enrich the soil with nitrogen, phosphorus and organic carbon. shade or shelter); (4) intercropping; and, (5) ornamental (has an unusual amenity use as a host for orchids; the sub-Himalayas, the homeland of <i>D. sissoo</i>, abound with a variety of orchids, many of which are known throughout the world for their beauty).</p>
<i>Daphne bholua</i> ; <i>D. papyraceae</i>	LOKTA (N)		<p>PRODUCTS: MEDICINE: Anthelmintic, Febrifuge. The juice of the roots, combined with molasses, is used in the treatment of fevers and intestinal problems. A decoction of the bark is used to treat fevers. The powdered seeds are anthelmintic. OTHER: A very good quality paper is made from the inner bark. It is one of the principle sources of hand made paper in Nepal. The fibre in the inner bark can be used to make rope.</p> <p>SERVICE BENEFITS: Scented Plants. The flowers are fragrant</p>
<i>Delonix regia</i>	GULMOHAR (N); BANSIBAT (M)	FLAMBOYANT, FLAMBOYANT FLAME TREE, FLAME OF THE FOREST, FLAME TREE, GOLD MOHUR, GUL MOHR, JULU TREE, PEACOCK FLOWER, ROYAL POINCIANA (E); GOLD MOHAR (T)	<p>PRODUCTS: APICULTURE: Flowers are reputed to produce bee forage; FODDER: The large pods as well as the wood are used for fuel; TIMBER: The sapwood is light yellow, and the heartwood is yellowish to light brown.; it is soft, heavy, coarse grained, weak, brittle, takes good polish and is rather resistant to moisture and insects although very susceptible to attack by dry-wood termites; GUM/RESIN: The tree yields a thick mucilage of water-soluble of gum in yellowish or reddish-brown warty tears; the seeds contain gum that may find use in textile and food industries; MEDICINE: Bark has medicinal properties; OTHER: The hard, elongated seeds are occasionally used as beads.</p> <p>SERVICES: these are: (1) shade or shelter; (2) boundary or barrier or support can be planted as live fence posts); and, (3) ornamental.</p>
<i>Dendrocalamus spp.</i>	BAANS (M)	BAMBOO (E)	Culm used in house construction, for posts and for making stall feeding racks, or split and woven into mats and baskets (e.g., grain storage bins; dry leaves for cooking fuel and in potters' kilns (but not brick kilns); branches for dry fencing
<i>Dillenia pentagyna</i>	TATRI (M)		INFORMATION PENDING
<i>Diospyros malabarica</i>	TENDU (N)		INFORMATION PENDING
<i>Edgeworthia gard-</i>	ARGELI (N)	NEPALESE PAPER	PRODUCTS: PAPER: Inner bark is used to make handmade paper; POISON: Fish poison is made

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

<i>neri</i>		BUSH (E)	from the leaves and bark.
<i>Ehretia laevis</i>	DATINGAL (N) gambak yem, gyaung-bgy, kendal prit, te-bengau, medang seminyak, kayu balung, kai kom, kayu watu,		PRODUCTS: FUEL: a source of fuelwood; TIMBER: used for making implements.
<i>Emblica officinalis</i>	AMALA (N&M)	INDIAN GOOSE-BERRY (E)	PRODUCTS: FOOD: Wild food MEDICINE: Is Acrid, Cooling, Refrigerant, Diuretic, Antibacterial, Antidiarrhoeal, Antidysenteric, Expectorant, Antipyretic, Antioxidative, Antiviral, Antiemetic, Immunomodulator and resistance building properties. Its antibacterial, carminative, hypoglycaemic, stomachic of ulcers, jaundice, dyspepsia and cough and controls hyperacidity. Cardio tonic and its mild stimulant action on heart help to control high blood pressure. Very good hair tonic. Beneficial in diabetes, heart disorder, eye disorder, rheumatism, scurvy, ageing. Its fruit is better known for its high nutritive and medicinal values. It is one of the richest sources of vitamin C. It is used in Chyawanpras, Triphala powder which is used for constipation.
<i>Elaeocarpus angustifolius</i>	RUDRAKSHA (N)	BEAD TREE (E&T); LILLY-OF-THE-VALLEY (E)	PRODUCTS: RELIGIOUS BEAD NECKLACE: Rudraksha is a high value blue fruit that is dried into brown-coloured beads and made into necklaces. It is worn for powerful religious, monetary well-being and health (particularly to reduce high blood pressure) aspirations and reasons. There are three types of Rudraksha available: the most popular is the Nepal type, the second is Indonesian and the third is Indian. Nepal Rudraksha are hard, compact and look very beautiful due to high quality luster. However, these are rare and costly. A pointed variety of the fruit is reported to have a very high street value.
<i>Eucalyptus camaldulensis</i>	MASLA (N&M); SAFEDI (M)	LONG BEAK EUCALYPTUS, MURRAY RED GUM, RED GUM, RED RIVER GUM, RIVER GUM (E); RIVER RED GUM (E&T)	PRODUCTS: APICULTURE: Tree is a major source of honey, producing heavy yields of nectar in good seasons; honey is light gold and of reasonable density with a distinctive flavour and has been marketed as a straight line for several years; it crystallizes readily; tree is particularly valuable for building up bee populations, especially when pollen from the ground flora is available to provide variety; FUEL: The firewood is suitable for industrial use in brick kilns but is not preferred for domestic use because it is too smoky and burns too fast; however, it makes good-quality charcoal; FIBRE: used for pulp and paper production, and it also planted for hardboard, fibreboard and particleboard; TIMBER: Because of its great strength and good durability, the wood is suitable for many structural applications (e.g. railway sleepers, poles, posts, floorings, wharves, ship building and heavy construction); TANNIN/DYE: The bole yields a gum that can be used as a dye; ESSENTIAL OIL: Some tropical provenances of <i>E. camaldulensis</i> are rich in 1,8-cineole leaf oil and are potential commercial sources of medicinal-grade eucalyptus oil; MEDICINE: The oils are used as an inhalant with steam and other preparations for relief of colds and influenza symptoms.; because of its refreshing odour and its efficiency in killing bacteria, the oil is also used as an antiseptic; OTHER: The bole has some potential for shiitake mushroom (<i>Lentinus edodes</i>) cultivation. SERVICE BENEFITS: These are: (1) Intercropping; (2) shade or shelter; and, (3) ornamental.
<i>Euphorbia Hirta</i>	DUDHAHI (M)	ASTHMA WEED	PRODUCTS: FOOD: Tender young leaves and shoots - cooked as a vegetable. A famine food, used when all else fails. and I would have to be very desperate to eat it even then. MEDICINE: Asthma weed has traditionally been used in Asia to treat bronchitic asthma and laryngeal spasm, though in modern herbalism it is more used in the treatment of intestinal amoebic dysentery. It should not be used without expert guidance, however, since large doses cause gastro-intestinal irritation, nausea and vomiting. The plant is anodyne, antipruritic, carminative, depurative, diuretic, febrifuge, galactagogue, purgative and vermifuge. The aerial parts of the plant are harvested when in flower during the summer and can be dried for later use. The stem, taken internally, is famed as a treatment for asthma, bronchitis and various other lung complaints. The herb relaxes the bronchioles but apparently depresses the heart and general respiration. It is usually used in

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

			combination with other anti-asthma herbs such as Grindelia camporum and Lobelia inflata. It is also used to treat intestinal amoebic dysentery. The whole plant is decocted and used in the treatment of athlete's foot, dysentery, enteritis and skin conditions. It has been used in the treatment of syphilis. The sap is applied to warts in order to destroy them. The treatment needs to be repeated 2 - 3 times a day over a period of several weeks to be fully effective.
<i>Euryale ferox</i>	MAKHAN (N)	FOXNUT	PRODUCTS: FOOD: Fruit soft and pulpy, it is about the size of a small orange. It is highly esteemed in China as a cooling tonic food. Seed - fresh or dried. The seed is about the size of a pea, each fruit containing from 8 to 15 seeds. The seed is usually roasted and then eaten. It is also used as a source of starch. A nutritional analysis is available. Very young stalks and rhizomes. Rich in starch. MEDICINE: The leaf is used in cases of difficult parturition. All parts of the plant are considered to be astringent, deobstruent and tonic. The seed is a sweet and sour astringent herb that acts as a tonic for the kidney and the spleen. The seed is analgesic and aphrodisiac. It is taken internally in the treatment of chronic diarrhoea, vaginal discharge, kidney weakness associated with frequent urination, impotence, premature and involuntary ejaculation and nocturnal emissions.
<i>Eurya acuminata</i>	JHINGANO (N)		PRODUCT: TIMBER: Wood - soft, even grained, moderately hard Other Uses. FUEL WOOD: Used mainly as a fuel. An excellent fuel.
<i>Ficus Spp.</i>	PAKHAR (M)		INFORMATION PENDING
<i>Ficus recomosa</i>	DUMRI (N) ; GULAIR, DUMAIR (M)		PRODUCTS: FOOD: Edible fruit (eaten ripe or cooked); FODDER: Leaves for goats; FUEL: Used as fuelwood; TIMBER: Used for implements (plough shares).
<i>Ficus religiosa</i>	PIPAL (N&M); PIPAIR (M)	BODHI TREE, PEEPAL, PEEPUL, SACRED FICUS, WISDOM TREE (E)	PRODUCTS: FOOD: Figs are consumed as famine food during periods of food; FODDER: Leaves are lopped as fodder for elephants, goats and cattle while silage prepared from the tree is palatable and digestible; FUEL: It is used as firewood (and also illegally in brick kilns); TIMBER: little used but is occasionally converted into packing cases, cheap boarding, yokes, spoons and bowls; LATEX/RUBBER: Bird-lime can be prepared from its milky juice; TANNIN/DYE: bark is used in tanning; MEDICINE: fresh/dried fruit seeds and young bark are used in traditional medicine. SERVICE BENEFITS: These are: (1) Intercropping/hedgegrow; (2) ornamental; and, (3) Religious (mostly planted near Buddhist temples as it is referred to as sacred in India: Hindus associate the tree with fertility in women.
<i>Ficus remplus</i>	PAKHAIR (M)		INFORMATION PENDING
<i>Ficus semicordata</i>	KHANYU (N)		INFORMATION PENDING
<i>Flacourtia indica</i>	KAANT (N)	BATOKA PLUM,FLACOURTIA,G OVERNOR'S PLUM,INDIAN PLUM,MADAGASCAR PLUM,MAURITIUS PLUM	PRODUCTS: FODDER: Browsed by game; branches and leaves lopped for cattle in India; lavrs for goats in Nepal; FUEL: Wood used for firewood and charcoal; TIMBER: very hard and heavy and used for agricultural implements such as ploughs, posts, building poles, rough beams, walking sticks and the manufacture of turnery articles; TANNIN/DYE: Bark is used as a tanning material; ALCOHOL: fruit can be fermented to produce wine; MEDICINE: The leaf is carminative, astringent and used as a tonic, an expectorant and for asthma, pain relief, gynaecological complaints and as an antihelmintic, and treatment for hydrocele, pneumonia and intestinal worms; root and ash have been used as a remedy for kidney complaints. SERVICES: These are: (1) boundary/barrier/support; and, (2) ornamental.
<i>Fraxinus floribunda</i>	LANKURI (N)		PRODUCTS: FOOD: Manna is obtained by incision of the trunk. It is used as a sweetener but is laxative if used in quantity. MEDICINE: The manna obtained from incisions in the stem is a safe and gentle laxative. The young shoots are abortifacient. OTHER: Wood. Used for oars, ploughs and poles.
<i>Gaultheria fragrantissima</i>	MACHHINO (N)	FRAGRANT WINTER-GREEN	PRODUCTS: FOOD: Fruit - raw or cooked. The purplish-blue fruit is about 8mm in diameter. Leaves - raw. Chewed (to relieve thirst?). An essential oil obtained from the leaves is used as a flavouring. A tea is made from the leaves. MEDICINE: The essential oil obtained from the leaves is antiseptic, aromatic, carminative and stimulant. It is used in the treatment of rheumatism, scabies and neuralgia. It is also taken internally in the treatment of hook worms. The juice of the leaves is used in

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

			the treatment of coughs. Both the juice and the whole leaves are used as an anthelmintic that is effective against hookworms. The unripe fruits are chewed or made into a juice to treat stomach troubles. ESSENTIAL OIL: Scented Plants, the leaves yield around 1.25% of an essential oil, this is a wintergreen substitute and it is used in perfumery, as a hair oil and medicinally. Flowers: Fresh The flowers are scented like lily of the valley (<i>Convallaria majalis</i>). Leaves: Crushed The bruised leaves have a powerful camphor-like scent.
<i>Grewia optiva</i>	BHIMAL (M)	BIUL/DHAMAN (T)	PRODUCTS: FOOD: The ripe fruits are edible; FODDER: The leaves are rated as good fodder; FUEL: The wood has an unpleasant odour and is seldom used as fuel if an alternative is available; TIMBER: The timber is used for oar shafts, poles, frames, tool handles and other purposes where strength and elasticity are required; it is thought to be suitable for paper production and branches are used for making baskets; FIBRE: The bark yields a fibre that is used for cordage and cloth; SERVICES: These are: (1) Boundary or barrier or support; and, (2) intercropping (planted combined with climax grass).
<i>Holoptelea integrifolia</i>	No known Nepali name but, KANJU, PAPRI, BANCHILLA, CHILBIL, DHAMNA, BEGANA (Hindi)	INDIAN ELM (E)	PRODUCTS: MEDICINE: In Nepal, bark is externally used to relieve rheumatic swellings. In India, decoction of the bark of this plant is externally used in rheumatism while oral application of the bark is used to treat intestinal tumors. Dried bark is useful as an oxytocic in pregnant Decoction of the leaves is orally given to regulate fat metabolism. Leaves along with garlic are externally used to treat ringworm eczema and cutaneous diseases. Leaves of the plant, Garlic (<i>Allium sativum</i>) and Black Pepper (<i>Piper nigrum</i>) are mixed and crushed to make tablet (one tablet per day can be given to the patient suffering from jaundice). Paste of the stem bark is externally applied to treat the inflammation of lymph glands. <i>Holoptelea integrifolia</i> stem bark powder is externally applied on the forehead of the patient suffering from common fever. Paste of the stem bark is externally applied in cases of ringworm and scabies. Stem bark acts as an anti-inflammatory agent specifically for eyes. Bark and leaf paste are applied externally on the white patches or leucoderma.
<i>Jatropha curcus</i>	SAJIWAN (N&M); BANGAREDA, BAGHANDI (M)	PHSYIC NUT (E); JATROPHA (T)	PRODUCTS: APICULTURE: The flowers are a source of nectar for bees; FOOD: In Guinea, ashes from the roots and branches are used as cooking salt; young leaves may be safely eaten when steamed or stewed; cooked nuts are eaten in certain regions of Mexico; OIL: The seeds yield up to 31-37% of valuable oil; <i>Jatropha</i> oil is an environmentally safe, cost-effective renewable source of non-conventional energy and a promising substitute for diesel, kerosene and other fuels; physic nut oil was used in engines in Segou, Mali, during World War II: inexpensive Lister-type engines (from India) use the oil to power grain mills and water pumps; these inexpensive pre-combustion chamber diesel engines require only the addition of a fuel filter to be able to run on pure <i>Jatropha</i> oil, thus eliminating the need for gazoil entirely; furthermore, at maximal load conditions the <i>Jatropha</i> oil gives even better results than gazoil because of its high oxygen content' the oil can also be successfully used as a lubricant in these engines; the oil burns without smoke and has been employed for street lighting near Rio de Janeiro; the oil is excellent for use in home lighting in simple lanterns; the oil is used to prepare varnish after calcination with iron oxides; the hardened physic nut oil could be a satisfactory substitute for tallow or hardened rice bran oil; in Europe it is used in wool spinning and textile manufacture; in combination with burnt plantain ashes, oil is used in making hard homemade soap; FUEL: Fruit hulls and seed shells can be used as a fuel; dried seeds dipped into palm oil are used as torches, which will keep alight even in a strong wind; TAN-NIN/DYE: Leaf juice stains red and marks linen an indelible black; the 37% tannin found in bark is said to yield a dark blue dye: latex also contains 10% tannin and can be used as marking ink; ashes from the roots and branches are used in the dyeing industry, and pounded seeds in tanning in Ghana; WAX: The bark contains a wax composed of a mixture of 'melissyl alcohol' and its melissimic acid ester. SERVICE BENEFITS: (1) reclaiming wastelands (one of <i>Jatropha's</i> strengths is that it grows well on marginal soil: it has the ability to reclaim problematic lands – the Indian government is embarking on widespread cultivation of 40-150,000 hectare plantations to reclaim wastelands); (2) soil

