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SCIENCE WORLD

(a collection of development-oriented science news briefs that may be used as a column, or as separate items)

BRINGING OUT THE BEST IN THE ASIAN WATER BUFFALO (approx. 200 words)

Water buffalo bulls in the Philippines aren't what they used to be. So, scientists are trying a little international matchmaking with Thai and Indian water buffalo to improve the breed.

"There are very few carabulls (their local name) today and the few available for breeding are of the poorest types," laments Dr. Moises de Guzman, a water buffalo expert at the Philippine Council for Agriculture and Resources Research.

The Asian water buffalo has been used on farms for 4000 years in India, its ancestral home. Its many uses led to its spread across Asia where 90 percent of the world's 150 million buffaloes are found.

The buffalo is an efficient beast of burden, capable of pulling more than its own weight; it does not require expensive fuel and oil, or spare parts; does not rust; and will work for 20 years.

In addition, 50 to 60 percent of the meat consumed in the Philippines comes from the buffalo. It also provides 300 to 800 kilos a year of milk that is richer than ordinary cow's milk.

Nothing is wasted on the buffalo. Its manure is used as fertilizer, building material and even insect repellant. Its hide is tanned for local leather products, and its horns are turned into tools, ornaments and toys. Even the hairs in the ears are used -- for brushes.

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But while the Philippine water buffalo is the best draft animal in Asia, scientists hope to improve its meat and milk production by crossbreeding with the Thai and Indian strains.

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A NATURAL INSECTICIDE (approx. 190 words)

From chrysanthemums came pyrethrin -- the active ingredient in many insecticides. From the bark of the cinchona tree in the Amazon, scientists extracted quinine, the antimalarial drug.

Today, researchers are attempting to isolate the active compounds in two African weeds that are traditionally used to protect cowpeas from attack by bruchid beetles.

Farmers in Upper Volta and Sierra Leone mix two local weeds -- Hyptis spicigera ("Black Sesame") and Cassia nigricans ("Fly's Talo") -- with stored cowpeas to reduce damage by beetles. Cowpeas are an important source of protein in West Africa, but their production is often neglected due to the high risk of attack by bruchid beetles, which cause losses of up to 40 percent.

Preliminary studies have shown that the two weeds are capable of inhibiting reproduction and larval metabolism in the beetles, thus reducing the losses inflicted.

With support from the International Development Research Centre, biologists at Carleton University in Ottawa, Canada, will conduct a study of the valuable weeds to identify the active compounds that act as natural pesticides, evaluate their performance, and determine their safety.

If the results are positive, the way will be open to increasing the cultivation of cowpeas in West Africa and providing farmers with greater protection from one of their traditional enemies.

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NEW FOOD FROM ALGA (approx. 170 words)

New strains of the alga, spirulina, are providing a cheap source of protein-rich animal feed thanks to researchers in Lucknow, India.

Spirulina is a multi-cellular, filamentous blue-green alga that is found free-floating in brackish waters around the world. In the past, the Aztecs in South America scooped up the alga, dried it and moulded it into loaves. Today, the same process goes on in Africa and Asia where, in its native habitat, spirulina contains as much as 40 to 50 percent protein.

Knowing that the protein content can be increased to 70 percent when the alga is grown in water enriched with mineral salts, researchers in India attempted to grow it in sewage ponds. When initial attempts failed, they developed seven new varieties that flourished with the addition of sodium nitrate and bicarbonate to the sewage water.

Raw sewage is pumped into ponds directly from Lucknow's main sewer, and fortified with one percent sodium bicarbonate. The liquid is agitated vigorously and 100 to 150 litres of the spirulina culture is added. In 15 to 20 days a luxuriant algal bloom has developed and is ready for harvesting.

The harvested algal growth is sun-dried into flakes for animal feed, and the remaining water is also put to good use for raising fish and for irrigation.

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