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for the Dutch debate "Biotechnology and Food"

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1. Introduction

In many countries population pressure, natural disasters, and changing climate conditions demand an urgent solution to the problem of food security. Genetic engineering claims to offer promising solutions, but is this a technology that can be applied with trust – and if so, under what conditions? Within the framework of the Dutch government debate on the subject, and under the auspices of the Terlouw Commission, we set up an international debate in which we invited an international audience to share their ideas and insights with us around the issue of biotechnology. We were especially interested to listen to "Southern Voices". For that reason, the readership of the "Biotechnology and Development Monitor" was approached to participate. The reader ship consists primarily of policy makers in the public sector; scientists; industrial, farmers' and consumers' organizations; environmental and other non-governmental organizations; and university students in developing and industrialized countries. Other possible participants were approached through a variety of networks.

The aim of the first round of this online debate was to let the participants identify the issues they wished to discuss and form the agenda for the second round in which the in-depth discussion would take place. In the first round, in order to kick off the discussion a framework of four contentious issues was decided upon. These were: *Food safety vs. food security, GMOs vs. organic, Private vs. public* and *Local vs. Global.* The moderators put together a (so called) topic map from this first round. The methodology chosen and the results of this round were worked into a report documented in Appendix 2. Some 421 participants registered for this first round that took place over a period of two days (31 October to 2 November 2001).

A number of topics re-occurred across the different discussion rooms. Four of them formed the basis for the in-depth discussion aimed at in round two. They were chosen for

- their relevance to a worldwide debate on biotechnology and food,
- different opinions on the topic between participants from the North and the South,
- possible implications for Dutch policies.

Under the titles *Poor patents, Options in food production, Rights and choices* and *Capacity building*, the second round took place between 6 and 14 November 2001. To stimulate the debate daily contributions were summarized and every day a new question was posted to all participants as a basis for that day's discussion. The number of participants rose constantly through-out the second round and reached a total of 529. The biggest groups of participants came from Europe (208) and from Asia (91), with participants from Africa (69), North and South America (77 and 55) on similar levels. The most active groups of participants came from India and the Netherlands. Interestingly enough, participants from Africa, North and South America contributed a similar number of contributions.

Participants intensively discussed biotechnology and especially genetic engineering in the context of international relations and regulations. They looked at the socioeconomic impact, and took past experience with agricultural research and development into account. A recurring theme in the discussion was that participants expressed that their ability to make their own choices is being limited in the following ways:

- access to technology (be it through lack of capacity or through IPR issues);
- farming practises that cannot coexist;
- decreasing access to seed and other agricultural resources;
- lack of financial and political power.

In various contexts throughout the discussion, participants articulated that genetic engineering in relation to food production has to be looked at from both the perspective from the natural sciences (for example environmental impact, food safety, risk assessment) as well as the social sciences (it is also deeply interwoven with the political issues of accountability, democracy, choice and empowerment).

The participants came forward with interesting proposals for moving he debate forward. The most intriguing and also most promising ideas probably emerged in the discussion about patents. Proposals were made of how to ensure both access to genetic resources and technologies, while still rewarding knowledge and research. The key proposals are outlined in Chapter 3. The four discussion rooms are summarized in Chapter 4.

It was interesting to note in the discussion that the opinions of the participants are not based on any clear-cut divide between "northern and southern perspectives". Opinions were invariably determined both by the participant's institutional setting and occupation as well as by their regional background. In most cases overlaps in argumentation are higher for example between members of different non-governmental organizations than between participants from the same country. Nevertheless, on issues like capacity building the specific experiences in developing countries led to specific input in the debate. The different groups of participants are described in Chapter 2.

The full text of the debate, as well as the reports on the first and second discussion round is available online at www.southernvoices.nl.

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2. Who participated? Different stakeholder groups in the debate

Nearly half of the participants in the online debate registered from developing countries (see Appendix 1). From the information given it is also obvious that a relevant number of participants have experiences both in developing and industrialized countries. This was especially noticeable in the discussions around "Options in food production" and "Rights and choices" where a wide spectrum of opinions across both regional and institutional backgrounds was reflected. Based on their experiences (and individual backgrounds) participants from the North and South gave different examples to support their arguments. Noteworthy was that the key differences in opinions depended not so much on a North and South divide, but on the various organizations people represent or work for. In general, the opinions between members of *non-governmental organizations* (NGOs) in North and South tend to overlap quite strongly, and the same goes for scientists who work in similar research worldwide. Clearly the South is not a homogenous block with homogenous interests and needs.

