

AGROFORESTRY

Enhancing Ecological Sustainability

by Rowshan Ali Choudhury

AGROFORESTRY is a sustainable land use system which increases the overall yield of the land by combining food (annual) crops with tree (perennial) crops and livestock on the same unit of land simultaneously, or sequentially using management practices that are compatible with the social and cultural practices of the local people and the economic and ecological conditions of the area. It aims to optimise production per unit area while, at the same time, respecting the principle of sustained yield. The important component of this land use system is the trees which when combined with crops yield certain important environmental benefits such as reduction of pressure on forests, efficient recycling of nutrients, reduction in nutrient leaching and soil erosion, improvement of microclimate, etc.

The two major components of agroforestry, as the term implies, are agriculture and forestry. Agricultural component, by itself, has paid rich dividends in Bangladesh through the high-yielding varieties programme. However, the high yielding crop agriculture has also resulted in a lot

of ecological degradation by way of top soil loss, loss of fertility, increasing water logging due to faulty irrigation and deposition of non-biodegradable agricultural chemicals in soil. Besides, it is highly energy-intensive. Although such a form of agriculture is not ecologically sustainable, the country cannot afford to give up suddenly this model of agricultural production at least in our bread-basket areas and take to less productive and more sustainable agricultural systems because of the imminent need for additional food for our escalating population.

The forestry component is, indeed, in a dismal state and will continue to remain so until and unless the forestry system in the country is totally reorganised with structural changes, heavy infusion of research and development, education and training, and effective participation of people (users/beneficiaries) in forestry. Today, if any sector calls for a national emergency, it is forestry. Over half of the forest land in Bangladesh has been cleared in the past 20

years, to a point where tree cover amounts to less than six per cent of the total area. As a result, Bangladesh has less than 0.02 ha. of forest land per person, one of the lowest such ratios in the world. The decline from 0.035 ha/person in 1968-69 is primarily the result of the dramatic increase in population (from 65 to about 120 million) and the decrease in forest area.

About 78 per cent of the fuelwood consumed comes from homestead forests which accounts for only 15 per cent of the forested area. Despite the importance of these homestead forests as a source of income and "savings" for rural households, they are being overcut, and depleted, so that families now spend over 30 hours per week scavenging for leaves and other biomass fuels needed for cooking. One third of the cowdung which would otherwise be used to maintain soil fertility is now burned as household fuel.

There are 68,000 villages

harbouring over 80 per cent of the people in the country, nearly over 40 per cent are below the poverty line who face subsistence conditions all the time. The village systems harbour a society with an economy that is entirely based on biomass production and utilisation. Under the circumstances, the condition of the rural populace can be ameliorated through diversification and intensification of biomass production at the village level. Biomass has to be produced on a sustainable basis for food, fuel, fodder, fertiliser, fibre, medicare, aquaculture, animal husbandry and small-scale village industry.

One important method to meet the aforesaid challenges is through agroforestry, which is a new name for an ancient land use practice wherein land is used for agriculture, forestry and animal husbandry: the three basic needs at the subsistence level of farming. These three are interdependent and go together because at the grassroots

level, they are inseparably being land-based. These traditional systems have been evolved by trial and error by the villagers, who may be illiterate but are not uneducated. It is not a question of planting a tree at a location and for an end-use, but of planting the tree at the location and for the end-use. Such decisions can only be taken on location-specific basis by a forester or an agricultural expert in consultation with the beneficiaries i.e. the villagers.

Agroforestry systems are ecologically compatible and sustainable and it responds to population pressure, rather than creates pressure on forests; it serves multipurpose and meets both food and non-food needs; conserves environment and needs no unfamiliar technology. Agroforestry system offers advantages to subsistence farmers by way of water use and soil fertility. It makes farming practices sustainable on account of good management of soil, water and nutrients of soil.

Agroforestry systems with their element of inter-cropping

are in essence ecological models similar to the natural systems and have, therefore, an element of sustainability associated with them. These systems have lasting productions because of the fact that they help in recycling of organic residues, biological nitrogen fixation, and mineral fertilisation. This happens all the time in an inter-cropping system involving nitrogen-fixing trees. Their litter fall improves level of nitrogen and organic matter in soil and consequently its overall fertility. Essentially, the element of sustainability that agroforestry affords, stems from the fact that the system is based on ecological considerations.

Soils have so far been tailored to the needs of the high yielding varieties, but time has come to begin to tailor the varieties to the particular habitats and agroforestry systems. This is possible, and is only a question of changing the emphasis. The future agricultural revolution for subsistence farmers will be in the direction of its being more ecologically-oriented and sustainable by making it holistic and combining appropriately agriculture, forestry and animal husbandry. — BCAS Feature

Astronomers Obtain Definitive Images of Brown Dwarf

by Jim Fuller

US astronomers say they have obtained the first definitive images of a "brown dwarf," a mysterious celestial object more massive than a planet but too small and cool to shine like a star.

