

in the Hague to approve the two university budgets — for teaching and for research — now proposed. Further support for research projects is provided by the Netherlands research council (ZWO) whose financial importance in university affairs has been increasing in recent years.

However, ZWO will have to do without a science minister — a post established only eight years ago. The previous minister, Antonius van Trier, was without portfolio, but he badgered his ministerial colleagues into giving him control of substantial parts of their budgets. The new government has removed this irritation, the support of science reverting to the new minister of education, Josephus van Kemenade. And as Kemenade's major political interest is in establishing comprehensive education for Dutch schoolchildren, scientists in the Netherlands are worried.

Agricultural research

Changes mooted

Washington

"Reach out and touch somebody", the slogan being used in the United States to promote the use of long-distance telephone calls, has also become a newly-prominent policy theme for the thirteen agricultural research institutions which constitute the Consultative Group for International Agricultural Research (CGIAR).

The group is an informal network organized under the auspices of the World Bank through which developed countries, multilateral agencies and private foundations channel their support for research at the institutions into developing countries' agricultural needs.

At their annual meeting in Washington last week, both donors and research administrators endorsed current efforts by the institutions to increase linkages with outside research workers in two directions. One is to strengthen collaborative research projects with universities and other institutions in developed countries, in order to make the best use of present scientific knowledge. The second direction is to improve links with national agricultural research programmes in the developing countries.

It was the tenth annual meeting of the group, which has grown from four to thirteen members since it was founded in 1971. Since then, the total amount of funds channelled through the CGIAR system has risen from \$20 million to \$135 million.

In the past few years, however, as the rate of inflation has crept upwards, the growth of the institutes in real terms has begun to slacken off. Last year, for the first time, several institutes had to trim their programmes when it was realized that with various industrialized countries — and private institutions — cutting back on their aid programmes, voluntary contributions would not meet the targets.

Sowing more seeds

Mexico City

One of the biggest and best known of the research centres funded through the Consultative Group on International Agricultural Research (CGIAR) is the International Maize and Wheat Improvement Center (CIMMYT, after its Spanish initials), whose headquarters nestle in foothills on the edge of a high, fertile plain thirty miles north of Mexico City.

Based on a programme initially set up by the Mexican government and the Rockefeller Foundation in the early 1940s, CIMMYT was formally established as an international centre in 1966, and was one of the four founding institutes when CGIAR was created in 1971. Its current budget makes the largest financially of the 13 centres which now constitute the group.

In terms of its initial mission — the use of scientific breeding techniques to increase the yield of wheat and maize crops — CIMMYT has been spectacularly successful. It is known internationally as the home of the Green Revolution, due to the high-yielding varieties of dwarf wheat for which its most famous scientist, Dr Norman Borlaug, was awarded the Nobel prize. Among its more recent success stories is Bangladesh, which has increased its wheat yield from 114,000 tons in 1975 to 1.2 million tons in the current year.

But times are changing at CIMMYT. Although the mainstream research continues along conventional lines, CIMMYT is increasing its efforts in "farm systems research", addressing questions such as crop management and agricultural economics. Greater emphasis is being placed on the development and dissemination of improved research procedures to national research programmes, as well as on the support of indigenous training programmes.

This year the situation looks as if it will be even tighter. Pledges for donations made at last week's meetings totalled \$155 million, an increase of about 15 per cent over the current year. However, according to Mr Warren C. Baum, the present high inflation rates plus fluctuations in the exchange rates covering the currencies in which donations are made mean that real growth will be small.

The combination of financial stringency and structural changes in the international research environment stimulating various shifts in strategy. One has been to increase the emphasis on basic research either at the institutions themselves or through links with the international scientific community.

Complementary to this will be the efforts

One of the more controversial issues the centre faces is the growing demand on both sides of the Atlantic for greater patent protection for plant breeders. Dr Borlaug, acting director of CIMMYT's wheat programme, has criticized the new legislative initiatives, arguing that they could make developing countries more vulnerable to exploitation by unscrupulous outside companies. But others at CIMMYT seem prepared to accept, if reluctantly that tighter patent rights could accelerate the dissemination of new agricultural technologies.

The changing economic dynamics of food production are producing their own tensions within CIMMYT. Until now the centre has been distributing its germplasm with no charge and virtually on request. But after recent incidents, the rules are being tightened up.

Some recent scientific developments are also being watched warily. For example, there is scepticism about the size of the potential contribution of recombinant DNA technology to the direct improvement of crop yields, and CIMMYT has no molecular biologists on its staff. "We think that Wall Street is being widely optimistic", says CIMMYT's director general, Dr Robert D. Havener, referring to the heavy investor demand for shares in the new genetic companies, and quoting Dr Borlaug's view that "it will be 50 years before there is any significant impact on complex plants coming out of genetic engineering".

At the same time, however, CIMMYT is strengthening its links with research scientists in developed countries so that they can exploit any major breakthrough. Meanwhile Dr Havener's principal concern is to ensure that political and economic pressures do not upset the arrangement under which centres such as CIMMYT operate with minimum outside interference and the maximum amount of flexibility.

David Dickson

to assist national research programmes. In the past, tensions have arisen when donors faced difficult choices over whether to allocate funds to a particular country's research effort or to the international institutions. At a meeting held earlier this year in Nairobi, Kenya, for example, representatives from several African countries expressed strongly their view that CGIAR as a group should be doing more to assist indigenous efforts in their region, a message which is now being acted upon.

Keen to maintain the minimum of bureaucracy, last week's meeting reacted equivocally to a suggestion from the review committee that a new committee be established to coordinate budget request and allocations, and the issue has been deferred.

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