Members of NGOs

In general, local and regional NGOs prioritise rural livelihood, bottom-up approaches and the rights and choices of small-scale farmers. Their perspective towards *genetically modified* (GM) crops and the form of agriculture that goes with them is highly critical. GM crops are often seen as either unsustainable or unacceptable. This critique is supported by the lessons they have drawn from the Green Revolution (where a key impact was the loss of plant varieties), or the introduction of agricultural practices that do not take the needs of small-scale farmers into account. An example given was *high-yielding varieties* (HYVs) that give higher yields of grain, but less straw and hence a smaller overall production including a reduction in available animal feed. Members of these NGOs opt for agricultural research and development that is participatory. They are concerned about access to seed, *Farmers' Rights* to reuse harvested seed for sowing, and about the contamination that will result from the introduction of GM crops.

Academics

A substantial part of contributions to the debate came from scientists working in research institutes but also in NGOs and as consultants. Especially with scientists in research centres and universities, the dividing lines between North and South are hard to distinguish. It was also clear that a number of them have working experiences both in industrialized and developing countries. The mobility of this group is relatively high, as a result of structures of the scientific community, of capacity building programmes and of the location of *International Agricultural Research Centres* (IARCs). In general, social and natural scientists argued both for and against the use of GM crops. Against this general backdrop it should however be added that scientists from the South were very clear in highlighting that their practical experiences in research differ from the typical situation in research institutes in the North. This point is highly relevant to the success of capacity building programmes.

The discussion about patents in biotechnology left the moral question of patenting organisms aside and rather focused on practical questions. It shed light on the current situation that scientists are facing. Most of them agreed that the focus in the scientific community has shifted from "Publish or perish" to "Patent or perish". This shift in focus comes with its own paradox. On the one hand it was recognized that patenting can create obstacles to further research and development, yet on the other hand research has to be refinanced through patents. Here scientist in North and South found themselves in a similar situation.

Farmers

Relatively few farmers participated directly in the debate. Of those that did (primarily from the US, Canada and Australia) their concerns focussed on the great dangers of contamination from GM crops (especially through open pollinating crops like maize and rapeseed). These farmers were concerned about their own lack of choice. Specifically on the their ability to farm "true" organic food if GM contamination were to be legally allowed. In their perspective, organic farming is not only to be seen as a "safer" food, but also should be seen as a viable economic option. In regard to seed there is an obvious difference between the North and South. While farmers in industrialized countries are used to buying seed on a regular basis, small-scale farmers in developing countries often grow more crop varieties. These farmers are often in areas of high biodiversity and agro-biodiversity. They themselves as well as members of organizations like MASIPAG (see box on page 16) can collect native varieties and develop new ones to a much higher degree than farmers in the North could. Therefore the issue of access to seed has much greater practical impact for those in the South.

Southern participants on capacity building

The discussion on capacity building was one that shows the clearest distinction between participants from the North and the South. Contributors indicated that the donor agencies responsible for capacity building at both national and international level should be more critical of the impact of their efforts. Questions were raised about how these agencies identify capacity building objectives, the content and methodology of their programmes and whether their capacity building initiatives are integrated in the wider objectives articulated by the recipient countries in the areas of public awareness and empowerment.

3. Some conclusions: Implications for Dutch policy making "Facilitating options"

Patents

The mainstream patenting system (certainly in agriculture) is presently under attack from various stakeholders in the agricultural chain. In the debate it was argued that it does not achieve what it has been created for. It is argued that the current system impedes access by poor countries to their own conventional plant varieties and genetic resources. In many regards, the time is ripe for change. Broader developments in the "networked economy", have meant that intellectual property in general has to be redefined in a way that better takes into account the many international contributions from across the network to any single invention.

What form could Dutch support towards creating options in the patent system take?

Double or triple the support for current initiatives to create an <u>IP clearinghouse system</u> (an agency that collects and distributes information on patents). An IP clearinghouse mechanism could help to efficiently move the privately claimed knowledge of genetic resources into the hands of those specific users who are able to add value by their applications of that knowledge. The main functions of such a clearinghouse would be to:

- connect technology holders in industrialized countries with universities, companies and national and international research centres as well as various donors,
- develop and provide a patent database,
- assist in the negotiation of license agreement,
- distribute/disseminate research material,
- provide training services to developing countries including the drafting of technology transfer protocols.

Support initiatives to create <u>the biotechnology equivalent to the 'Open Source' movement</u> in the software industry. This would entail:

- providing public access to 'open source' research results, under the condition that those who use the freely accessible material, in return make their research results accessible to others,
- a great deal of research has been made into the business case underlying the open source movement. Further research should be done into the potential business case for maintaining an open source "Bionux" system (The name Bionux was suggested as the biotech equivalent to Linux.)