Astronomers from the California Institute of Technology in Pasadena, California, and the Johns Hopkins University in Baltimore, Maryland, told reporters November 29 that the candidate brown dwarf, called Gliese 229B, is located 18 light years from Earth in the constellation Lepus.

The researchers said that the brown dwarf, discovered with the 152-centimeter reflecting telescope at Palomar Observatory in southern California, is a small companion to the star Gliese 229. The brown dwarf is at least 250,000 times dimmer than the sun, making it the faintest object ever seen orbiting another star.

The initial image of Gliese 229B was backed up by infrared spectroscopic observations made with the 508-centimeter Hale telescope at Palomar and a confirmatory image from the orbiting Hubble Space Telescope.

Brown dwarfs, which are dim, red objects, shine in the same way that gas giant planets like Jupiter radiate energy, that is, through gravitational contraction.

Researchers said that the discovery is an important first step in the search for planetary systems beyond the solar system because it will help astronomers distinguish between massive Jupiter-like planets and brown dwarfs orbiting around other stars.

And for astronomers hunting for brown dwarfs, the detection of methane could mean an end to having to limit their searches to companion stars or dim members of star clusters, and instead they can simply screen dim objects for the gas's signature.

Finding brown dwarfs aids astronomers in the search for the so-called missing mass in the universe. The objects visible in the universe do not account for all the mass that must exist there, based on the observed motion of the stars and galaxies. It has been suggested that a good portion of the missing mass exists in the form of brown dwarfs. But, until now, none had been positively identified.

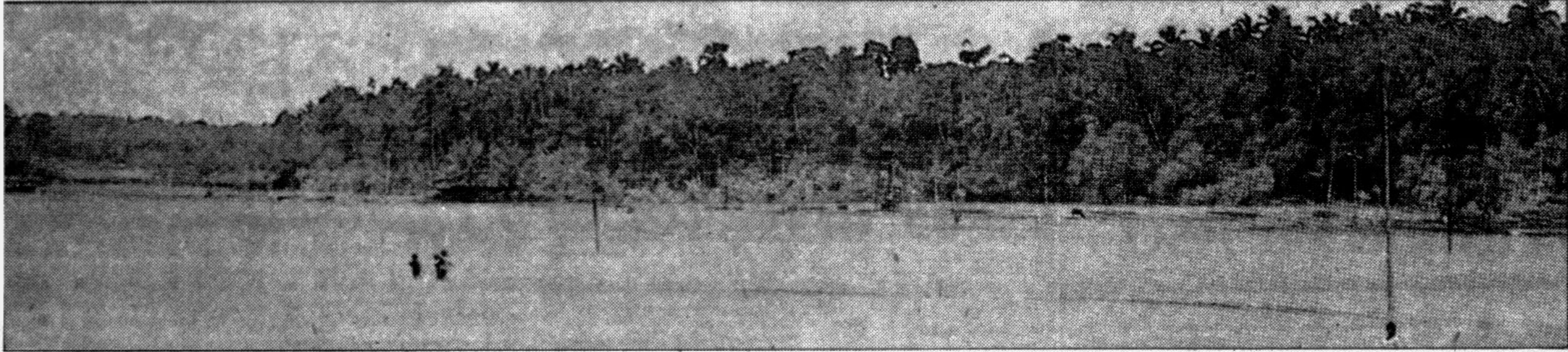
To discover Gliese 229B, the researchers used the Mount Palomar telescope with a stellar coronagraph to block out the bright main star, creating an artificial "eclipse" that allowed them to detect any cool, dim companion stars.

A group of researchers from the University of California and San Francisco State University claimed to have detected the first confirmed brown dwarf earlier this year. The candidate brown dwarf, known as PPL15, was found in the Pleiades cluster of stars, 400 light years away from Earth.

The astronomers identified the brown dwarf by detecting the presence of lithium through the use of the world's largest telescope, the 10-meter Keck instrument on Mauna Kea in Hawaii. Lithium, a primordial element present in the formation of celestial objects, is eventually destroyed by the nuclear fires of stars, but continues to exist in brown dwarfs because they are not massive enough to sustain fusion reactions.

While scientists called the finding "tremendously exciting," they said there is the possibility that PPL15 is actually a small, cool star, or a stellar object that burned briefly, but then died out before it could destroy all of its lithium.