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

			improvement (Jatropha products from the fruit (the flesh, seed coat and seed cake) are rich in nitrogen, phosphorous and potassium, and are fertilizers that improve soil; tender branches and leaves are used as a green manure for coconut trees while all plant parts can be used as a green manure; (3) erosion control (as a hedgerow and if planted parallel to slopes to fix small earth or stone dams, it helps control water erosion; (4) living fence (Jatropha is widely cultivated in the tropics as a living fence in fields and settlements – <i>J. curcas</i> is not browsed by livestock as the leaves and stems are toxic to animals): it can therefore grow without protection and can be used as a hedge to protect fields); (5) intercropping; and, (6) windbreak.
<i>Juglans regia</i>	OKHAR (N)	WALNUT (E); AKHROT (T)	PRODUCTS: EDIBLE OIL: Seed - raw or cooked. Edible oil is obtained from the seed; it tends to go rancid quickly. MEDICINE: The bark, leaves and fruit are used medicinally. No more details are given in this report but another report on Indian medicinal plants gives the following uses for <i>J. nigra</i> (and almost certainly refers to this sub-species):- The bark is anthelmintic and detergent. The leaves are anthelmintic, astringent and tonic. A decoction is considered to be specific in the treatment of strumous sores. The fruit is alterative. It is used in the treatment of rheumatism. TANNIN/DYE: The bark and the unripe rind of the fruit are good sources of tannin. TIMBER: Wood - hard, strongly grained, polishes well. Used for making furniture, carved work, veneers etc. OTHER: Plants produce chemicals which can inhibit the growth of other plants. These chemicals are dissolved out of the leaves when it rains and are washed down to the ground below, reducing the growth of plants under the tree. The roots also produce substances that are toxic to many plant species, especially apples (<i>Malus</i> species), members of the Ericaceae, <i>Potentilla</i> spp and the white pines (certain <i>Pinus</i> spp.).
<i>Juniperus</i> sp.	DHUPI (N)		INFORMATION PENDING
<i>Justicia adhatoda</i>	BAKAS, ASURO (M)		INFORMATION PENDING
<i>Lagerstroemia parviflora</i>	BOT DHANGERO (N); ASAREPHUL, BAJHIA (M)	CREPE MYRTLE (E)	PRODUCTS: FODDER: Leaves for goat; FUEL: Used as fuelwood; TIMBER: Used for making farm implements, cart planks and furniture; TANNIN/DYE: From leaves and bark. MEDICINE: Filtered water from boiling the leaves is used to treat fever.
<i>Lannea coromandelica</i> syn. <i>grandis</i>	See column on right	n/a	NAMES: HALLUNDE DABADABE, HALALUNDE, HALLENDO (N); JIMHAR, JIYAL (M) PRODUCTS: FODDER: Leaves fed to goats; TIMBER: Used to provide poles for house posts; TANNIN: obtained from the bark; MEDICINE: Bark juice is used to treat for ulcers.
<i>Lawsonia inermis</i>	MEHENDI (M)	HENNA	PRODUCTS: MEDICINE: Henna is considered as an ancient herb of grace and healing. It is mentioned as a valuable medicine in Egyptian hieroglyphs. When Henna is applied to the skin, its active elements provide cooling and astringent action along with protection against many surface fungi and bacteria. Henna can help to lower body temperature to soothe headaches, fevers, burning feet (which may be a B- Vitamin deficiency), and even hysteria or a violent temper. Headache Remedy, in addition to the relaxing and cooling properties of the henna seeds, anise seeds are also a good antispasmodic. Scalp Treatment, to increase hair growth and reduce hair loss. Mehendi has been used to treat a number of ailments due to a brown substance of a resinoid fracture found in it. This has chemical properties which characterize tannins, and is therefore named hennotannic acid. It has been used both internally and locally to treat conditions including leprosy, smallpox, cancer of the colon, headaches and blood loss - especially during childbirth. It can be used for skin conditions such as eczema. The plant can also treat muscle contraction and fungal and bacterial infections. Condition and color the hair, as well as prevent thinning hair, and cools the skin to reduce swelling in hot climates. The fresh leaves of mehendi mixed with lime juice or vinegar are used to apply on burns, churned leaves are applied on the sore joints for rheumatism, its juice is applied on the body and its flower is used to cure headaches and induce sleep. Henna oil is applied on the hair to prevent graying of the hair. The leaves of this magnificent herb also seizes bleeding or secretion and prevents skin diseases. For years, leaves of mehendi are being used in the treatment of vitiligo, a skin disease. Bark of this herb is used for treating the symptoms and signs of jaundice. The crushed form of its bark is applied to skin as a treatment for certain skin diseases like scabies, ec-

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

			zema, burns and fungal infections. Henna seeds are used for curing fever and also for regulating menstruation. The seeds can also be used for curing dysentery. If there is any soreness in the throat, you can use the decoction of mehendi leaves for gargling. The grinded leaves of this herb can also be used for relieving prickly heat. The henna plant is common in India and is used in rural areas as a hedge. Rural women pick fresh mehendi leaves, prepare them and use it on their hands or hair. Henna is also sold in powder form. The plant is prepared and made into a paste. Lemon juice is added to the paste to intensify its red color. Other ingredients such as tea leaves, coffee powder, and eucalyptus oil are also added to it increase smoothness and viscosity. These days henna is also being used for body art. OTHERS: used to make tattoos on different parts of the body. DYE: it is a natural dye and the color is beautiful and gives the hair lustrous look.
<i>Leucaena leucocephala</i>	IPIL IPIL (N); CHAH (M)	HORSE TAMARIND, IPIL-IPIL, JUMPY-BEAN, LEAD TREE, LEUCAENA, WHITE LEAD-TREE, WHITE POPINAC, WILD TAMARIND (E);	PRODUCTS: FOOD: Pods, seeds and leaf tips have been used as food, although mimosine toxicity makes this practice risky; seeds can also be prepared as a coffee substitute; FODDER: one of the highest quality and most palatable fodder trees of the tropics; livestock feed should not contain more than 20% of <i>L. leucocephala</i> , as the mimosine can cause hair loss and stomach problems; recovers quickly from defoliation, combines well with companion grasses and can be grazed with minimal losses from trampling or grazing; forage, packed in pellets and cubes, is internationally marketed as animal feed; APICULTURE: is in bloom almost throughout the year, providing constant forage to honey bees; FUEL: excellent firewood species, and wood burns steadily with little smoke, few sparks and produces less than 1% ash; the tree makes excellent charcoal; FIBRE: it produces paper with good printability but low tearing and folding strength; wood pulping properties are suitable for both paper and rayon production; also used for particleboard production; TIMBER: a hard heavy wood workable for a wide variety of carpentry purposes including sawn timber, mine props, furniture and parquet flooring; poles are used to prop bananas and as a support for yams, pepper and other vines; GUM/RESIN: Gum arises from <i>Leucaena</i> stems under ill-defined conditions of injury and disease or from sterile hybrids; the gum has been analysed and found similar to gum arabic and of potential commercial value; TANNIN/DYE: Red, brown and black dyes are extracted from the pods, leaves and bark. SERVICES: These are: (1) erosion control (has aggressive taproot system; (2) reclamation (thrives on steep slopes and in marginal areas with extended dry seasons, making it a prime candidate for restoring forest cover, watersheds and grasslands); (3) shade/selter; (4) boundary or barroer or support; (5) nitrogen fixing; (6) soil improver; (7) intercropping; and, (8) ornamental (seeds).
<i>Leucas cephalotes</i>	GUMMA (M)		PRODUCTS: FOOD: Tender leaves and young shoots - cooked. Used as a pot herb. MEDICINE: A decoction of the plant is used in the treatment of malarial fever. A paste of the plant is boiled with mustard oil and applied externally to boils. The juice of the plant is used in the treatment of urinary complaints. The dried inflorescences are smoked and the smoke exhaled through the nose to treat nosebleeds.
<i>Lichens</i>	KANCHATAK (M)		INFORMATION PENDING
<i>Grewia optiva</i>	PHUSRE (N)	BHIMAL, BEHEL, BIHUL (H)	PRODUCTS: FOOD: The ripe fruits are edible. Raw or cooked, it has a pleasant acid taste, the fruits is about the size of a pea. FODDER: The leaves are rated as good fodder and trees are heavily lopped for this purpose in the winter months when usually no other green fodder is available. The green leaves constitute about 70 % of the total green weight of branches. Leaf fodder yield is reported to be 11 ton/ha from 2-year-old plants, green fodder yield from mature trees is reported to be 12-30 kg. Leaves are fairly rich in protein and other nutrients and do not contain tannins. Crude protein is highest in young leaves and in winter leaves but decreases during the rainy season. FUEL: The wood has an unpleasant odour and is, therefore seldom used as fuel if an alternative is available. FIBER: The bark yields a fibre that is used for cordage and clothing. The fibres are 1 - 1.6mm long it is used in paper and rope making but is not very durable. TIMBER: Wood - tough and elastic but with a very unpleasant odour when first cut. It is used for making oar shafts, tool

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

			handles etc. The wood, weighing 801 kg/cu. m, is whitish with little reddish-brown heartwood. It is fine textured with distinct growth rings. It is hard, tough with good elasticity and strength properties. It becomes difficult to work by hand after seasoning. The timber is used for oar shafts, poles, frames, tool handles and other purposes where strength and elasticity are required. It is thought to be suitable for paper production and branches are used for making baskets. SERVICES: Boundary or barrier or support: The tree is often planted in hedges and field boundaries. Intercropping: The tree is planted combined with climax grass.
<i>Litchi chinensis</i>	LICHI (N&M)	LEECHY (E)	PRODUCTS: FOOD: The juicy aril is the edible part of the lychee. It may be eaten fresh or juiced, preserved in syrup and canned, dried or frozen. Lychee nuts are fruit that has been dried, either artificially or in the sun. The food value of lychee lies in its sugar content, which ranges from 7 to 21%, depending on climate and cultivar. Fruit also contains about 0.7% protein, 0.3% fat, 0.7% minerals (particularly calcium and phosphorus) and is a reasonable source of vitamins C (64 mg/100 g pulp), A, B1 and B2. The strong appeal of lychee lies in the exquisite aroma of the fruit. Apiculture: This tree is widely grown for instance in Singapore and Mauritius as a major honey source. The honey is of excellent quality and flavour. FUEL: Source of fuelwood. TIMBER: The wood is said to be nearly indestructible, although it is brittle and has few uses. TANNIN/DYE: Bark contains tannin. OTHER: Lychee fruit can be processed into wine. MEDICINE: The fruit, its peel and the seed are used in traditional medicine; decoctions of the root, bark and flowers are used as a gargle. Seeds are used as an anodyne in neuralgic disorders and orchitis. SERVICES: Ornamental: L. chinensis trees are beautiful in spring, when they are covered with huge sprays of flowers; they are also an attractive sight when in full fruit. These characteristics make it a popular ornamental tree in parks and gardens.
<i>Litsea monopetala</i>	SILTIMUR (M)		PRODUCTS: FODDER: Leaves are the principal food of the muga silkworm (<i>Antheraea assama</i>) in India and are used for fodder in Nepal; TIMBER: The wood is used as medan (e.g. for planks and tool handles, house building, furniture and plywood production); MEDICINE: Seeds contain an oil which is used medicinally as ointments for rheumatism manufacturing candle in India; bark is used as astringent and in diarrhoea.
<i>Loranthus</i>	BANJH (M)		INFORMATION PENDING
<i>Lycopodium clavatum</i>	NAGBELI (N)	COMMON CLUB MOSS	PRODUCTS: MEDICINE: A decoction of the plant is analgesic, antirheumatic, carminative, mildly diuretic, stomachic and tonic. It is used internally in the treatment of urinary and kidney disorders, rheumatic arthritis, catarrhal cystitis, gastritis etc. It is applied externally to skin diseases and irritations. The plant can be harvested all year round and is used fresh or dried. The spores of this plant are antipruritic, decongestant, diuretic and stomachic. They are applied externally as a dusting powder to various skin diseases, to wounds or inhaled to stop bleeding noses. They can also be used to absorb fluids from injured tissues. The spores are harvested when ripe in late summer. The spores can also be used as a dusting powder to prevent pills sticking together. A homeopathic remedy is made from the spores. It has a wide range of applications including dry coughs, mumps and rheumatic pains. TANNIN/DYE: The plant can be used as a mordant in dyeing OTHERS: The spores are water repellent and can be used as a dusting powder to stop things sticking together. They are also used as a talcum powder and for dressing moulds in iron foundries. They can also be used as explosives in fireworks and for artificial lightning. The stems are made into matting.
<i>Lyonia ovalifolia</i>	ANGERI (N)		PRODUCTS: FUEL: Used for firewood (not very good); MEDICINE: The young leaves and buds are used to treat skin diseases; shoots are used to treat scabies.
<i>Madhuca longifolia</i>	MAHUWA (N&M)	BUTTER TREE, HONEY TREE (E); BUTTER TREE, MAHUA (T)	PRODUCTS: FOOD: The sweet, fleshy corolla is eaten fresh or dried, powdered and cooked with flour; fruit contains valuable oil that is sometimes used for cooking by the locals; outer fruit coat is eaten as a vegetable and the fleshy cotyledons are dried and ground into a meal; ripe fruits are used for fermenting liquor.; fodder: Leaves, flowers and fruits are lopped for goats and sheep; seed cake is also fed to cattle; TIMBER: The heartwood strong, hard and durable, very heavy and takes a fine finish; used for house construction, naves and felloes of cartwheels, door and window

