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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)

COMPUTERS TAKE TO THE FIELDS

(approx. ~~230~~ words)

A micro-computer no bigger than a portable sewing machine, is being tested in farmers' fields in Kenya. The computer package was designed to help researchers get the most out of agroforestry projects.

Agroforestry is a modern approach to a traditional farming method -- mixing trees, crops and livestock to make maximum use of the land. It has become increasingly popular in recent years as scientists and planners in developing regions realized that single-crop systems are not always suited to the needs of small farmers. Some years ago the International Council for Research in Agroforestry (ICRAF) was founded in Nairobi.

One of the problems for the Council's researchers has been the difficulty of accurately assessing the potential of agroforestry systems because of the large number of variables involved, and the long life of tree crops. Now the Council is collaborating with researchers from the Australian National University to give the MULBUD (multi-crop, multi-period budgeting) computer package its first field test. The project is also partly funded by Canada's International Development Research Centre, which helped establish ICRAF. The system's designer, Dr Dan Etherington, began working on it in Sri Lanka several years ago. He says it can be used to formulate cropping plans and then very quickly see what happens when you change variables, such as costs or prices. And he adds you don't have to be a computer expert to do it.

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ALL FIRED UP ABOUT HUSKS (approx.200 words)

For every ton of rice that is milled, 400 pounds of husks are produced. Chinese engineers have developed a way to convert this abundant by-product into gas that can be used as a substitute for diesel oil.

The gasifier was created by the power generating equipment design institute in Jiangsu province. Its inventors claim it is simple to operate, and needs to be checked only once a week during operation, and overhauled yearly during the off-season.

A pilot plant, the only one so far built in China, uses up to seven tons of husks per day, and runs a 140 kilowatt generator to provide power for a local factory. The cost of the electricity produced is 60 percent lower than of that generated by diesel, it is claimed. And the operation disposes of a problematic waste product in a virtually pollution free manner, unlike the usual technique of burning the husks.

Originally designed as an aid project, the designs were sent to Mali in West Africa, where two plants powered by rice husks are now reported to be operating successfully, according to China Features news service.

SPACE AGE REFRIGERATORS (approx.200 words)

Solar cells that were developed for use on American spacecraft are being used on experimental solar powered refrigerators to preserve vaccines in rural clinics in India and several African nations.

Each of the 20 experimental refrigerator/freezers has a 75 litre capacity, and is powered by a solar panel capable of producing 325 watts of electrical power. Thanks to excellent insulation, the units use far less power than a conventional refrigerator, even in temperatures up to 110°F.

The development of effective photovoltaic-powered refrigerators could be a major contribution to expanded immunization programmes in developing countries

according to the World Health Organization. To remain effective, most vaccines must be kept at a temperature between 39°F and 46°F, while minus 4°F is needed for long-term storage of polio and measles vaccines.

The project is jointly sponsored by several US government departments, including the space agency, NASA, and the AID programme. The photovoltaic solar power units were developed by NASA's Lewis Research Laboratory for use on space missions.

NEW WHEELS FOR OLD (approx.180 words)

Take an old automobile tire, two wooden discs, a broomstick and a short piece of metal pipe, and what have you got? A strong, serviceable wheel for a hand barrow or cart, that's what.

The wheel was designed by technicians at the Institute of Basic Sciences of Paraguay's National University (Instituto de Ciencias Basicas, Universidad Nacional de Asuncion, Paraguay). It requires no inner tube for the tire, as the pressure of the two wooden discs on each side of the tire is sufficient to keep the wheel rolling smoothly while supporting loads up to 80 kilos. The discs (those for the prototype were cut out of an old packing crate) are held in place by four dowels cut from the broomstick, with nails used as cotter pins. The axle is a piece of galvanized water pipe.

The wheel's designers claim it is not only much cheaper than a metal wheel, but it actually works better -- and it helps to clean up the environment by removing old tires littering the countryside.

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