Jim Fuller in USIA science writer



HUMAN RIGHTS

Looking at Our Own Perspectation

by Muhammad Quamrul Islam

EVERY year Human Rights Day is observed on 10th December throughout the world. This year too it was duly observed yesterday. It reminds us of the day of adoption of Universal Declaration of Human Rights by the General Assembly of United Nations in 1948. 'Human Rights Commission' was formed to see 'conditions' in different countries of the world.

The Commission gives report annually on the global status of human rights to the Economic and Social Council of United Nations. During the session of the General Assembly, its Social, Humanitarian and Cultural Committee discusses elaborately the situation of Human Rights countrywise. At that committee, it is learnt, the issue of Human Rights of tribal people of Chittagong Hill Tracts was raised by some European country, notably Norway, in 1991. It goes without saying that the world community is very much anxious to see the enforcement of human rights everywhere and anywhere. In this age of speedy information flow, nothing can be kept secret for long.

Both at Government and NGO levels, Bangladesh is connected with Human Rights activities around the world. How far our participation in 'Earth Summit', 1992 in Rio de Janeiro, 'Population Conference', 1994 in Cairo; 'World Summit on Social Development', in Copenhagen and Beijing Women's Conference this year, has been of use in the domestic front? Replies to such questions, as are vexing the mind of the common people, are yet to come from the concerned quarters in concrete terms.

It is learnt that the United Nations High Commissioner for Human Rights Mr Jose Ayala-Lasso will visit Bangladesh shortly to see the conditions prevailing here.

Bangladesh NGOs have apparent advantage of attracting funds from foreign donors, due to abject poverty of the 110 million people. More than one hundred organizations made arrangements to celebrate Human Rights Day, through colourful processions and seminars etc. this year, Bangladesh Human Rights Co-ordination Council, the apex body of concerned NGOs, arranged a seminar, where distinguished persons were invited. There were suggestions to exempt 10th December from the opposition programme. However, we have no report to know how much progress has been achieved in enforcing Human Rights up to 10th December '95. But, what we see in the daily newspapers is that there are frequent violations of Human Rights; and it is known to all.

It is worth mentioning that fundamental rights are embodied in part III of the Constitution of the People's Republic of Bangladesh, which was passed by the constituent Assembly of Bangladesh on 4th November, 1972, and authenticated by the Speaker on 14th December, 1972. It contains 22 Articles from Article 26 to Article 47. Since then, there have been amendments in this part of the Constitution also under the CMLA/President Zia and CMLA/President Ershad. For

example -

(a) The original Article 30 provides for 'Abolition of titles, honours and decorations'. It was substituted by Act XXX of 1988 and provided 'prohibition of foreign title, etc.'

(b) Proviso to article 38 was omitted by the Second Proclamation Order No III of 1976. It was: 'provided that no person shall have the right to form, or be a member or otherwise take part in the activities of, any communal or other association or union which in the name or on the basis of any religion as for its object, or pursues, a political purpose.'

It seems that no influential quarters have moved to restore the original article. Will the Bangladeshi NGOs make a review of the constitutional provisions and enlighten the people about their fundamental rights? Surely, they are concerned about the current political stalemate from March, 1994; but their efforts did not end the deadlock. Now, the country is up with the election for the Sixth Parliament. The election is scheduled to be held on 18th January, 1996. Consequent upon dissolution of parliament, there is a constitutional obligation to hold election within 90 days i.e. by 21st February, 1996. If there is agreement between the 'opposition' and the 'opposition', Election Commission may schedule the dates, to facilitate participation of all political parties.

Nobody can deny that free exercise of franchise is the basic right of a citizen. To ensure it, technical and administrative support is necessary. Hardly any substantial effort was made to improve the electoral machinery, accelerate preparation of voters' list and ID card, until Justice A K M Sadeque took the oath of the office of Chief Election Commissioner on 27th April 1995. It is not understandable why democracy and human rights organizations did not raise their voice on these issues. Instead, they seem to be more interested to observe election to ensure 'fairness'. What they will observe if there is no proper electoral rolls, delimitation of constituencies and civic education of the voters, etc? As local NGOs, they could speak and work on these issues, under the guidance of Election Commission. And, this could be taken up in right earnest by Election Commission, court and NGOs, when opposition alleged vote rigging in Magura by-election, held on 20th March 1994. Alas, concerned authorities seemed to be callous to the criticisms till April, 1995! And we are in the grip of opposition agitations.

It has come to the press that American Ambassador D Meril was making serious efforts to effect an understanding between 'opposition' and 'opposition', to uphold democracy. According to an American law in force from

1961, it is the duty of USA State Department to report on the Human Rights positions, improving or declining, in different countries of the world in every calendar year to the American Congress. The report on 1995 will be submitted to the Congress by next February, 1996. Bangladesh's position on matters of human rights will be incorporated in that report, based on the draft furnished to Washington by American Embassy in Dhaka. Can't our government and NGOs improve the Human Rights situation, instead of

seeing a dismal picture in others' report? In the non-government sector, London based Amnesty International and US based Human Rights Watch are looking at our Human Rights situation.