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

			frames: OIL: from the fruit kernels principally consists of palmitic and stearic acids and is mainly used for soap and candle making; POISON: Mahua oil is used to treat seeds against pest infestation; OTHER: De-fatted seed kernels contain 26-50 % saponin. SERVICES: These are: (1) erosion control (Mahua has a large spreading superficial root system that holds soil together); (2) reclamation (Mahua is planted on wasteland with hard lateritic soils in India); (3) nitrogen fixing (vesicular-arbuscular mycorrhizal associations and root colonization have been observed in mahua); (4) soil improver (seed cake has been used as fertilizer); (5) intercropping; (6) shade and shelter; and, (7) ornamental.
<i>Mangifera indica</i>	AMP, ANAP; (N) AAM, AAP (M)	MANGO (E)	PRODUCTS: FOOD: Mango is cultivated for the fruit, which can be eaten ripe and processed (at various stages of maturity, in the form of pickles or chutneys, dried slices, canned slices in syrup, juice and puree or paste). The fruit is surrounded by golden, juicy flesh, rich in vitamins A and C. The green fruit is also used to flavour fish and meat dishes in the same way as tamarind and other sour fruits. In India, the kernels are important as a famine food, but the astringency has to be removed by boiling, roasting and soaking them for a long time. Young leaves are cooked as a vegetable. FODDER: Seed kernels are a byproduct of processing and can be used as feed for cattle and poultry; APICULTURE: M. indica is an important honey plant, secreting large quantities of nectar; TIMBER: Popular firewood and also widely used in crick kilns; FUEL: Branches for fuelwood; TIMBER: The wood is used for many purposes, including indoor construction, meat-chopping blocks, furniture, carpentry, flooring, boxes, crates and boat building (canoes and dugouts); TANNIN/DYE: Bark is the source of a yellowish-brown dye used for silk; FIXED OIL/COSMETICS: Oil is extracted by cold press from the kernels and used in cosmetics; MEDICINE: Charred and pulverized leaves make a plaster to remove warts and also act as a styptic. Seeds are used to treat stubborn colds and coughs, obstinate diarrhoea and bleeding piles. The bark is astringent, homeostatic and antirheumatic. SERVICE BENEFITS: include: (1) shade/shelter; (2) windbreak; (3) soil improver; and, (4) intercropping.
<i>Melia azedarach</i>	BAKAINO (N); BAKAAIN (M)	AZEDARACH, BEAD TREE, CHINA BERRY, CHINA TREE, PERSIAN LILAC, PRIDE OF CHINA, PRIDE OF INDIA, SYRINGA, WHITE CEDAR(E); PERSIAN LILAC (T)	PRODUCTS: FODDER: Leaves are lopped for fodder and are highly nutritious; FUEL: Important source of fuelwood; TIMBER: M. azedarach wood (the 'white cedar' of commerce), which resembles mahogany, is used to manufacture agricultural implements, furniture, plywood, boxes, poles, tool handles; it is used in cabinet making and in construction because of its resistance to termites; OIL: Oil suitable for illumination has been extracted experimentally from berries; POISON: Aqueous and alcoholic extracts of leaves and seed reportedly control many insect, mite and nematode pests; however, the fruit of M. azedarach is highly toxic to warm-blooded animals and children; dried ripe fruit is used as an external parasiticide; some toxic components are found in the seed oil; OTHER: fruit stones make ideal beads and are used in making necklaces and rosaries. SERVICE BENEFITS: These are: (1) shade/shelter; (2) ornamental; and, (3) intercropping (useful species for growing with crops such as wheat, and it has been successfully planted with sugarcane)
<i>Moringa oleifera</i>	SOHIJAN (M), (N)	DRUMSTICK TREE, BEN-OIL TREE, CABBAGE TREE, CLARIFIER TREE, HORSE-RADISH TREE, MORINGA TREE (E)	PRODUCTS: FOOD: The leaves, a good source of protein, vitamins A, B and C and minerals such as calcium and iron, are used as a spinach equivalent. They are an excellent source of the sulphur-containing amino acids methionine and cystine, which are often in short supply. Young plants are eaten as a tender vegetable and the taproots as an alternative for horseradish. Young pods are edible and reportedly have a taste reminiscent of asparagus. The green peas and surrounding white material can be removed from larger pods and cooked in various ways. The flowers can be eaten or used to make a tea. OIL: Oil extracted from the mature pods (oil of Ben) is yellowish, non-drying, good keeping qualities but eventually turns rancid. It is used as a lubricant, in cosmetics and perfumes, and to some extent is a substitute for sperm-whale oil. Seeds from mature pods (which can be 40-50 cm long) can be browned in a skillet, mashed and placed in boiling water, which causes an excellent cooking or lubricating oil to float to the surface. The pleasantly flavoured edible oil, resembling olive oil, is an excellent salad oil. FODDER: Leaves are mainly used for hu-

			<p>man food and not to any great extent for livestock, but branches are occasionally lopped for feeding camels and cattle. APICULTURE: Its silviculture, involving regeneration by cuttings, coppicing and pollarding, keeps flowering on and off most parts of the year. This provides nectar to honey bees for a long period. FUEL: The soft and light wood is acceptable firewood for cooking but makes poor charcoal. It has a density of 0.5-0.7 and yields approximately 4600 kcal/kg. FIBER: Bark, when beaten, produces a fibre used to make small ropes and mats. A study on the production of rayon-grade pulp from <i>M. oleifera</i> by a prehydrolyzed sulphate process in India shows that it is suitable as a raw material for the production of high alpha cellulose pulp for use in cellophane and textiles. TIMBER: The wood is very soft and light and is useful only for light construction work. GUM/RESIN: When the tree is injured, the stem exudes a gum that is used in calico printing, as a condiment, and for stomach and bladder ailments. The mucilaginous gum has a bland taste and belongs to the hog series of gums. TANNIN/DYE: Bark used for tanning hides and wood yields a blue dye. MEDICINE: Moringa seeds are effective against skin-infecting bacteria <i>Staphylococcus aureus</i> and <i>Pseudomonas aeruginosa</i>. They contain the potent antibiotic and fungicide terygosperrin. The alkaloid spirachin (a nerve paralyzant) has been found in the roots. Even when free of bark, the condiment in excess may be harmful. A decoction of the flowers is used as a cold remedy. The gum is diuretic, astringent and abortifacient and is used against asthma. Oil of Ben is used for hysteria, scurvy, prostate problems and bladder troubles. The roots and bark are used for cardiac and circulatory problems, as a tonic and for inflammation. The bark is an appetizer and digestive. The iron content of the leaves is high, and they are reportedly prescribed for anaemia in the Philippines. OTHERS: In the Sudan, powdered seeds are deemed more effective than slices of okra (<i>Abelmoschus esculentus</i>) for treatment of bee honey; they can be used without boiling and can also be used to clarify sugarcane juice. The crushed leaves are used to clean pots and pans, and the Hausa and Yoruba of Nigeria even use them to clean walls.</p> <p>SERVICES: EROSION CONTROL: <i>M. oleifera</i> is suited to areas where strong winds and long, dry spells occur simultaneously, causing serious soil erosion. SOIL IMPROVER: The green leaves make useful mulch. The press cake left after oil extraction from the seeds can be used as a soil conditioner or as fertilizer. ORNAMENTAL: The species is widely planted as an ornamental. BOUNDARY/BARRIER/SUPPORT: Planted as a hedge in courtyards, <i>M. oleifera</i> provides wind protection, shade and support for climbing garden plants. Widely used for live fences and hedges in Kenya, Nigeria, Tanzania, India, and elsewhere. Stakes root easily and are stable, and cuttings planted in lines are used particularly around houses and gardens. INTERCROPPING: The tree provides semi-shade, useful in intercropping systems where intense direct sunlight can damage crops. POLLUTION CONTROL: Suspension of the ground seed of <i>M. oleifera</i>, the benzolive tree, is used as a primary coagulant. It can clarify water of any degree of visible turbidity. At high turbidity, its action is almost as fast as that of alum, but at medium and low turbidity, good clarification is obtained if a small cloth bag filled with the powdered seeds is swirled round in the turbid water. To prepare the seed for use as a coagulant, remove the seed coat and wings. The white kernel is then crushed to a powder, using a mortar or placing it in a cloth and crushing it with a stone. The powder should be mixed with a small amount of water, stirred, then poured through a tea strainer before being added to the turbid water.</p>
<i>Michelia champaca</i>	CHAAP (M)	FRAGRANT CHAMPACA, GOLDEN CHAMPA, ORANGE CHEMPAKA, YELLOW CHAMPA (E)	<p>PRODUCTS: FODDER: Leaves are fed to silkworms; FUEL: used as fuelwood; TIMBER: wood is nicely figured and is used for furniture, cabinetwork, carvings, turnery and pattern making; it has also been used for cement-bonded wood-wool board; ESSENTIAL OIL: Flowers yield an essential oil used in perfumery; analyses of seeds showed low (20%) kernel contents but high oil contents of kernel (32.2%) and 6.44% of seed; it has potential for commercial exploitation for oil production for various uses; POISON: Leaf extract is toxic to the rice fungus, <i>Pyricularia oryzae</i>; fatty oils extracted from the seeds show antibacterial activity; MEDICINE: A decoction of the bark and leaves is given after childbirth; the bark is used as a febrifuge; in Myanmar the flowers are used to treat</p>

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

			leprosy and leaves used against colic; five sesquiterpene lactones were isolated from the root bark. SERVICE BENEFITS: these are: (1) reclamation (can be used to reforest badly eroded areas (20 nitrogen fixing (vesicular-arbuscular mycorrhizae have been observed on the roots; (3) soil improver (soil under tree cover shows an increase in pH, soil organic carbon and available phosphorus); and, (4) ornamental.
<i>Morus alba</i>	KIMBU, TUIT (M)	INDIAN MULBERRY, MULBERRY, RUSSIAN MULBERRY, WHITE MULBERRY (E); MULBERRY, TUT, WHITE MULBERRY (T)	PRODUCTS: FOOD: Leaves are highly nutritious and contain vitamins B complex (except B12), C (200-300 mg/100 g), D and flavonols; they are sometimes eaten as a vegetable; fruit is eaten fresh or made into juice and stews; FODDER: Leaves are used as fodder for livestock; up to 6 kg of leaves a day can be fed to dairy cows to improve milk yield; shade-dried leaves incorporated into feed enhance health and egg production in poultry; FUEL: Makes medium-quality fuelwood; FIBRE: Wood yields sulphate pulp with satisfactory strength for white writing and printing paper; bark is worked in to paper pulp and fibre is suitable for the textile industry; TIMBER: yields a medium-weight hardwood suitable for house building, boats, beams, posts, flooring, bridge building, agricultural implements, cabinet work, furniture and turnery, especially picker arms, bobbins and tool handles; useful for spokes, poles, shafts and bent parts of carriages and carts; also much valued for sports equipment such as hockey sticks, tennis and badminton rackets, and cricket bats; ALCOHOL: Fruit juice may be fermented and used to make liquor; TANNIN/DYE: Contains about 32% tannin, suitable for tanning and colouring purposes; ESSENTIAL OIL: Fruit contains cineole, geraniol, linalyl acetate, alpha-pinene and limone as major components of the essential oils; MEDICINE: rk is said to be good in the treatment of stomach-ache, neuralgic pains and dropsy; leaves and young branchlets used for treating heavy colds, cough, red eye, insect bites and wounds; fruit used in the treatment of sore throat, dyspepsia and melancholia; OTHER: Grown extensively for its leaves, used in rearing silkworms; its cultivation is integral to the sericulture industry.
<i>Myrica esculenta</i>	KAFAL (N)	BOX MYRTLE (E)	PRODUCTS: FOOD: Fruit - raw or cooked. Sweet with a pleasant blend of acid, they are very pleasant eating. About 13mm in diameter. The fruit contains about 12.6% sugar, 1% protein, 0.4% ash. Low in vitamin C, about 4.1mg per 100ml. The fruit does not keep well, only lasting in good condition for 2 - 3 days after picking. Yields from mature trees can be as high as 25kg per year, but are more often around 15.5kg. MEDICINE: The bark is antirheumatic, antiseptic, aromatic, astringent, carminative, ophthalmic and stimulant. It has proved useful in the treatment of fevers, asthma and coughs. The juice is applied to treat rheumatism. Mixed with ginger, it is used as a rubefacient in the treatment of cholera. The juice of the bark is taken internally in the treatment of catarrh and headaches, and is applied externally to cuts and wounds. A decoction of the bark is used in the treatment of fevers, asthma and diarrhoea. This decoction is boiled to form a gelatinous mass that is applied as a poultice on sprains. Combined with the bark of <i>Quercus lanata</i> , it is used as a decoction in the treatment of dysentery. The juice of the unripe fruit is used as an anthelmintic. TANNIN/DYE: A yellow dye is obtained from the bark. The plant is a source of tannin (Probably the bark or the leaves) The bark is said to contain 60 - 80% tannin. OTHERS: WAX: A wax covering on the fruit is extracted by scalding the fruit with boiling water and immersing them for a few minutes, the wax floats to the surface and is then skimmed off. The fruit is then boiled in water to extract the wax from the pulp and once more the wax is skimmed off. It is then strained through a muslin cloth and can be used to make aromatic candles. Candles made from this wax are quite brittle but are less greasy in warm weather. They are slightly aromatic and do not smoke when put out, making them much more pleasant to use than wax or tallow candles. The wax is also used in making soaps. TIMBER/FUEL: Wood - hard, close-grained. a good fuel Used mainly for fuel, though it is sometimes used for making poles for construction.
<i>Nardostachys grandiflora</i>	JATAMANSI, VULTE (N)	NARDUS ROOT (E); JATAMANSI (T)	PRODUCTS: FOOD: Used as a condiment. No more details are given. MEDICINE: The root is antispasmodic, carminative, deobstruent, deodorant, diuretic, emmenagogue, laxative, nervine, sedative, stimulant and stomachic. It is an excellent substitute for valerian, <i>Valeriana officinalis</i> , and is taken internally in the treatment of epilepsy, hysteria and convulsive affections, nervous indiges-