Risk assessment

To what degree are the risks of new biotechnologies comprehensively assessed before being released on the market? Who has ultimate responsibility for risk assessment and thus should also foot the bill?

Government provides an obvious body to co-ordinate the tasks around risk assessment. This would entail:

• Establishing a clear policy framework with coherent guidelines outlining where responsibility for the introduction of new biotechnologies begins and ends. For example, should

responsibility lie with the companies and/or research institutes that developed the technology or with the producer?

- Take responsibility for developing policy that guarantees the systematic and comprehensive testing of all new technology with input not just from the natural sciences that assess the health risks but also from all over the other research and regulatory bodies able to map out the potential socioeconomic risks. This is necessary to ensure that the ludicrous and heartbreaking situation does not arise that whilst more food is being produced, more people are dying from hunger, as they are unable to afford the food.
- Ensure that risk assessment has an inherent system of checks and balances built into it focussed on creating a large degree of independence for the test results (i.e. that the potential risk of new products are not being assessed by those same people who are wanting to release the product on the market).

Capacity building

The Netherlands has initiated a number of different capacity building programmes over the years. Debate participants raised some critical issues pertaining to capacity building with far reaching implications on current capacity building practice. When the specific complexity of biotechnology is added to it, clear suggestions emerged.

- Any capacity building programme has to be based on a realistic assessment of existing capacity and an equally clear assessment of the type of capacity needed. The introduction and implementation of biosafety regulations provided an example of how complex systems can overstretch local capabilities and therefore slow down or inhibit technology transfer.
- When capacity building is focussed on assisting knowledge transfer to the South it should also be recognized that social, cultural and ethical aspects are important aspects of biotechnology.
- The limits of capacity building also need to be recognized. This is demonstrated by the issue
 of traceability as highlighted in the *Cartagena Protocol on Biosafety*. Serious question marks
 were placed around the ability of capacity building programmes to adequately create the kind
 of institutional framework and networks that would be needed to ensure that traces are
 maintained on *living modified organisms* (LMOs). Policy makers need to realistically assess
 what capacity building can and cannot achieve.
- Focus on supporting existing structures and on forging new creative *public private partnerships* (PPPs) to expand the role of the public sector in agricultural research with the specific goal of alleviating the situation of the poor and towards creating policies that are community enhancing. This research should allow individual countries to take their own informed decisions around biotechnology.
- Provide support to local interest groups that are working towards informing the general public as to the options around biotechnology. Support should also be given to these groups to allow them to learn from the experiences of others within the framework of international knowledge exchange programmes (ICT can provide an effective tool in assisting in international knowledge exchange).

Promote further research into trading in alternative 'currencies'

There are other currencies besides the usual 'hard currencies' and the right to use these alternative currencies for trading purposes should be further explored within the framework of biotechnology. For example in a similar way to how the *Kyoto Protocol* allows countries to trade their emission rights, a system could be elaborated that allowed for alternative forms of trading between the North and the South. The South could provide access to genetic material and in return receive access to technology. During the debate, a number of successful examples were mentioned of trading biodiversity access for capacity building. The Netherlands could claim the position as a front runner in this area by promoting such an alternative on the international stage.

4. An overview of the discussions in round 2

4.1 Poor Patents

The impact of patents on society depends not only on the patent regime, but also on other factors that determine in how far monopoly situations can be exploited by patent holders: competition law, national seeds legislation, the strength of national agricultural research systems.

The recent patenting of plants can be regarded as an aberration of the original patent definition (as a shift from invention to discovery). If it is shown that the present system really impedes access by poor countries to their own conventional varieties, this would lead to a public outcry that may possibly undermine the whole patent system. This system should be changed to provide stronger custodians rights that better protect plant varieties and genetic resources attributed to the *Appellation of Origin* (Art. 22-24 of TRIPS).

Patenting living organisms and life processes has a number of negative consequences for developing countries. Therefore, alternatives are looked for:

- Open systems (like Linux software or Napster.com for technology exchange) may speed up technological development and keep the results accessible to anybody.
- The *United Nations* (UN) could buy crucial patents for a reasonable price covering expenses and profits margin to make them, available to everybody.
- Public research undertaken by the *Consultative Group on International Agricultural Research* (CGIAR), *international* and *national agricultural research centres* (IARCs and NARs), universities and other institutions could be funded more vigorously under the condition that they make their research results publicly accessible.
- Sui generis systems of intellectual property protection in agriculture can be developed further.
- Codes for ethical behaviour may have to guide research and patent strategies of private companies. This could include generous licensing of technologies to those who would not be able to pay for it anyhow, as for example Golden Rice technology will be available cost-free to farmers and traders whose income is less than US\$ 10,000 per year.
- Agricultural production could be redirected to the domestic market. If food is produced for the local market only, chances are much lower that patent infringements would be noticed and reacted upon.