It is not law only that can guarantee Human Rights. Enforcement of the same needs good heart and sense of duty to others. It is correctly said that change of heart, particularly among the police, is necessary so that people can enjoy rights. Let the Government agencies find a way out; the instances of some near-by countries may be emulated.

The writer is an economist and Advocate, Bangladesh Supreme Court.

'Prince of Death' Prepares for Another Assault

by A J Singh

Luck may be running out for the world's number one opium supplier, as military forces and business rivals try to topple him. But drug production is likely to outlive him.

The Army of Myanmar (formerly Burma) is hoping to deliver a final crushing blow to Khun Sa, the drug warlord who has been described as the world's most wanted man.

Military commanders have vowed to launch an offensive into the heart of the drug baron's stronghold in the Golden Triangle during November when the monsoons give way to the dry season.

They have tried many times before: for years rebel wars against the central government have kept the army at bay. But now the ruling junta, the State Law and Order Restoration Council (SLOC) — eager to extend its control over the whole country — has signed a ceasefire agreement with guerrillas from the Karen ethnic group operating from land bordering Khun Sa's fiefdom.

As a result of the deal, Myanmar's army has been able to build up bases close to Mong Yawn, near the Thai border, where the drug lord resides.

Khun Sa, 62, who has survived many attempts on his life over the past 30 years, also faces other problems. Jealous neighbours are greedily eyeing his empire, while a large chunk of his 8,000-strong fighting force split away recently under a rival commander.

And his efforts to strike a peace deal with Washington, which wants to prosecute him for drug-running, have come to naught.

Khun Sa is thought to control 60 to 80 per cent of the illicit poppy harvest in the Golden Triangle — a rugged 100,000 square kilometre area on the borders of Myanmar, Thailand and Laos that produces half the world's opium. For more than three decades, this has been processed into heroin sold for many billions of dollars on the streets of cities around the world.

Khun Sa and his well-equipped army operate from a headquarters in Myanmar's Shan State. They are re-

ported to have surface-to-air missiles, which deter attacks by military aircraft.

Self-styled revolutionary Khun Sa is regarded by many of the local Shan people as a saviour who will lead them to freedom from Myanmar. His name means "Prince Prosperous" in the native language, and his protection gives subsistence farmers a chance to make a good living growing opium poppies.

Others see him as a killer and a crook. He has been indicted in the United States on 10 drug-trafficking charges. Former US Attorney General Richard Thorn-

burgh said of him: "As the largest dope-pusher in the Golden Triangle, the title 'Prince of Death' might be more apt."

Flamboyant and pleasure-loving in his private life, Khun Sa maintains tough discipline among his forces, and anyone found using drugs is executed. He does not believe he is committing any crime. "You grow wheat to eat. We grow opium so we can buy clothes and medicines for our people," he was once quoted as saying.

Each year, he offers his entire crop to Washington in return for \$500 million in

"foreign aid" spread over six years as part of his own drug-eradication programme. He has offered to turn his region into a "narcotics-free zone" — provided the United Nations agrees to take control of it.

But his overtures have been ignored. Officials in the West are loath to be seen dealing with a man they regard as a criminal.

Ironically, Khun Sa was once a young soldier in the US-backed anti-communist Kuomintang army, remnants of which fled from China to Burma in 1950 after being defeated by the forces of Mao Zedong. Khun Sa later set up his own private force and moved into the lucrative drug trade. Some of his old Kuomintang colleagues joined him and are still with him.

Born locally of a Shan mother and Chinese father, he has been accepted as a Shan nationalist, and the first of his several wives was related to Shan royalty.

She died recently — diminishing his credentials to some extent — and SLOC agents have been quick to seize on this in a campaign to sow seeds of discontent in the warlord's army of largely Shan soldiers and mainly Chinese field commanders.

The agents have succeeded in turning at least one military leader, Major Karnyard, against Khun Sa. The major now commands a rival 1,000-strong Shan militia.

SLOC, which has recently strengthened its army with fresh supplies of weapons and ammunition from China, has also signed a ceasefire with the Wa clan warriors — northern neighbours of Khun Sa — and turned them against him. For some time, the Wa have been eyeing Khun Sa's opium farms, heroin plants and caravan routes into Thailand, China, Laos and India.

Myanmar's junta seems determined to seize control of the warlord's territory.

— GEMINI NEWS

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