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

			tion, insomnia, depression and tension headaches. Externally, it is used as a deodorant and to treat rashes. A paste of the root is used externally to treat haemorrhoids. The root is harvested in the autumn and dried for later use. Use this remedy with caution, overdoses are toxic. Leaf juice is applied in headache, altitude sickness, epilepsy, cough and cold, cuts and wounds; rhizome decoction is taken as diuretics and tonic; its paste is applied to cure piles. OTHERS: ESSENTIAL OIL: An essential oil is obtained from the root and young stems. It is harvested before the leaves unfurl. It is used in perfumery and as a hair tonic where it is said to make the hair grow faster and also to turn it black. INCENSE: The dried leaves are used as incense. Crushed Dried The hairy portion of the stem, just above the roots, has a strong aroma somewhat like patchouli. The fresh root is fragrant, but the scent becomes more pronounced as the root dries.
<i>Nyctanthes arbor-tristis</i>	PARIJAAT (N), SINGHAR (M)	NIGHT JASMINE (E)	PRODUCTS: MEDICINE: Leaf used for cough and cold, FUEL: Source of fuelwood; OTHER: Fragrant flowers for worship. TANNIN/DYE: Flower used for yellow colour dye.
<i>Ocimum sanctum</i> (<i>Ocimum tenuiflorum</i>)	TULASI (N&M)	SACRED BASIL (E)	PRODUCTS: FOOD: Leaves and flowers - raw or cooked. Used as flavouring or as spinach, they are used especially with tomato dishes, pasta sauces, beans, peppers and aubergines. The leaves are normally used fresh but can also be dried for winter use. A very pleasant addition to salads, the leaves have a delightful scent of cloves. A refreshing tea is made from the leaves. The seed can be eaten on its own or added to bread dough as flavouring. When soaked in water it becomes mucilaginous and can be made into a refreshing beverage called 'sherbet tokhum' in the Mediterranean. An essential oil obtained from the plant is used as a food flavouring in mustards, sauces, vinegars etc. MEDICINE: Bush basil has a milder action than sweet basil and is used mainly in the treatment of flatulence and griping pain in the digestive system. The leaves and flowering tops are antispasmodic, aromatic, carminative, digestive, galactagogue, stomachic and tonic. They are taken internally in the treatment of feverish illnesses (especially colds and influenza), poor digestion, nausea, abdominal cramps, gastro-enteritis, migraine, insomnia, depression and exhaustion. Externally, they are used to treat acne, loss of smell, insect stings, snake bites and skin infections. The juice of tulsi leaves can be used to bring down fever. Extract of tulsi leaves in fresh water should be given every 2 to 3 hours. In between one can keep giving sips of cold water. In children, it is every effective in bringing down the temperature. Ayurvedic tulsi preparations have significantly reduced the symptoms of viral hepatitis. In diabetics it helps in lowering the blood sugar level. Tulsi is an important constituent of many Ayurvedic cough syrups and expectorants. It helps to mobilise mucus in bronchitis and asthma. Chewing tulsi leaves relieves cold and flu. It raises the human body immunity by increasing the antibody production. Plant or Holy Basil (<i>Ocimum tenuiflorum</i>) extracts are used in ayurvedic remedies for common colds, headaches, stomach disorders, inflammation, heart disease, various forms of poisoning, and malaria. Traditionally, tulsi is taken in many forms: as an herbal tea, dried powder, fresh leaf, or mixed with ghee. ESSENTIAL OIL: is mostly used for medicinal purposes and in herbal toiletry. For centuries, the dried leaves of Tulsi have been mixed with stored grains to repel insects. The essential oil is used in aromatherapy. An essential oil obtained from the whole plant is used as a food flavouring and in perfumery, dental applications etc. An average yield of 1.5% essential oil is obtained from the flowering tops. When applied to the skin it makes a good mosquito repellent. OTHER: Planted by Hindus in home area for worship and for use on funeral pyres.
<i>Opuntia ficus-indica</i>	NAGPHENI (N)	INDIAN FIG, INDIAN PRICKLY PEAR, MISION PRICKLY PEAR, PRICKLY PEAR, SPANISH TUNA (E)	PRODUCTS: FOOD: The prickly pear fruit ranges in flavour from sour to very sweet; the fruit, known as tuna in spanish and sabra in arabic, is eaten throughout Latin America, the Mediterranean and the middle east; there is commercial tuna production in Italy, Spain, Sicily, Tunisia, Mexico and south America, especially Chile; the tender young pads (Nopalitos) are eaten as a vegetable particularly during the lent season; FODDER: With decline in demand for the tender young pads at the end of the lent, they are alternatively used as dairy cattle fodder; local dairymen maintain that cactus pads are essential for good lactation, imparts a better flavour and quality to the milk and enhances better quality for butter; the most extensive use of cactus occurs in Brazil where <i>O.</i>

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

			<p><i>ficus-indica</i> has been grown as a fodder for more than 80 years.</p> <p>SERVICE BENEFITS: These are: (1) erosion control (cactus hedges play a major role in erosion control and land-slope partitioning particularly when established along contours; the hedge is a physical obstacle to runoff, favoring temporary local runoff accumulation and silting, thus preventing regressive erosion; in arid lands subject to wind erosion, cactus hedges are an easy, cheap and efficient way of prevention and control of top soil loss and accumulation of wind-borne deposits; (2) reclamation (planting shrubs and particularly cacti is one of the easiest to rehabilitate degraded landscapes; cacti, because of their easy establishment by vegetative propagation, are amenable to the rehabilitation of lands that could not be reclaimed through conventional agricultural methods because of their steep slope and other physical factor limitations. in Tunisia and Algeria for instance, stony and rocky slope have been rehabilitated by planting cacti on contours; (3) soil improver (cacti help in maintaining soil fertility via their geobiogene and trace element cycling activities, enriching the top soil in organic matter and improving its structure and the stability of its aggregates, hence permeability and water uptake balance; (4) boundary or barrier or support; and, (5) other (the cactus hedges when established in double rows, play an important part in landscape organization, and in the local socio-economy, as evidence of land rights and land ownership in countries or regions where no land registry exists).</p>
<i>Pethocellobium dulce</i>	JILEWI (M)		INFORMATION PENDING
<i>Phoebe lanceolata</i>	KOKSHI, KHURHUR (N)		PRODUCTS: FOODER: leaves; MEDICINE: bark and leaves have medicinal uses with antibacterial activities.
<i>Phoenix sylvestries</i>	KHAJUR (N&M)	WILD DATE PALM (E)	PRODUCTS: FOOD: Edible fruits; toddy wine. Of a very inferior character. Sap - it can be concentrated into syrup or fermented into alcohol Edible Uses. One of the main sources of sugar in Bengal. The sap is obtained from the unopened inflorescence. The tip of this is cut off and the sap then flows from this cut. The flow can be up to 5 litres a day for several months, it contains about 14% sugar. OTHER: leaves made into mats.
<i>Phyllanthus emblica</i>	AMALA (N&M)	INDIAN GOOSE-BERRY (E)	PRODUCTS: FOOD: The fruit is edible but sour; TANNIN/DYE: Popularly used in inks, shampoos and hair oils, the high tannin content of Indian gooseberry fruit serves as a mordant for fixing dyes in fabrics. COSMETICS: Amala shampoos and hair oil are traditionally believed to nourish the hair and scalp and prevent premature grey hair; MEDICINE: The fruit, seed, leaves, root, bark and flowers are used in various Ayurvedic herbal preparations. SERVICE BENEFITS: In Hinduism, amala is regarded as a sacred tree
<i>Phyllanthus reticulatus</i>	SIKAITH (M)	RETICULATED LEAF-FLOWER (E)	PRODUCTS: TIMBER: The wood is hard and tough, sometimes used to make utensils; FUEL: Collected by poor people for fuelwood; TANNIN/DYE: A black ink is prepared in the Philippines from the ripe fruits; in Indonesia a decoction of stem and leaves was used for dyeing cotton black; It is also used as a mordant; in India the root is reported to produce a red dye; MEDICINE: Roots, bark, leaves, as well as fruits are used for a large number of complaints, notably to treat asthma and coughs, and for injuries of the skin.
<i>Pinus roxburghii</i>	KHOTE SALLA, GO-BRESALLA (N)	CHIRPINE (E)	PRODUCTS: FOOD: Seed - raw or cooked. Not very nice, it has a strong flavour of turpentine and is only eaten as an emergency food. A reasonable size, the seed is up to 11mm long. A sweet edible manna exudes from the bark and twigs. It is actually a gum. Vanillin flavouring is obtained as a by-product of other resins that are released from the pulpwood. MEDICINE: The turpentine obtained from the resin of all pine trees is antiseptic, diuretic, rubefacient and vermifuge. It is a valuable remedy used internally in the treatment of kidney and bladder complaints and is used both internally and as a rub and steam bath in the treatment of rheumatic affections. It is also very beneficial to the respiratory system and so is useful in treating diseases of the mucous membranes and respiratory complaints such as coughs, colds, influenza and TB. Externally it is a very beneficial treatment for a variety of skin complaints, wounds, sores, burns, boils etc and is used in the form of liniment plasters, poultices, herbal steam baths and inhalers. The wood is diaphoretic and stimu-

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

			lant. It is useful in treating burning of the body, cough, fainting and ulcers. OTHERS: A tan or green dye is obtained from the needles. The needles contain a substance called terpene, this is released when rain washes over the needles and it has a negative effect on the germination of some plants, including wheat. A resin is obtained from the sapwood. Trees are tapped for three years and then rested for three years. The yield is up to 5.5 kilos per tree. Oleo-resins are present in the tissues of all species of pines, but these are often not present in sufficient quantity to make their extraction economically worthwhile. The resins are obtained by tapping the trunk, or by destructive distillation of the wood. In general, trees from warmer areas of distribution give the higher yields. Turpentine consists of an average of 20% of the oleo-resin and is separated by distillation. Turpentine has a wide range of uses including as a solvent for waxes etc, for making varnish, medicinal etc. Rosin is the substance left after turpentine is removed. This is used by violinists on their bows and also in making sealing wax, varnish etc. Pitch can also be obtained from the resin and is used for waterproofing, as a wood preservative etc. The wood is very resinous and can be splintered and used as a torch. A charcoal made from the leaves, mixed with rice water, is used as an ink. Wood - moderately hard. Used for construction, shingles, boxes etc. It is useful in cold climates but is not resistant to white ants.
<i>Plumeria rubra</i>	CHOYA, GALAICHI, MOTIPHUL (M)	PAGODA TREE (E)	PRODUCTS: GUM/RESIN/MEDICINE: Resin is employed to treat stomachache and body pain; it is also used to cure snake bite; OTHER: Ornamental flowers.
<i>Psidium guajava</i>	AMBA, BELAUTI (N); AMUK, LATTAM (M)	GUYAVA (E)	PRODUCTS: FOOD: Edible fruit and popular juice; FUEL: An important source of fuelwood; MEDICINE: The leaves of the guava tree in decoction are recommended for gastroenteritis, uterine hemorrhage, chronic diarrhea, swollen legs, etc The young leaves and shoots are used for dysentery, inflammation of the kidney, and diarrhea. The same decoction is good as a wash for ulcers, vaginal and uterine problems, and where an astringent remedy is needed. It heals wounds and cuts. It has been used for spasms, fevers, worms, kidney problems, epilepsy and diabetes, and even for cerebral affections.
<i>Punica granatum</i>	DAARIM, ORIYA (N); ANAR (N&M)	DWARF POMEGRANATE, POMEGRANATE, TREE OF KNOWLEDGE, WILD POMEGRANATE (E); ANACARDA (seeds), ANAR, POMEGRANATE, ((T)	PRODUCTS: FOOD: Juice and spice from seeds; FODDER: Leaves; TIMBER: For making farm implements; FUEL: Branches for fuelwood; TANNIN/DYE: Root bark yields a black ink rich in tannins and useful in dyeing/tanning leather; MEDICINE: Root juice and ripe and unripe fruit is taken in dysentery; extract of bark and fruit is used to treat diarrhea; root and bark decoction is used as anthelmintic; fruit pulp is beneficial in cardiac disorders and stomachache. SERVICE BENEFITS: include: (1) watershed management erosion control (important deep rooting tree), in soil erosion control, and is planted along rivers to stabilize banks; (2) shade/shelter; (3) windbreak; (4) Reclamation (is a drought tolerant tree suitable for arid and semi-arid zone afforestation; and, (5) soil improver (leaf litter decomposes slowly and is suitable for mulching).
<i>Quercus glauca</i>	PHALANT (N)	BAMBOO-LEAVED OAK, BLUE JAPANESE OAK, RING CUPPED OAK (E)	PRODUCTS: FOOD: Seeds, raw or cooked have a sweet taste; the seed can be dried, ground into a powder and used as a thickening in stews etc or mixed with cereals for making bread; if the seed contains bitter tannins, these can be leached out by thoroughly washing the seed in running water though many minerals will also be lost; either the whole seed can be used or the seed can be dried and ground it into a powder; it can take several days or even weeks to properly leach whole seeds, one method was to wrap them in a cloth bag and place them in a stream. Leaching the powder is quicker; a simple taste test can tell when the tannin has been leached; the traditional method of preparing the seed was to bury it in boggy ground overwinter; the germinating seed was dug up in the spring when it would have lost most of its astringency; the leaves are cooked as a famine food; the roasted seed is a coffee substitute; TANNIN/DYE: Oak galls are excrescences that are sometimes produced in great numbers on the tree and are caused by the activity of the larvae of different insects; the insects live inside these galls, obtaining their nutrient therein; when the insect pupates and leaves, the gall can be used as a rich source of tannin, that can also be used as a dye-stuff; TIMBER: The wood fairly durable and used for heavy and light construction purposes, railway sleepers, posts, stakes, poles, making containers and furniture and as fuelwood; MEDICINE: It has

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

			<p>been used in traditional medicine as an astringent treatment for haemorrhoids.</p> <p>SERVICE BENEFITS: Often used as a residential shade tree and is also recommended for buffer strips around parking lots or for median strip plantings in the highway; the branches and twigs are good material for culturing mushrooms (for example, <i>Pleurotus eryngii</i>).</p>
<i>Quercus semecarpifolia</i>	KHARSU (N)	BROWN OAK, KHARSU OAK (E); KHARSHU (T)	<p>PRODUCTS: FOOD: Seeds can be dried, ground into a powder and used as a thickening in stews etc or mixed with cereals for making bread; the seed contains bitter tannins, these can be leached out by thoroughly washing the seed in running water though many minerals will also be lost; either the whole seed can be used or the seed can be dried and ground it into a powder (it can take several days or even weeks to properly leach whole seeds, one method was to wrap them in a cloth bag and place them in a stream; leaching the powder is quicker; a simple taste test can tell when the tannin has been leached; the traditional method of preparing the seed was to bury it in boggy ground over winter; the germinating seed was dug up in the spring when it would have lost most of its astringency); FODDER: The tree is lopped extensively in the hills of Himachal Pradesh and Uttar Pradesh (bears are particularly fond of acorns); FUEL: It makes good firewood and excellent charcoal; TIMBER: used only locally for building, door-frames, beds, stables, ploughs and mule-saddles (also used as a substitute for imported oak for kegs in distilleries); TANNIN/DYE: Oak galls are excrescences that are sometimes produced in great numbers on the tree and are caused by the activity of the larvae of different insects; the insects live inside these galls, obtaining their nutrient therein; when the insect pupates and leaves, the gall can be used as a rich source of tannin that can also be used as a dyestuff.</p> <p>SERVICE BENEFITS: A mulch of the leaves repels slugs, grubs etc, though fresh leaves should not be used as these can inhibit plant growth. Silkworms of <i>Antheraea proylei</i> is widely cultivated on the leaves of oaks, of which the leaves of <i>Q. semecarpifolia</i> are more palatable with little change of condensed tannins. The leaves contain 4.5% ash and 1.37% nitrogen.</p>
<i>Rhododendron anthopogon</i>	SUNPATI (N)		<p>PRODUCTS: FOOD: The flowers are used as a tea substitute. MEDICINE: The stems and leaves of the sub-species <i>R. anthopogon hypenanthum</i> are used in Tibetan herbalism. They have a sweet, bitter and astringent taste and they promote heat. They are antitussive, diaphoretic and digestive and are used to treat lack of appetite, coughing and various skin disorders. In Nepal, the leaves are boiled and the vapour inhaled to treat coughs and colds. The flowers of the sub-species <i>R. anthopogon hypenanthum</i> are also used in Tibetan medicine, having a sweet taste and neutral potency. They are antitussive, febrifuge and tonic, being used in the treatment of inflammations, lung disorders and general weakening of the body. They are also used when water and locality are not agreeable due to a change of environment. OTHERS: The dried leaves are used as incense. Scented Plants Leaves: Crushed The whole plant is strongly aromatic with a slightly acrid odour, especially when crushed.</p>
<i>Rhododendron arboreum</i>	LAURIGANS, GURANS (N)		<p>PRODUCTS: FOOD: The tender leaves are used as a cooked vegetable. Caution is advised; see the notes above on toxicity. Flowers - raw or cooked. A sweet-sour taste, they are said to make a good sub-acid jelly. The flowers are sometimes simply pickled by adding salt and chili. Caution is advised, large quantities can cause intoxication. MEDICINE: The young leaves are astringent and poultice. They are made into a paste and then applied to the forehead in the treatment of headaches. The juice of the bark is used in the treatment of coughs, diarrhoea and dysentery. A decoction of the flowers is used to check a tendency to vomit, especially if there is also a loss of appetite. The juice of the flowers is used in the treatment of menstrual disorders. The petals are eaten to assist the removal of any animal bones that have become stuck in the throat. OTHERS: The juice of the leaves is spread over cots and beds to get rid of bed lice. FUEL: Wood soft even grained, seasons badly. Used in turnery, it can also be used to make charcoal and for fuel. It is a very good fuel, burning well with a long-lasting heat - overcollection of the wood for fuel, and also for making charcoal, has become a cause for conservation concern TIMBER: The wood is much employed in Nepal where it is used for making household implements, building small houses and fences. FURNITURE:</p>

