

Japan blocks patent for hybrid seed

Bob Johnstone, Tokyo

JAPAN'S ministry of agriculture wants to stop a Japanese company from patenting a hybrid seed. It fears that such a patent—the first of its kind in Japan—will set a precedent and open the door to a number of foreign patents that are pending on hybrid rice seeds. If these are granted, Japan would have to rely on foreign companies which are well ahead in the research and development of hybrid rice.

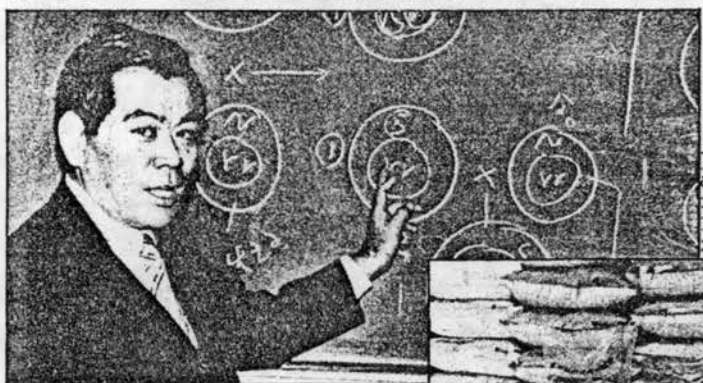
Like other hybrids, hybridised rice can be grown successfully only in its first year. Hybrids are often infertile, and if they do produce seed, the crop grown from this seed is inferior to the parental strain and so farmers have to go back for fresh supplies of hybrid seeds. If the patents for such hybrids are in the hands of foreign companies, Japanese farmers will have to rely on them for their yearly supplies of rice seed to produce high-yield rice.

The patent that the agriculture ministry is trying to block is for a hybrid mugwort, a herbaceous plant. The company, Nippon Shinyaku, first made the application seven years ago. The hybrid mugwort produces a chemical, santonin, that is used to treat roundworm.

According to Japan's patent office, some 50 or 60 more applications have been filed for patents on hybrid seeds. The ministry of agriculture is arguing that plant hybrids cannot be patented because they are merely combinations of existing genes. The ministry would prefer a system whereby companies take out plant breeders' rights—similar to that in Britain, which does not give patents on animals or plants. The difference between a right and a patent is that the right's monopoly is not as far reaching as that of a patent.

The ministry is particularly anxious to stop an American firm called Ring Around from patenting a high-yielding hybrid rice. Ironically, a Japanese professor, Choyo Shinjo of Ryukyu University in Okinawa, did the basic research on these hybrids 20 years ago.

Shinjo succeeded in hybridising rice in the early 1960s while doing postgraduate work at Kyushu University. Rice proved more difficult to hybridise than other crops such as corn or cotton. The problem is that male and female parts of the rice flower are very close to each other, and so self-



Professor Choya Shinjo and his hybrid rice—the germ of a good idea

pollination occurs within half an hour of the flower opening.

The key to hybridisation was to identify and transmit a gene which would cause male sterility. Previous researchers had hunted unsuccessfully in the cell nucleus for this gene. Shinjo deduced, correctly, that the gene had to be in the cytoplasm.

Having succeeded in hybridisation, he announced his findings at a conference in 1965. Four years later, he published a paper in an English-language genetics magazine. He also sent samples of his seeds to Japan's ministry of agriculture and to several universities but failed to spark any interest—at that time Japan's rice farmers were producing more than enough rice.

Chinese scientists, however, received his paper enthusiastically. And when in 1972 the Chinese normalised relationships with Japan, Shinjo was one of the people they wanted to meet. The Japanese government was happy to arrange a meeting, and Shinjo gave the Chinese six types of hybrid rice, 180 seeds in all, when they came to Tokyo. Two years later, in 1974, he was invited to Peking to give a series of lectures.

By the time the Chinese normalised relationships with the US some six years later, they had been able to double crop yields with the help of Shinjo's seeds. And, looking for a suitable channel through which to obtain American technology, the

Chinese turned to an American oil firm, Occidental Oil, which could supply technology for oil exploration. In return for this, the Chinese in March 1980, gave 1.4 kilograms of hybrid rice seeds to one of Occidental Oil's subsidiaries—Ring Around.

Since Shinjo announced his findings, the supply of domestic rice has changed dramatically.

Four successive years of poor harvests have left stocks of rice abnormally low.

In February 1982, representatives of Ring Around visited Japan to sound out the potential market for hybrid rice, which horrified the ministry of agriculture.

Stocks of rice have been so low that from 1 March this year, the ministry cut supplies of rice seed to dealers by 5 per cent. Shipments of old rice to the Third World have been curtailed. If demand outstrips supply, then the ministry may have to

break into the emergency stock left over from 1978, when there was last a surplus.

In Japan, maintaining self-sufficiency in rice is regarded as a national issue. To prevent the market for rice seed falling into commercial hands, the ministry of agriculture late last year set up a programme to develop its own hybrids.

Shinjo is unhappy about the possibility of a private company monopolising the fruits of his research but he does not want to patent the hybrid. He says, however, that Japan should be able to develop its own hybrids in the time it takes a company to develop suitable hybrids and get them patented.

Shinjo is the adviser to the ministry's programme, which has started at Tsukuba Science City, near Tokyo, and seven other places.

Shinjo's personal collection of types of hybrid seeds now numbers around 70. To be on the safe side, the ministry of agriculture has asked him not to give any of them away for at least five years. Having been caught napping once, it is keen not to let it happen again. □

Animals die in their thousands crossing Sudanese canal

TENS of thousands of animals have died attempting to cross the half-completed Jonglei Canal in southern Sudan, according to the Sudanese People's Liberation Army (SPLA) whose guerrilla attacks on workers on the project have forced a halt to construction.

The canal is a hugely ambitious project. When completed it will link two arms of the White Nile and save 4000 cubic metres of water that is now lost through evaporation as the tributaries pass through the Sudd swamps. Sudan and Egypt will

share the extra yield of water.

But now guerrilla attacks have forced the withdrawal of workers from the canal, with 120 kilometres of its 400 km length still to be cut. The SPLA claims that a whole series of undertakings given by the Sudanese government that would protect the people and wildlife of the area have not been honoured.

The problem is that the canal will cut off both humans and animals from traditional grazing and watering sites west of the canal during the dry season.

The government promised to provide water east of the canal, to build bridges at regular intervals and to invest in farming projects in the area. But, says the SPLA, none of this has happened. Now water shortages have become acute and tens of thousands of animals have died climbing the banks of the canal and falling to their deaths in an attempt to cross to their normal watering areas. Other animals which cannot climb the 12-metre-high embankment are dying of thirst on the east side. □