One idea that was explored was the possibility of using the current patent system as a powerful instrument against itself. A number of process patents could help to stimulate a Linux equivalent. Free licences could be given to use the processes with only one restriction: the resulting innovations should be open to everybody. In this way, licences could be used to spread the concept of open source software for biotechnology. The same idea could be used by gene banks by giving everybody access to the material collected under the condition that they guarantee *Farmers'* and *Plant Breeders' Rights* on their new varieties.

An agency that collects and distributes information on patents, a so-called *IP clearinghouse mechanism*, could help to efficiently move the privately-claimed knowledge of genetic resources into the hands of those specific users who are able to add value by their applications of that knowledge. Open questions are still who will run such a clearinghouse and who will cover the costs. One possible

solution would be to share the revenues from patents equally among the members of the organization. If the patent systems is considered a solution to overcome the tension between the private granting of intellectual property rights over otherwise intrinsically public-nature goods, such a clearinghouse could serve as an important mechanism to make patents effective.

Clearinghouse activities to facilitate access of poor farmers to patented research results are already undertaken by *CAMBIA IP Resource* (Australia), funded by the *Rockefeller Foundation*. Its key objective is to enhance the ability of public sector and small-to-medium enterprises to develop biotechnology for crop improvement worldwide (see www.cambiaip.org). Another relevant initiative in this respect is the *Global Knowledge Center on Crop Biotechnology*. As part of the *International Service for the Acquisition of Agri-biotech Applications* (ISAAA) family, it is committed to share crop biotechnology information with as many people as possible (see www.isaaa.org/kc). The CGIAR system itself could become the virtual host for an internet based exchange system. To some extent it could be argued that the nucleus of a Linux-type system does already exist.

A two-tier system of property rights in international agriculture currently exists. The CGIAR and CAMBIA are two institutions that support and strengthen 'public' research to develop their 'own' IP (which can be traded or exchanged) and a facilitating process as partly supported by ISAAA to deal with IP already protected. A good example of an alternative system of exchange is the *International Network for the Improvement of Banana and Plantain* (INIBAP) in the CGIAR.

Summary of day 4:

Gerd Junne (moderator) "The content of such an indefinitely expandable database could be organised on the basis of known genomes (or segments of). For each genome there would be an hierarchy of elements, each subordinate level of which would be increasingly oriented towards the underlying science of specific genes, constructs, etc. At the higher levels must come the broader information relating to the species, patents granted or applied for (held by whom, 'discovery/innovation', etc.), knowledge held in the public domain (which might include CG-owned patents), published data on safety/risk assessments, yield trials, etc."

Vote on this quotes: "Scientists have moved from 'publish or perish' to a 'patent or perish' situation."

Yes

No

It has introduced a system of exchange based on *Material Transfer Agreements* (MATs). Under these agreements, INIBAP acquires improved varieties from breeding programmes with an agreement that these can be freely distributed for use in developing countries, but commercial use in developed countries requires a bilateral agreement between breeding programme and user. This type of arrangement also illustrates the role that the CGIAR can play as an 'honest broker' in the area of movement of genetic resources.

Would it make a difference if one small biotechnology company would start to put all its available information on the net? Could a university (or any other resource centre) make a start with offering free access to research papers from all over the world and foster strong online communities to develop the research further? The issue of how the efforts of researchers and the investment of their employers can be rewarded, if the research results become available for free, is one that needs further exploration. Deeper insight also has to be gained into the real potential of such a system to considerably slow down research expenditures.

Philip L. Bereano (Scientist, USA):

"Allowing the fruits of this research to become a private monopoly is an ideological decision, not an empirically necessary one. After all, Jonas Salk and the March of Dimes specifically refused to patent the polio vaccine."

George Owusu Essegbey (Scientist, Ghana):

"In the past, research in my part of the world has been virtually free - in word and deed. Improved varieties of various seeds have been extended to farmers at no or subsidised costs. Now research institutes are being asked to generate their own funds. It means that there can be no more free research results for the poor farmers."

Harald Ronge (Netherlands):

"At present the open community of Linux seems to be outracing Microsoft, the biggest software-company in the world in terms of quality and innovation. A closed world of secrecy and difficult patent-management is a barrier for science and development."