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

			Planks of the wood are carved to make boxes, cupboards and other furniture.
<i>Ricinus communis</i>	ALLIND (N); ANDI, ADAUDI, ARARI (M)	CASTOR TREE (E); CASTOR (T)	PRODUCTS: TANNIN: The stem contains TANNIN; FIXED OIL: Castor oil is extracted by cold press of the seeds and is used for medical applications, lubricant (carts) and lighting; MEDICINE: The oil, root, bark and seed are used for a variety of modern or traditional medical applications.
<i>Rubia cordifolia</i>	MAJITHO (N)	INDIAN MADDER (E)	PRODUCTS: FOOD: Leaves - cooked. Used as a side dish with rice. It is much esteemed as a lab-lab by the Javanese. Fruit - raw. The fruit is about 8mm in diameter. MEDICINE: The roots are alterative, anodyne, antiphlogistic, antitussive, astringent, diuretic, emmenagogue, expectorant, styptic, tonic and vulnerary. They have an antibacterial action, inhibiting the growth of <i>Staphylococcus aureus</i> , <i>S. epidermidis</i> , <i>Pneumococci</i> etc. They are used to lower the blood pressure. The roots are used internally in the treatment of abnormal uterine bleeding, internal and external haemorrhage, bronchitis, rheumatism, stones in the kidney, bladder and gall, dysentery etc. The roots are harvested in the autumn from plants that are at least 3 years old. They are peeled and then dried. The stems are used in Tibetan medicine, where they are considered to have a bitter taste and a cooling potency. Febrifuge, they are used in the treatment of blood disorders and spreading fever of kidneys and intestines. TANNIN/DYE: A red dye is obtained from the stems and the root. It is inferior to <i>R. tinctoria</i> , the madder plant.
<i>Sapindus mukorossi</i>	RITHA, URISTHA (N)	SOAP-NUT TREE, TREE OF NORTHERN INDIA (E); CHINESE SOAP BERRY (E&T)	PRODUCTS: FOOD: The seed kernel cake contains 32 % crude protein and 7.9 % total N; the protein is mainly of the globulin type; aspartic acid, glutamic acid, lysine, serine, glycine, arginine, alanine, valine, leucine/isoleucine, proline and tryptophan have been identified; however, the kernels lack about 44 % of essential amino acids and are thus inadequate for human nutrition but industrial protein could be prepared from the globulin fraction; FODDER: The leaves are used as fodder for cattle; APICULTURE: Honey water-white (also described as light golden), of mild flavour and good aroma; FUEL: The wood is used for charcoal production and as firewood; TIMBER: The wood is light yellow, compact, close-grained and fairly hard; ESSENTIAL OIL: Seeds contain 23 % oil of which 92 % is triglycerides; the triglyceride fraction contained 30 % oleo-palmito-arachidin glyceride, 13.3 % oleo-diarachidin glyceride and 56.7 % di-olein type glycerides such as dioleo-palmitin, dioleo-stearin and dioleo-arachidin; POISON: The fruit pulp is used in northern India and China to control head lice and as fish poison; powdered seeds are insecticidal; MEDICINE: The fruit and seeds are regarded as a cure for epilepsy in northern India, a decoction of the fruit is used to wash wounds (it is believed to have expectorant and emetic properties); the fruit is also considered to be haemolytic; seeds are used in China to stop dental caries; OTHER: The chief product of the tree is its fruit, the pulp of which is used as a substitute for soap; the active ingredients are saponins which are extracted by boiling the powdered fruits; soapnuts are used as detergent for polishing jewelry, and for washing and bleaching cardamoms; the saponins are used as a textile auxiliary and as an emulsifier in insecticides. SERVICES: These are: (1) reclamation (the tree has proved successful in the afforestation of eroded hill slopes at elevations below 900 m in the western Himalayas); (2) soil improver (seed kernels which are a by-product of the oil extraction from the pericarp and shells can be used as fertilizer); (3) pollution control (a surfactant obtained from the fruit pericarp of <i>S. mukorossi</i> has proved effective in the remediation of contaminated soils); and, (4) ornamental.
<i>Schima wallichii</i>	CHILAUNE (M)	NEEDLEWOOD, SCHIMA (E&T)); CHILAUNI, CHINESE GUGER TREE, MANG TAN, SAMAK, SIMAR-TOLU (T)	PRODUCTS: FODDER: In Nepal, the leaves are used for fodder; FUEL: produces good firewood; FIBRE: Wood is suitable for paper pulp; TIMBER: yields a medium-weight to heavy hardwood; it is easy to work with hand and machine tools and polishes satisfactorily; Used for medium-heavy construction that is under cover, such as columns and beams, for flooring, interior fitting, panelling, door and window frames, joinery, utility furniture, ship and boat building (ribs, decks), vehicle bodies, agricultural implements, pallets, boxes and crates, poles, toys, turnery and, when treated, for railway sleepers; it has been used for bridge building in mountain areas, and young trees have been used as rafters; good-quality plywood can be manufactured from the wood, and it is suitable for the production of wood-wool boards; TANNIN/DYE: Bark is used for dyeing and its tannin is

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

			used in processing skins; leaves also contain tannin but not in quantity enough for economic use in tanning; OIL: seed contains 19% oil;poison: bark contains an alkaloid used as a fish poison; MEDICINE: astringent corollas are used to treat uterine disorders and hysteri. SERVICE BENEFITS: these are: (1) erosion control (especially for conserving soil and water); (2) reclamation (useful for reforestation and in water conservation in catchment areas); (3) shade/shelter; and, (4) intercropping.
<i>Semecarpus ana-cardium</i>	BHALAYO, BHAL-LATAKA (N)	ORIENTAL CASHEW NUT (E); MARKING NUT TREE (E&T)	PRODUCTS: FOOD: Roasted, the ripe fruit is edible; MEDICINE: Extract of the fruit (nut) is a used as a herbal remedy; OTHER: A dark jucie obtained from the fruit (nut) is used as ink, and as a varnish when dry.
<i>Shorea robusta</i>	SAAL, AGRAAKH (N); SAKHUWA (M)	SAL (E&T)	PRODUCTS: FOOD: In Madras, India, seeds are ground into coarse flour used to make bread, and the plant is used as a famine food; <i>S. robusta</i> butter, used in cooking, is derived from the seeds; a de-fatted kernel powder, popularly known as sal seed cake, contains about 50% starch, in addition to proteins, tannins and minerals; the physico-chemical property of the starch can be exploited for preparing canned food products; FODDER: In India, <i>S. robusta</i> is lopped for fodder, but the leaf fodder is considered to be of medium to poor quality; the oil cake, though rich in tannins (5-8%), has been used without detrimental effects in concentrates for cattle in proportions of up to 20%; as the protein remains completely undigested, the oil cake yields only energy; Salseed cake can also constitute up to 10% of poultry and pig rations without affecting the performance of these animals; leaves can be used as roughage for cattle and are fed to Antheraea mylitta, a tasar silk-producing worm; FUEL: Source fo fuelwood; OIL: <i>S. robusta</i> seed oil fat has become a significant foreign exchange earner for India; TIMBER: The hard and heavy heartwood (specific gravity of 0.83-0.93 cm ³) is very durable and highly resistant to termite attack; grain is strongly spiralled and rather coarsely structured; seasoning also presents problems; it is especially well suited for structures subject to heavy stress in house construction (neams and poles), hydraulic engineering, ships and railway cars; it is also used for poles, railway ties and posts, simple interior finishing such as window frames and floors, FURNITURE and many other applications; for making household or agricultural implements, <i>S. robusta</i> coppice shoots are used; GUM/RESIN: oleoresin used as incense in Hindu religious ceremonies; OTHER: <i>S. robusta</i> leaves are widely used for making leaf plates and cups for both home use and sale to sal plate factories. SERVICE BENEFITS: Intercropping.
<i>Spondias pinnata</i>	AMARO (N&M); AMARA, AMATA (N); AMARA, AMATA (M)	GOLDEN APPLE (E)	PRODUCTS: FOOD: The acidic fruit is eaten fresh or pickled; MEDICINE: Juice of the bark is used to treat dysentery and rheumatism.
<i>Syzygium cumuni</i>	JAAMUM (N&M); JAAUM (M)		PRODUCTS: FOOD: The fruits are 2 to 3 cm long and deep purple in colour. Edible fruits is eaten after ripen. The young plants are very susceptible to frost. MEDICINE: The jamun fruits are a general tonic, cooling and astringent to bowels. These enrich blood and strengthen liver. These increase VATA in body, remove bad smell from the mouth and cure biliousness. Very good vinegar is prepared from ripe jamun fruits. This vinegar is an agreeable stomachic and carminative. It is also used as a diuretic. The bark of jamun tree is digestive, astringent to the bowels and anthelmintic. It is good for sore throat, bronchitis, asthma, thirst, biliousness, dysentery, blood impurities and ulcers. The fresh juice of jamun bark alongwith goat milk is given to children in diarrhea. An astringent decoction is prepared from jamun bark and used for gargles and washes. The ash from burnt leaves strengthens gums and teeth. The expressed juice from leaves is used in dysentery alone as well as in combination with other astringents. The seeds are useful diabetes and are widely used to treat diabetes alone as well as in combination with some other some other medicines of its class. Dried seed powder is useful in diabetes. The seeds are also astringent to bowels, diuretic and stop urinary discharges. TIMBER: house beams and pond posts.
<i>Tamarindus indica</i>	IMILI (N); IMALI, TETAIR (M)	INDIAN DATE, MA-DEIRA MAHOGANY,	PRODUCTS: FOOD: The fruit pulp, mixed with a little salt, is a favourite ingredient of curries and chutneys popular throughout India, though most of the tamarind imported into Europe today

		<p>TAMARIND TREE (E); TAMARIND (T)</p>	<p>comes from the West Indies; the ripe fruit of the sweet type is usually eaten fresh, whereas the fruits of sour types are made into juice, jam, syrup and candy. Fruit is marketed worldwide in sauces, syrups and processed foods; the juice is an ingredient of Worcestershire Sauce and has a high content of vitamin B (thiamine and niacin) as well as a small amount of carotene and vitamin C; the flowers, leaves and seeds can be eaten and are prepared in a variety of dishes; tamarind seeds are also edible after soaking in water and boiling to remove the seed coat; flour from the seed may be made into cake and bread; roasted seeds are claimed to be superior to groundnuts in flavour; FODDER: the foliage has a high forage value, though rarely lopped for this purpose because it affects fruit yields; in the southern states of India cooked seeds of Tamarind tree are fed to draught animals regularly; APICULTURE: Flowers are reportedly a good source for honey production (the second grade honey is dark-coloured); FUEL: Provides good firewood and alsp produces an excellent charcoal; TIMBER: very hard, durable and strong and takes a fine polish; it is used for general carpentry, sugar mills, wheels, hubs, wooden utensils, agricultural tools, mortars, boat planks, toys, panels and furniture. In North America, tamarind wood has been traded under the name of 'madeira mahogany'; OIL: amber coloured seed oil (which resembles linseed oil) is suitable for making paints and varnishes and for burning in lamps; TANNIN/DYE: Both leaves and bark are rich in tannin: bark tannins can be used in ink or for fixing dyes; leaves yield a red dye, which is used to give a yellow tint to clothe previously dyed with indigo; ashes from the wood are used in removing hair from animal hides; MEDICINE: The bark is astringent and tonic and its ash may be given internally as a digestive; incorporated into lotions or poultices, the bark may be used to relives sores, ulcers, boils and rashes and may also be administered as a decoction against asthma and amenorrhoea and as a febrifuge; leaf extracts exhibit anti-oxidant activity in the liver, and are a common ingredient in cardiac and blood sugar reducing medicines; young leaves may be used in fomentation for rheumatism, applied to sores and wounds, or administered as a poultice for inflammation of joints to reduce swelling and relieve pain; a sweetened decoction of the leaves is good against throat infection, cough, fever, and even intestinal worms; filtered hot juice of young leaves and a poultice of the flowers are used for conjunctivitis; pulp pulp may be used as a massage is used to treat rheumatism, as an acid refrigerant, a mild laxative and also to treat scurvy; powdered seeds may be given to cure dysentery and diarrhea; OTHER: pulp of the fruit, sometimes mixed with sea-salt, is used to polish silver, copper and brass in India and elsewhere seed contains pectin that can be used for sizing textiles; ground, boiled, and mixed with gum, the seeds produce a strong wood cement. In Africa, tamarind is a host of one of the wild silkworms (<i>Hypsoides vuil-litii</i>).</p> <p>SERVICE BENEFITS: These include: (1) shade/shelter and windbreak; (2) boundary/vbarrier support (live fence); and, (3) ornamental.</p>
<p><i>Taxus baccata</i> subsp. <i>Wallichiana</i></p>	<p>LAUTH SALLA, KANDELOTTO, LOATHSALLA (N); DHANGRE SALLA (M)</p>	<p>BHUTANESE YEW, COMMOMN YEW, ENGLISH YEW, HI- MALAYAN YEW (E)</p>	<p>PRODUCTS: FOOD: The red aril surrounding the seed can be eaten (in India, local people use the bark as a tea substitute); FODDER: In parts of western Himalayas, the trees are lopped for cattle fodder; TIMBER: hard, fine, even-grained and moderately heavy wood used mainly for turnery, marquetry and wood carvery; the colorful wood (red heartwood, white sapwood) was used to veneer furniture, to make lute bodies, bowls, tankards, combs, tool handles, pegs, and various art objects; in the UK, yew veneers is in high demand for its decorative value; in India it is used for carrying poles, bows and furniture; POISON: Leaves are poisonous to cattle; the foliage and seeds contain several alkaloids (taxine) and glucoside (taxicatine), very poisonous, which alters to hydro-taxine by hydrolysis; in Europe, poisoning is frequent in animals such as horses, asses and mules which are extremely sensitive while rabbits, guinea-pigs and cats are insensitive; in humans, the yew generates digestive, nervous, respiratory and cardiovascular disorders, which can result in death; MEDICINE: The arilles, removed from their seeds, have diuretic and laxative effects; it was used medicinally to treat viper bites, hydrophobia (rabies), heart ailments and as an abortifascient; it is known to contain the anti-cancer drug taxol, but has not been widely exploited in this connec-</p>

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

			tion; leaf extract is used in skin diseases and cancer; it is also used in asthma and bronchitis. SERVICE BENEFITS: these are: (1) erosion control (especially for conserving soil and water); (2) reclamation (useful for reforestation and in water conservation in catchment areas); (3) shade/shelter; and, (4) intercropping.
<i>Terminalia alata (tomentosa)</i>	ASNA (N); ASANA (M)	INDIAN LAUREL/LAUREL (E&T)	PRODUCTS: FODDER: Leaves; TIMBER: A valuable and commercial source of timber and may have potential in other South-East Asian countries; the wood is used as terminalia (e.g. for house building, furniture, tool handles, and for underwater purposes); when quarter-sawn, the wood yields attractive veneer; TANNIN/DYE: The bark and especially the fruit yield pyrogallol and catechol to dye and tan leather. MEDICINE: The bark is used medicinally against diarrhoea. Oxalic acid can be extracted from it.
<i>Terminalia bellirica</i>	BARRO (N)	BEDDA NUT TREE, BELERIC MYROBALAN, BELLIRIC MYROBALAN (E)	PRODUCTS: FOOD: The kernels of the fruit can be eaten but are somewhat dangerous as they have a narcotic effect; FODDER: The leaves are highly valued and extensively used as fodder; FUEL: The tree yields a good-quality firewood and charcoal; TIMBER: The wood is steeped in water to make it more durable then used for making boxes, furniture and construction; TANNIN/DYE: The fruit produces tannins and dyes used for leather tanning, dyeing of clothes, matting and inks; COSMETICS: The kernel produces non-edible oil used in toilet soap and is good for hair; MEDICINE: The fruit rind (pericarp) is astringent, laxative, anthelmintic, pungent, germicidal and antipyretic.; it is applied in a diverse range of conditions including cough, tuberculosis, eye diseases, anti-HIV-1, dyspepsia, diarrhoea, dysentery, inflammation of the small intestine, biliousness, flatulence, liver disease, leprosy, cleanse the blood and promote hair growth in the Ayurvedic drug; fruit extracts have anti-bacterial activity against <i>Micrococcus pyogenes</i> and <i>Escherichia coli</i> . OTHER: Leaves contain 9- 14% crude proteins and can be used to rear tussar silkworms (<i>Antheareamylytta</i>). SERVICE BENEFITS: these are: (1) boundary or barrier or support and windbreak; (2) ornamental; and, (3) green twigs are used to decorate houses in Nepal during religious festivals.
<i>Terminalia chebula</i>	HARRO (N)		PRODUCTS: MEDICINE: Its fruit is mild laxative, stomachic, tonic, alterative, adaptogen, hepatoprotective, febrifuge, antispasmodic, expectorant, anti-asthmatic, antiviral and hypoglycaemic. It is useful in ophthalmia, hemorrhoids, dental caries, bleeding gums, ulcerated oral cavity and in many other diseases according to Ayurveda. Its paste with water is found to be anti-inflammatory, analgesic and having purifying and healing capacity for wounds. Its decoction as a lotion is surgical dressing for healing the wound earlier. Equal parts of three myrobalans and catechu are made in a paste with clarified butter or some bland oil work as an ointment in chronic ulcerations, ulcerated wounds and other skin diseases with discharge. These ointments could be a substitute for Gall ointments used in Britain. These are used for astringent purpose in hemorrhoids as well. Its decoction is used as gargle in oral ulcers, sore throat. Its powder is a good astringent dentrifice in loose gums, bleeding and ulceration in gums. It is good to increase the appetite, as digestive aid, Liver stimulant, as stomachic, as gastrointestinal prokinetic agent, and mild laxative. Haritaki has proven gastrokinetic effect i.e. it helps in moving the contents of stomach earlier. So it can be used after surgeries and as adjuvant with other drugs that interfere with gastric motility as antihistaminics, atropine like drugs. Base on its comprehensive properties, it promotes appetite and helps in digestion. It stimulates the liver and protects it further by expelling the waste excretory products from the intestines. The powder of Haritaki has been used in chronic diarrhea sprue with good results. It should be used as hot infusion in these disorders. It is indicated in Protracted diarrhea with hema-tochezia and prolapse of rectum. For persons with excessive gas in intestine, flatulence, it is a good herb that can be taken daily. it will relieve these conditions smoothly. One compound Chebulagic acid from Haritaki has shown antispasmodic action like that of Papaverine. Being a mild laxative, it is a mild herbal colon cleanse. With its other properties, it provides some help in conditions with Liver and Spleen enlargement and in Ascites. It is not a strong purgative like other herbs as Senna. It does the cleansing action very smoothly. Further it can be taken for a long time without any ill

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

			<p>effects. In Ayurveda haritaki is the best for 'Srotoshodhana' or purifying the channels of body. It is a good nervine. It is used in nervous weakness, nervous irritability. It promotes the receiving power of the five senses. It is adjuvant in hemorrhages due to its astringent nature. It helps in edema and various inflammations. It is good for Chronic cough, coryza, sorethroat and asthma. It is used with other herbs in many holistic herbal formulations in Ayurveda. Being anti-inflammatory, and astringent, it is useful in urethral discharges like spermatorrhea, vaginal discharges like leucorrhoea. It can be given as adjuvant in atonic conditions of Uterus. It is helpful in Renal calculi, dysurea, and retention of urine. It is useful in skin disorders with discharges like allergies urticaria and other erythematous disorders. It is given as adjuvant herb in Chronic fever. On long term use it is helpful in gaining weight in the emaciated persons and in losing weight in obese persons. When taken with meals it sharpens the intellect, increases strength, stimulates the senses, expels the urine, stool and other waste materials from the body. It saves the person from the vitiating effects of bodily humors. Thus it is considered as an alterative and adaptogen. Haritaki reduces the ill effects of fat rich, creamy and oily food. T. chebula is the definite aid for persons who habitually overeat. Further it can supplement the Cholesterol normalizing drugs. Haritaki is reputed for its alterative, adaptogenic and tonic effect when used throughout the year with different substances in different six seasons of the year. If we review all the herbal formulations in Ayurveda's all classical texts, we will find haritaki to be one of the most frequently used ayurvedic herbs. In most of the compounds it is used as minor adjunct. In many others it is used as the foundation base of the entire formula - like in most of the electuaries or jams. It is the one of the prominent herb in formulations for asthma, cough, tonics, skin diseases, abdominal disorders. Haritaki can serve to act as an effective alternative to modern prokinetic drugs like metaclopramide. anti-bacterial and antioxidant properties. Some preliminary evidence of its capability to be useful in HSV Herpes simplex virus. Some anti-tumor activity and effect in inhibiting the HIV virus. Anthraquinone and Sennoside like purgative activity. Ability to evacuate the bowel. Wide antibacterial and antifungal activity, esp. against E. coli</p>
<i>Trewia nudiflora</i>	GUTEL (N); PITHARI (M)	FALSE WHITE TEAK (E)	<p>PRODUCTS: MEDICINE: Flatulence, stomachic, gout, rheumatism. FUEL: Source of fuelwood; TIMBER: Used for implements (tool handles). OIL: The seed oil of <i>Trewia nudiflora</i> is known to contain glycerides of α-kamlolenic (18-hydroxy-<i>cis</i>-9, <i>trans</i>-11, <i>trans</i>-13-octadecatrienoic) acid, a large part of these glycerides contain estolides in which the hydroxyl group of α-kamlolenic acid is esterified to a molecule of another acid, either a hydroxy acid or an ordinary fatty acid. By preparative thin layer chromatography, we isolated a series of tri-, tetra-, penta- and hexaacyl glycerols. By lipolysis and gas chromatography-mass spectrometry, isolated and characterized estolide-linked fatty acids containing two acid moieties.</p>
<i>Wrightia tinctoria</i> syn. <i>Nerium tinctorium</i>	KARBIR, JHARKANAIL (M)	EASTER TREE, IVORY TREE, PALA INDIGO (E); INDRAJAU, INDRAJOU (T)	<p>PRODUCTS: FOOD: The flowers, leaves, fruits and seeds may be eaten as vegetables after a thorough washing; FODDER: leaves are lopped for livestock fodder; TIMBER: high in quality, valuable, small, and white, and used for turnery, carving, toy making, matchboxes, small boxes and furniture; DYE: The leaves, flowers, fruits and roots is a sources of indigo-yielding glucoside, which produces a blue dye or indigo-like dye; MEDICINE: The juice from fresh unripe fruits is used for coagulating milk; seeds are said to be aphrodisiac and anthelmintic; leaves are used to relieve toothache when chewed with salt. In Nepal, the milky juice is used to stop bleeding; also the leaves and roots are pounded in water for treatment of fever; seeds yield deep red, semi-drying oil, which has medicinal value; in Indian traditional medicine, the bark and leaves are used to treat psoriasis, stomach pains, toothache, and dysentery; OTHER: The pods contain floss, which is used for stuffing cushions; the cream-coloured latex has a rubber content varying from 2 to 28% that can be exploited commercially.</p> <p>SERVICE BENEFITS: These are: (1) soil improver (branches are trampled into the puddle soil in rice field for green manuring); and, (2) intercropping.</p>
<i>Zanthoxylum ar-</i>	TIMUR (N)	WINGED PRICKLY	<p>PRODUCTS: FOOD: Edible parts leave. Seed - cooked is used as appetizer. It can be ground into a</p>

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

<i>matum</i>		ASH (E)	powder and used as a condiment, a pepper substitute. A light roasting brings out more of the flavour. The seed is an ingredient of the famous Chinese 'five spice' mixture. The peel is also used. Young leaves are eaten. No further details are given. MEDICINE: The seeds and roots are stomachic and vermifuge. A decoction of 7 - 14 seeds is used in the treatment of abscesses, arthritis, bruises, gastritis, swellings etc. The resin contained in the bark, and especially in that of the roots, is powerfully stimulant and tonic. Fruits and stem barks are taken in indigestion and toothache; decoction of fruits is used in cold and stomachache and as anthelmintic.
<i>Zizyphus mauritiana</i>	BAYAR (N); BAIR (M)	BEAR TREE, BER, CHINESE APPLE, CHINESE DATE, COMMON JUJUBE, DESERT APPLE, DUNKS, GEB, INDIAN CHERRY, INDIAN JUJUBE, INDIAN PLUM, JUJUBE (E)	PRODUCTS: FOOD: Fruit is eaten fresh or dried and can be made into a floury meal, butter, or a cheese-like paste, used as a condiment; it is also used for candy making and pickling; Ber is one of the most nutritious fruits: it is one of the richest sources of vitamin C, next only to amla and guava; Ber is also a good source of minerals and protein: a ripe fruit of ber contains amino acids like aspartic, aspartic and arginine, glutamic acid, glycine, serine, threonine, alanine, valine, methionine, leucine and isoleucine; a refreshing drink is prepared by macerating fruits in water; APICULTURE: When in bloom it is reportedly a source of pollen, at best a minor one; FODDER: In parts of India, the leaves of <i>Z. mauritiana</i> are used as nutritious fodder for sheep and goats; in India, the leaves are also gathered to feed tasar silkworms: tasar silk, highly prized, is the only silk commercially exploited in the tropics; FUEL: produces excellent firewood and good charcoal; TIMBER: It yields a medium-weight to heavy hardwood and the wood is used for general construction, furniture and cabinet work, tool handles, agricultural implements, tent pegs, golf clubs, gun stocks, sandals, yokes, harrows, toys, turnery, household utensils, bowling pins, baseball bats, chisels and packaging; it is also suitable for the production of veneer and plywood; GUM/RESIN: The purified resin makes the high-quality ber shellac that is used in fine lacquer work and to produce sealing wax and varnish; TANNIN/DYE: The bark, including the root bark, has served in tanning: when pounded and mashed in water, it yields brown and grey or reddish dyes; ALCOHOL: A raw, intoxicating spirit is occasionally distilled from the fermented fruit pulp; MEDICINE: Leaves, fruits and bark are used medicinally; pounded roots are added to drinking water and given to poultry suffering from diarrhoea and to humans for indigestion; COSMETICS: The leaves are dried and ground into a fine green-coloured powder called 'qasil' in Somalia where women have used this as a natural face mask for centuries: it is mixed with water; OTHER: in India, <i>Z. mauritiana</i> trees are a host for the lac insects, <i>Kerria lacca</i> , which are found on the leaves and make an orange-red resinous substance. SERVICE BENEFITS: These are: (1) erosion control; (2) reclamation (can withstand severe heat, frost and drought; hence it is planted in dry areas and on sites unfit for other crops); (3) shade or shelter; (4) boundary or barrier or support; and, (5) ornamental.

TABLE 2: PLANTS of NEPAL

NAME			PRODUCTS & SERVICES
BOTANICAL	NEPALI & MAITHILI	ENGLISH & TRADE	
<i>Achyranthes aspera</i>	CHIRCHIRI (N); AP-MARG (M)		PRODUCTS: (A small invasive flowering plant); MEDICINE: The root seeds and juice are used in a variety of traditional medicine applications; POISON: Paste from the ground seeds is also used as an insect repellent in parts of Nepal.
<i>Ageratum conyzoides</i>	GANDHE, GANKI (M)		PRODUCTS: Fresh leaf paste is applied to cure infections of skin between the toes.
<i>Albizia chinensis</i>	SIRIS (N); SIRITH (M)		Leaf paste is applied in case of ringworm and eczema. PRODUCTS: POISON: This is a pesticidal plant (bark).

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

<i>Aloe vera</i>	GHUE KUMARI (M)	ALOE VERA (E&T)	<p>PRODUCTS: COSMETICS: The leaf extracts are used in skin-care cosmetic products; MEDICINE: <i>Aloe vera</i> is a fairly well known herbal preparation with a long history of use. It is widely used in modern herbal practice and is often available in proprietary herbal preparations; it has two distinct types of medicinal use; the clear gel contained within the leaf makes an excellent treatment for wounds, burns and other skin disorders, placing a protective coat over the affected area, speeding up the rate of healing and reducing the risk of infection; this action is in part due to the presence of aloectin B, which stimulates the immune system; to obtain this gel, the leaves can be cut in half along their length and the inner pulp rubbed over the affected area of skin; this has an immediate soothing effect on all sorts of burns and other skin problems; the second use comes from the yellow sap at the base of the leaf; the leaves are cut transversally at their base and the liquid that exudes from this cut is dried; it is called bitter aloes and contains anthraquinones which are a useful digestive stimulant and a strong laxative; when plants are grown in pots the anthraquinone content is greatly reduced; the plant is emmenagogue, emollient, laxative, purgative, stimulant, stomachic, tonic, vermifuge and vulnerary; extracts of the plant have antibacterial activity; apart from its external use on the skin, aloe vera (usually the bitter aloes) is also taken internally in the treatment of chronic constipation, poor appetite, digestive problems, etc: it should not be given to pregnant women or people with haemorrhoids or irritable bowel syndrome; the plant is strongly purgative so great care should be taken over the dosage; the plant is used to test if there is blood in the faeces; the plant has a folk history of treatment in cases of cancer.</p> <p>SERVICE BENEFITS: Plants have been grown indoors in pots in order to help remove toxins from the atmosphere.</p>
<i>Amomum subaltum</i>	ALAICHI (N)	BLACK CARDAMOM	<p>PRODUCTS: FOOD: The seed capsules are harvested in autumn and dried and these aromatic dried capsules are sold in markets; it is an important economic crop in the Eastern Himalayas and especially in the District of Darjeeling and state of Sikkim where it is cultivated in large areas; this is the large cardamom of commerce, and a number of horticultural variants of the species are grown commercially.</p>
<i>Asparagus racemosus</i>	KURILO (N); KURILO, SHATAVARI (M)	ASPARAGUS (E); SATAWAR (T)	<p>PRODUCTS: FOOD: Young shoot used as vegetable, soup. MEDICINE: Root (especially) and whole plant used in a wide variety traditional medicine application as well as fed to cattle for improved milk production; root powder is given as tonic; paste of root is also used in fever, cough and cold; fruits are taken to treat pimples.</p>
<i>Calotropis gigantea</i>	AANK (N); AKAUN (M)	GIANT MILK WEED	<p>PRODUCTS: ALCOHOL: can be extracted from the root; TANNIN/DYE: The latex juice is used in making a yellow dye and in tanning. A fine fiber is obtained from the stems; MEDICINE: The bark is used as a medicine for the treatment of neurodermatitis and syphilis, and the leaves are used as a poultice; herb effects include antiarrhythmic and alleviates spasms (root); anticancer (root and leaf); hypotensive (latex); laxative (plant juice); digestive, stomachic and tonic (flower); emetic, diaphoretic, alternative and purgative (root- bark and juice); rare chemical constituents from the root are the subject of much international research testing.</p>
<i>Cannabis sativa</i>	BHAANG (N&M)	INDIAN HEMP	<p>PRODUCTS: FOOD: Seed - raw or cooked. It can be parched and eaten as a condiment or made into cakes and fried. The seed is quite tasty, but it is very difficult to separate from the husk, it does have a very gritty texture. The seed contains about 27.1% protein, 25.6% fat, 7.4% carbohydrate, 6.1% ash. EDIBLE OIL: Highly nutritious edible oil, rich in essential fatty acids, is obtained from the seed. Leaves. Used in soups. The leaves contain 0.215% carotene. MEDICINE: plant is widely used as a narcotic drug. The leaves and the resin that exudes from them are the parts mainly used, though all parts of the plant contain the active ingredients. Cannabis contains a wide range of active ingredients, perhaps the most important of which is THC. The principal uses of the plant are as a pain-killer, sleep-inducer and reliever of the nausea caused by chemotherapy, whilst it also has a soothing influence in nervous disorders. Although cannabis does not effect a cure for many of the problems it is prescribed to treat, it is a very safe and effective medicine for helping to reduce the symptoms of many serious diseases. For example, it relieves the MS sufferer of the</p>

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

			<p>distressing desire to urinate, even when the bladder is empty. As long as it is used regularly, it also greatly reduces the pressure in the eye to relieve the symptoms of glaucoma. Used for relieve some of the unpleasant side effects suffered by people undergoing chemotherapy for cancer - in particular it is very effective in removing the feelings of nausea and indeed helps to create an appetite and positive attitude of mind which is so important to people undergoing this treatment. It has also been found of use in the treatment of glaucoma and relieves the distressing constant desire to urinate that is suffered by many people with multiple sclerosis. Given to patients suffering from AIDS, it helps them to put on weight. Since it strongly increases the desire for food it has been found of benefit in treating anorexia nervosa. It is used externally as a poultice for corns, sores, varicose veins, gout and rheumatism. Cannabis has been used in the treatment of a wide range of conditions including alcohol withdrawal, anthrax, asthma, blood poisoning, bronchitis, burns, catarrh, childbirth, convulsions, coughs, cystitis, delirium, depression, diarrhoea, dysentery, dysmenorrhoea, epilepsy, fever, gonorrhoea, gout, inflammation, insomnia, jaundice, lockjaw, malaria, mania, menorrhagia, migraine, morphine withdrawal, neuralgia, palsy, rheumatism, scalds, snakebite, swellings, tetanus, toothache, uteral prolapse, and whooping cough. The seed is an important source of essential fatty acids and can be very helpful in the treatment of many nervous diseases. A high content of very active antibacterial and analgesic substances has been found in the plant. It has bactericidal effects on gram-positive micro-organisms, in some cases up to a dilution of 1:150,000. OIL: A drying oil is obtained from the seed. It is used for lighting, soap making, paints, varnish etc. In the temperate zone, oil is produced from females which have been left to stand after the fibre-producing males have been harvested. OTHERS: A varnish is made from the pressed seeds. Seed is harvested from the female plants when most of it falls off when the plant is shaken. Best time of day to harvest seed is in early morning when fruits are turgid and conditions damp. As fruits dry out by mid-day, seed loss increases due to shattering. Usually stems are cut and the seeds shaken out over canvas sheets or beaten with sticks to extract the seeds. FIBRE: A fibre is obtained from the stem. It is strong and very durable and is used in making coarse fabrics, rope etc. Male plants produce the best fibres and they are harvested when the plants turn brown and the flowers begin to open. When used for making paper the stems are harvested in the autumn and either retted or steamed until the fibres can be removed. The fibre is cooked for 2 hours or more with lye and then beaten in a ball mill or Hollander beater. The paper is off-white in colour. A good companion plant for cabbages and other brassicas, it repels the cabbage white butterfly and also secretes a volatile essence from its roots that inhibits pathogenic micro-organisms in the soil.</p>
<i>Clerodendron viscosum</i>	BHANTI (M)		INFORMATION PENDING
<i>Cordyceps sinensis</i>	YARSAGUMBA (N)		<p>PRODUCTS: MEDICINE: Yarsagumba is a rare and unique herb (half-plant and half-insect) that grows in the meadows above 3,500 meters in the Himalay regions and is harvested for a few weeks from May annually after the spring thaw begins. Yarsagumba is mainly exported to China where it is sold there and in many countries for high value as a natural herbal Viagra. Numerous scientific studies and research reveals that it has properties of antibiotic in it. <i>Cordyceps sinensis</i> is used for lung and respiratory infection, pain, sciatica and backache. It also provides vitality and increases physical stamina of the body. Yarsa gumba is used by the Chinese to cure chronic hepatitis B and immune function such as dysfunctioning of liver. According to the Hawaiian health products, cordycepin is found effective against tuberculosis as well as in the treatment of leprosy. Another major use of this is in the treatment of leukemia. It is useful for children, adults, the aged and the sick people. It energizes lung, kidney and liver; improves memory and purified blood; keeps a person physically and mentally sound. It is of great importance for men and women of any age group, players, people working in physical stress, suffering from premature ejaculation and sexually inactive ones. It gradually empowers internal energy of our body in a natural way as well as acts as a powerful aphrodisiac. Unlike Viagra, it does not cause any mental problem or any other</p>

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

			type of physical damage or malfunctioning.
<i>Curcuma Spp.</i>	BESAR KALO, KALA HALDI (M)	CURCUMA (E)	PRODUCTS: MEDICINE: has vast ethnobotanical value, already known in India as tonic, carminative, antidote to snake bite, astringent and used for bruises, corns and sprains. Paste of rhizome with milk is used for blood dysentery and stomachache. Juice of <i>C. aromatica</i> is given for curing indigestion, rheumatism and dysentery. Plant parts are also used for healing wounds and fractured bones. It is also used to remove stillborn baby from womb. Khasi and Garo tribes of Meghalaya make a paste of its rhizome and take it with water to kill intestinal worms; it possesses wide range of activities like antifungal, antimicrobial, mosquito repellent, anti-inflammatory. OIL: The oil exhibits inhibitory effect on sarcoma 100 in mice and is used for treating cervix cancer at early stage. First order rhizomes of HIMHALDI contain 2.4 % essential oil on dry weight basis, while second order rhizomes contain 1.2 % oil. About 200 kg of hydro-distilled oil (on dry weight basis) can be produced from 1 ha of the crop. The oil extracted from its rhizome is a blue-black dark liquid with camphorous, woody, amber, and spicy characteristic odour. The oil is in demand by the pharmaceutical and allied industries. In HIMHALDI, camphor is the major compound followed by 1,8 cineole and isobornyl alcohol.
<i>Cuscuta reflexa</i>	AAKASH (N); AKA-SHBELIL, AMARLATI (M)	DODDER (E); AFTIMUN VILAYTI (T – raw drug)	PRODUCTS: MEDICINE: The seeds and stems are used in the treatment of bilious disorders; whole plant is used internally in treating protracted fevers and externally in the treatment of itchy skin; plant is employed in Ayurvedic medicine to treat difficulty in urinating, jaundice, muscle pain and coughs.
<i>Cyperus rotundes</i>	MOTHA (M)	NUT GRASS (E)	PRODUCTS: FOOD: Tuber - Edible Uses, raw or cooked. Very strong flavour when freshly harvested, said to resemble 'Vick's VapoRub', the tubers become milder if they are allowed to dry. A pleasant nutty flavour according to another report, whilst another says that the roots are very unpalatable raw and a little better but still not very palatable when cooked. The dried roots can be ground into a powder and used as a cereal. Seed. A famine food, used when all else fails. It is very small and would be fiddly to use. MEDICINE: Nut grass is a pungent bitter-sweet herb that relieves spasms and pain, acting mainly on the digestive system and uterus. The roots and tubers are analgesic, antibacterial, antispasmodic, antitussive, aromatic, astringent, carminative, diaphoretic, diuretic, emmenagogue, litholytic, sedative, skin, stimulant, stomachic, tonic and vermifuge. They are used internally in the treatment of digestive problems and menstrual complaints. They are commonly combined with black pepper (<i>Piper nigrum</i>) in the treatment of stomachaches. The roots are harvested in the summer or winter and are dried for later use. An essential oil in the tubers has antibiotic activity and has been shown to arrest the growth of <i>Micrococcus pyrogenes</i> . The plant is rated 8th amongst 250 potential antifertility plants in China. The plant is used in the treatment of cervical cancer. OTHERS: WEAVING: The leaves are used in basketry and for weaving hats, matting etc. ESSENTIAL OIL: The root, when dried, is very aromatic with a smell resembling that of sweet flag, <i>Acorus calamus</i> . The aromatic root is used for perfumery in India. POWDER: When dried and ground into a fine powder it is used like talcum powder.
<i>Datura stramonium</i>	DHATURO (N)	JIMSON WEED, THORN APPLE (E) angel's trumpet, devil's trumpet, james-town weed, loco weed, moonflower, and thorn-apple	PRODUCTS: MEDICINE: The thornapple is a bitter narcotic plant that relieves pain and encourages healing. It has a long history of use as a herbal medicine, though it is very poisonous and should be used with extreme caution. The leaves, flowering tops and seeds are anodyne, antiasthmatic, antispasmodic, hallucinogenic, hypnotic, mydriatic and narcotic. The seeds are the most active medicinally. The plant is used internally in the treatment of asthma and Parkinson's disease, excess causes giddiness, dry mouth, hallucinations and coma. Externally, it is used as a poultice or wash in the treatment of fistulas, abscesses wounds and severe neuralgia. The use of this plant is subject to legal restrictions in some countries. It should be used with extreme caution and only under the supervision of a qualified practitioner since all parts of the plant are very poisonous and the difference between a medicinal dose and a toxic dose is very small. The leaves should be harvested when the plant is in full flower, they are then dried for later use. The leaves can be used as

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

			<p>a very powerful mind-altering drug, they contain hyoscyamine and atropine. There are also traces of scopolamine, a potent cholinergic-blocking hallucinogen, which has been used to calm schizoid patients. Atropine dilates the pupils and is used in eye surgery. The leaves have been smoked as an antispasmodic in the treatment for asthma, though this practice is extremely dangerous. The seeds are used in Tibetan medicine, they are said to have a bitter and acrid taste with a cooling and very poisonous potency. Analgesic, anthelmintic and anti-inflammatory, they are used in the treatment of stomach and intestinal pain due to worm infestation, toothache and fever from inflammations. The juice of the fruit is applied to the scalp to treat dandruff. Potentially invasive, banned. OTHERS: REPELLENT- The growing plant is said to protect neighbouring plants from insects. The whole plant gives off a nauseating stench.</p> <p>SERVICES AND BENEFITS: The flowers, with the same fragrance as <i>Mirabilis jalapa</i>, open and close at irregular intervals during the evening, earning the plant the nickname moonflower.</p>
<i>Eclipta alba</i>	BHRINGARAJ, BHANGARIYA (M)		<p>PRODUCTS: MEDICINE: The herb is used as a tonic and deobstruent in hepatic and splenic enlargements and in skin diseases. The plant juice is administered in combination with aromatics for catarrhal jaundice. The plant possesses antihepatotoxic and anti-inflammatory activities. The fresh plant is considered anodyne and absorbent. The herb contains wedelolactone possessing potent antihepatotoxic properties. The herb is a rich source of ascorbic acid. It also contains an alkaloid, ecliptine. The plant is a good source of thiophene derivatives which are active against nematodes. The occurrence of mono-di- and trithiophene acetylenes together with a-terthenyl in this species is noteworthy. The petroleum ether extract of aerial parts contains a trithienyl aldehyde, ecliptial, besides stigmaterol and b-sitosterol. The roots are very rich in thiophene acetylenes. Eclipta is an effective anti-inflammatory agent. It inhibited the higher levels of histamine due to chronic inflammation upto 58.67 percent. The ethanolic extract of the dried whole plant <i>E. prostrata</i> and its active constituent, culumbin, exhibited remarkable antihypertensive activity on anesthetized rats. No significant side effects or toxicities have been found either or histopathology of liver, kidney, spleen, heart or on biochemical parameters like SGOT, SGPT, BUN, etc. Moreover, no appreciable changes have been found in body weight and in specific organ weight during the course of investigation on Long Evans rats.</p>
<i>Eichhornia crassipes</i>	KUMBHI (M)	WATER HYACINTH (E)	<p>PRODUCTS: FOOD: Young leaves and petioles – cooked. Virtually tasteless. Said to be used as a carotene-rich table vegetable in Formosa. Javanese sometimes cook and eat the green parts and inflorescence. OTHERS: (1) BIOMASS: Water hyacinths are potentially an excellent source of biomass. (2) METHANE GAS: Through an anaerobic fermentation process, polluted hyacinths can be converted to the natural gas methane - a costly process that may become more economical as supplies of underground natural gas are depleted. (3) FERTILIZER: Dried and cleansed plants can be used as fertilizer and plant mulch. (4) Eventually, living aquatic plants might serve aboard long-distance manned spacecraft, absorbing wastes and converting carbon dioxide to oxygen, then being themselves converted into food. The plant can be cultivated for use in wastewater treatment, and can be incorporated into a system where the biomass is harvested for fuel production. Since this biomass is a by-product of wastewater treatment, it has a positive environmental impact, and thus poses no threat as competitor to food, feed, or fibre-producing plants. Wilted water hyacinth, mixed with earth, cow dung, and woodashes in the Chinese compost fashion, can yield useful compost in just two months. Although potential yields are incredible, so are the costs of removal or attempted eradication of this water weed. Standing crops have been estimated to produce 100-120 tonnes per hectare per year. Under ideal conditions, each plant can produce 248 offspring in 90 days. Water hyacinth roots naturally absorb pollutants, including such toxic chemicals as lead, mercury, and strontium 90 (as well as some organic compounds believed to be carcinogenic) in concentrations 10,000 times that in the surrounding water. In Africa, fresh plants are used as cushions in canoes and to plug holes in charcoal sacks. (5) ROPE: Ropes made from shoot and used in furniture.</p>

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

<i>Girardinia diversifolia</i>	ALLO (N)	GIANT NETTLE PLANT	PRODUCTS: FIBRE: Bark used for traditional paper handcrafts.
<i>Hibiscus rosa-chinensis</i>	GHANTIPHUL, ARHUL (M)		PRODUCTS: OTHER: Flowers for ornamental use and religious worship.
<i>Ipomea aquatica</i>	KARMI , BAHEYA, HEHARA (M)	AQUATIC MORNING GLORY, CHINESE WATERSPINACH, KANG KONG, SWAMP CABBAGE, SWAMP MORNING GLORY, WATER BINDWEED, WATER SPINACH, POTATO VINE (E)	PRODUCTS: FOOD: Young leaves and stems eaten as a leafy vegetable, stems popular as achara (native pickles) ingredient. MEDICINE: Good sources of iron, calcium, vitamins B and C. Tops are mildly laxative. The purplish variety used for diabetes because of assumed insulin-like principle it contains. Juice used as emetic. Dried latex is purgative. Poultice of buds used for ringworm. Commonly used as a food plant in Asia. Popular among some recent immigrants as a common potherb from the homeland and has been studied in Florida as a vegetable crop. This is because the plant of its rich iron content. <i>I. aquatica</i> is relatively rich in S-methyl methionine (Vitamin U) and is used traditionally to treat gastric and intestinal disorders. Furthermore it has been found to have insulin-like properties acting as an anti-hyperglycaemic.
<i>Justicia adhatoda</i>	ASURO (N); ASURO, BAKAS (M)	ADULSA/ MALABAR NUT	PRODUCTS: MEDICINE (NEPAL): Decoction of leaf is used in fever, headache and bronchitis; leaf and inflorescence juice is applied in jaundice and rheumatism; root juice is taken to relief cough and bronchitis; MEDICINE (OTHER): Source of vasicine (leaves).
<i>Mimosa pudica</i>	LAJWANTI (N); LA-JAINI (M)	HUMBLE PLANT	PRODUCTS: Endangered in some areas; MEDICINE: it is a high-value medicinal plant – the leaves and roots are used in a wide variety of important traditional medicine applications.
<i>Nelumbo nucifera</i>	KAMAL, PURAIN (M)	SACRED WATER LOTUS (E)	PRODUCTS: FOOD: Root - cooked as a vegetable. It is also a source of starch or arrowroot. Much used and relished in Chinese cooking, the root has a mild flavour and a crisp texture. It can be cooked with other vegetables, soaked in syrup or pickled in vinegar. The root contains about 1.7% protein, 0.1% fat, 9.7% carbohydrate, 1.1% ash. Young leaves - cooked or raw. Used as a vegetable. The leaves can also be used to wrap small parcels of food before cooking them. Stems - cooked. A taste somewhat like beet. They are usually peeled before use. Seed - raw or cooked. A delicate flavour. The seed can be popped like popcorn, ground into a powder and used in making bread or eaten dry. The bitter tasting embryo is often removed. The seed contains about 15.9% protein, 2.8% fat, 70% carbohydrate, 3.9% ash. The roasted seed is a coffee substitute. Petals can be floated in soups or used as a garnish. The stamens are used to flavour tea. MEDICINE: The Sacred water lotus has been used in the Orient as a medicinal herb for well over 1,500 years. All parts of the plant are used, they are astringent, cardiotoxic, febrifuge, hypotensive, resolvent, stomachic, styptic, tonic and vasodilator. The leaf juice is used in the treatment of diarrhoea and is decocted with liquorice (<i>Glycyrrhiza</i> spp) for the treatment of sunstroke. A decoction of the flowers is used in the treatment of premature ejaculation. The flowers are recommended as a cardiac tonic. A decoction of the floral receptacle is used in the treatment of abdominal cramps, bloody discharges etc. The flower stalk is haemostatic. It is used in treating bleeding gastric ulcers, excessive menstruation, post-partum haemorrhage. The stamens are used in treating urinary frequency, premature ejaculation, haemolysis, epistaxis and uterine bleeding. A decoction of the fruit is used in the treatment of agitation, fever, heart complaints etc. The seed contains several medically active constituents, including alkaloids and flavonoids. It is hypotensive, sedative and vasodilator. The seed has been shown to lower cholesterol levels and to relax the smooth muscle of the uterus. It is used in the treatment of poor digestion, enteritis, chronic diarrhoea, spermatorrhoea, leukorrhoea, insomnia, palpitations etc. The plumule and radicle are used to treat thirst in high febrile disease, hypertension, insomnia and restlessness. The root is tonic. The root starch is used in the treatment of diarrhoea, dysentery etc, a paste is applied to ringworm and other skin ailments. It is also taken internally in the treatment of haemorrhages, excessive menstruation and nosebleeds. The roots are harvested in autumn or winter and dried for later use. The root nodes are used in the treatment of nasal bleeding, haemoptysis, haematuria and functional bleeding of the uterus. The plant has a folk history in the treatment of cancer, modern research has isolated certain compounds from the plant that show anticancer activity. The flowers have a sweet fruity perfume.

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

<i>Piper longum</i>	PIPLA-MOL (N); PIPALA (M)	LONG PEPPER (E); PIPALI (T)	PRODUCTS: MEDICINE: The sun-dried, unripe berries and roots are used in traditional medicine.
<i>Piper methysticum</i>	PAN (M)		PRODUCTS: MEDICINE: Include treatment of hypertension, epilepsy Uses include aphrodisiac; potent sacramental drink; potions; induces visions; astral work; travel protection. OTHERS: Used as chewing and making mouth red in South Asian Country.
<i>Randia Spp.</i>	PIRAD		PRODUCTS: POISON: The =the fruit is used as a natural pesticide in parts of Neapl.
<i>Rauwolfia serpentina</i>	SARPAGANDHA (M)	SNAKE ROOT (E); SARPAGANDHA (T)	PRODUCTS: MEDICINE: The pharmacological activity of Rauwolfia is due to the presence of several alkaloids of which reserpine is the most important. Rauwolfia has been employed for centuries for the relief of various central nervous system disorders, both psychic and motor, including anxiety states, excitement, maniacal behaviour associated with psychosis, schizophrenia, insanity, insomnia and epilepsy. Extracts of the roots are valued for the treatment of intestinal disorders, particularly diarrhoea and dysentery. It is also used as an anthelmintic. Keeps snakes away.
<i>Sida rhombifolia</i>	BARUWAR (M)	QUEENSLAND HEMP ARROWLEAF SIDA	PRODUCTS: FOOD: Twigs-chew sticks. MEDICINE: leaves and roots are used in piles, gonorrhoea and in rheumatism, Leaf- cutaneous, subcutaneous parasitic infection; dropsy, swellings, oedema, gout, herb widely distributed in tropics and subtropics used for forage and medicinally as a demulcent and having a fine soft bast stronger than jute; sometimes an aggressive weed. TIMBER: building materials. TANIN/DYE: From wood- dyes, stains, inks, tattoos and mordants. OTHERS: (1) Agri-horticulture: fodder. Social: religion, superstitions, magic. Bark Products: fibre.
<i>Solanum surattense</i> <i>Solanum Xanthocarpum</i>	KANTAKARI, GULBHANTO (M)	YELLOW BERRIED NIGHTSHADE (E)	PRODUCTS: MEDICINE: Root is an expectorant, used in Ayurvedic medicine for cough, asthma and chest pain. Also used for flatulence, sore throat and toothache. It cures asthma, cough, bronchospasm, sore throat, constipation, an effective expectorant and diuretic.
<i>Swertia chirata</i>	CHIRAITO (N)		PRODUCTS: MEDICINE: Dried plant yields famous drugs of multi-purpose use such as tonic, stomachache, febrifuge, asthma and laxative; it is equally used for fever coughs, worms; OTHER: It is also used in liquor industries.
<i>Tinospora cordifolia</i>	GURJU (N); GURICH, GURJ (M)		PRODUCTS: Large climber; MEDICINE: Stem used in traditional medicine.
<i>Vetiveria lawsonii</i> <i>Vetiveria zizanioides</i>	KUSH (M)		PRODUCT: OIL: The oil is reported to be used as a carminative in flatulence, colic and obstinate vomiting. It is regarded as a stimulant, diaphoretic, refrigerant, astringent and antibacterial and when applied externally, it removes excess heat from the body and gives a cooling effect. A decoction of the leaves recommended as a diaphoretic. Anti-dandruff shampoo, anti-wrinkle cream, baby powder, gentle baby shampoo, purifying mud pack, protein shampoo for oily/greasy hair. OTHERS: The roots are aromatic and are used as food flavouring. SOIL STABILIZATION: The plant has deep-rooted and far-ranging roots that make it a valuable plant for controlling soil erosion in cultivated fields. It is often planted along the contour lines for this purpose. ESSENTIAL OIL: The aromatic roots are used in pot-pourri and perfumes. The essential oil from the roots is used in perfumery.
<i>Vitex negundo</i>	SIMALI, SENUWAITOR (N&M)	FIVE-LEAVED CHASTE TREE (E)	PRODUCTS: FOOD: Seeds are reported to be eaten after boiling, for instance in the Philippines; FUEL: Stems are used as firewood; FIBRE: Branches and twigs are used in basket making; ESSENTIAL OIL: Leaves yield an essential oil; POISON: Leaves have insecticidal properties and are laid over stored grain to ward off insects; MEDICINE: All parts of the plant are commonly used in Indian medicine; leaves possess discutient properties and are applied to rheumatic swellings of the joints and in sprains; they are aromatic and are smoked for relief of headache and catarrh and a decoction is employed in smoke baths for the treatment of febrile, catarrhal and rheumatic affections; the juice of the leaves is used for the treatment of foetid discharges; they show anti-inflammatory, antibacterial and anti-fungal activity; roots are used in local medicine for dysentery and are anthelmintic, flowers are astringent and fruits are considered vermifuge; OTHER: Active ingredients that have been isolated from the leaves include Casticin, isoorientin, chrysophenol D, luteolin, p -hydroxybenzoic acid, D-fructose and the alkaloids nishindine and hydrocotylene; leaf

GREEN JOBS PRIMER: TREES, PLANTS and GRASSES of NEPAL

			extract has shown anticancer activity against Ehrlich ascites tumour cells. SERVICE BENEFITS: These are: (1) erosion control (roots are strong and deep and suckers profusely; it can be used as a contour hedge in sandy arid areas for soil retention and moisture conservation; (2) reclamation (shrub can be used for afforestation, especially for reclamation of forestlands which are affected by floods, and in arid areas); (3) shade or shelter; (4) boundary or barrier or support (it is used as a live fence); and, (5) ornamental.
<i>Zingiber officinale</i>	ADUVAA (N); AMADI (M)	GINGER	PRODUCTS: MEDICINE: The rhizome is used as a condiment; in India, and Nepal, ginger is applied as a paste to the temples to relieve headache.

TABLE 3: GRASSES of NEPAL

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BOTANICAL	NAME		PRODUCTS & SERVICES
	NEPALI & MAITHILI	ENGLISH & TRADE	
<i>Arundo donax</i>	NARKAT, THAGAL (N)	BAMBOO REED, DANUBIAN REED, DONAX CANE, GIANT REED, GREAT REED, ITALIAN REED, PROVENCE CANE (E)	PRODUCTS: these are: (1) FODDER: only the young leaves are browsed; CONSTRUCTION: used in construction of walls and roofing; FIBRE: It makes a good quality of paper, and in Italy the plant is used in the manufacture of rayon; RODS/HANDCRAFTS: Stems are also used as measuring rods, walking sticks, fishing poles, musical instruments, baskets and mats; MEDICINE: In Neapl, a paste of the root is applied to foerhead to relieve headaches; rhizome is diuretic and its jucie is taken to stimulate menstrual flow; rhizome or rootstock is used for dropsy; boiled in wine with honey, the root or rhizome has been used for cancer; this or other species of <i>Arundo</i> is also reported to be used for condylomata and indurations of the breast. SERVICE BENEFITS: these are: (1) watershed management/reclamation; (2) support (stems serve as support for vines and similar climbing plants, and for making trellises and the like for climbing cultivated plants); (3) biomass (according to the phytomass files, annual productivity ranges from 10 to 59 MT/ha, because of rather high yields from natural stands, cane has been suggested for biomass for energy – indeed a notable energy candidate, especially when one considers the energy as a byproduct, with leaf protein and potential pharmaceutical as primary products); and, (4) ornamental (variegated and glaucous-leaved varieties)
<i>Pragmites karka</i>	KHARH (N&M)	TALL REED (E&T)	PRODUCTS: FODDER: All livestock; FIBRE: Fibre source; MEDICINE: the rhizomes have medicinal uses. SERVICE BENEFITS: these are: (1) watershed management (the plants aid soil retention – P. karka is a dominant Tarai grass species); and, (2) water purification (reed beds).
<i>Saccharum bengalensis</i>	BARUWA, KHAR (M)		INFORMATION PENDING
<i>Saccharum mumja</i>	KHARAH (M)		INFORMATION PENDING
<i>Saccharum spontaneum</i>	GRASS SPP.		INFORMATION PENDING
<i>Thysanolaena maxima</i>	AMLISO (M)	TIGER/BROOM GRASS	PRODUCTS: HANDCRAFTS: Used for making sweeping brooms. SERVICE BENEFITS: Suitable renewable grass for watershed management.