Vote on this quote "Secrecy about research results is worse for developing countries than patenting."

Yes No

4.2 Options in food production

For most participants the most promising ideas generated in *Options in future food production* lay not in specific plants or 'super-seed' but in the agricultural systems in which they are used. Three issues were discussed:

- the question whether genetic engineering is just another tool in the tool box of agricultural research and development (R&D) or whether it has the potential (at least in the current R&D and market situation) to supersede other approaches, technologies and seeds. (This issue was also dealt in the discussion room "Rights and Choices");
- the impact of market mechanisms on the choice of agricultural products and technologies.
- There was a push to gain focus into the real lessons (to be) learnt from the current agricultural system, from the Green Revolution and from a variety of projects on agricultural and rural development.

Most participants stressed lessons learnt from the Green Revolution, but no common understanding exists on what theses lessons are, or even whether the Green Revolution was a success or a failure. For example, arguments were given for the increased production of *high yielding varieties* (HYVs) as well as a reduction in overall production through these HYVs because their straw cannot be used as animal feed anymore. Contradicting opinions were not so much divided between developing and industrialized countries, but between the institutional setting or occupation of the participants. In general, members of civil society organisations that focus on rural livelihood etc. focused on other issues than scientists situated in agricultural research institutes.

A similar situation arises in assessing the current agricultural system and its shortcomings, as well as when examples (see page 16) from projects in developing countries are given, like those of the *Southeast Asia Regional Institute for Community Education* (SEARICE), the *Scientist-Farmers Partnership* (MASIPAG, both in the Philippines) or the *International Centre of Insect Physiology and Ecology* (ICIPE, Kenya). The need to extract some clear learning experiences from the past (even though expressed in often contradicting arguments), showed that a thorough assessment of past and current agricultural problems could provide policy makers with a tool for assessing future developments.

Whilst we can learn from the past, this should be seen in conjunction with present and future trends (such as the massive movement of rural populations to urban areas creating mega-cities and changed consumption patterns towards more meat and more processed products). On these issues opinions differ widely, not only between North and South but also between different stakeholder groups in the region.

Market mechanisms are closely linked with agriculture, as agricultural products are not only daily food but also commodities in international trade. As commodities, food faces the same competition as other products do: a push towards low production costs, a trend to use the resource 'land' for monetary profitable products, competition of other farmers who produce under more favourable conditions. Changes of the agricultural systems to ensure food security will have to take trade issues into account, for example by strengthening local production through lower interest rates on loans for food production, or even by taking basic food out of the scope of the WTO. On these issues, opinions between North and South vary to a large degree. Specifically, subsidies given to European farmers came under strong criticism because they can give exported European food such a price advantage on local markets that farmers from developing countries find it very difficult to compete with. It was further noted how unfair the situation is as structural adjustment programmes enforced by international bodies, have withdrawn all subsidies for farmers in developing countries. A discussion on these issues can put policy makers in an uncomfortable position of weighing the needs of rural areas in Europe against those in developing countries.

The lessons learnt from the Green Revolution, from the current situation of agricultural systems in Europe and worldwide, from scientific and from rural projects are diverse and contradicting. Policy makers have to assess their pros and cons thoroughly. A list of questions derived from such an assessment, that can be used to decide upon technology developments, should encompass the following issues:

- Is the technology developed and/or transferred in a top-down or bottom-up approach? Is it participatory? Who is engaged?
- Does the introduction of a new technology not only respect *Farmers' rights* but is it also aware of the different levels of formal and informal education within rural communities?
- Does a new technology prioritise large sections of a society? Are not only farmers and their families taken into account, but also farm workers and/or extension workers?
- Can the use of the technology stabilize rural populations and thereby prevent migration to cities and its consequences of a growing number of unemployed urban poor and other poverty related issues?
- If it focuses on staple crops, does it ignore other nutritionally important crops? Does it contribute to food security?
- How does the technology alter the production process on a farm as a whole (including wild plants and animals that can contribute to food)?
- Is the technology beneficial under special conditions of soil and climate? Can it be used for food production on land that is not considered to be agricultural land?
- How does the technology affect environmental issues like soil deprivation and biodiversity?
- Is access to seed and germ plasma guaranteed? Does the technology protect agrobiodiversity?

Changes in the agricultural systems are necessary, because no matter whether one considers agricultural land and the total food production sufficient, people in all continents go hungry on different scales and for different reasons, and farmers face a multitude of problems. Some suggestion were made:

- ensure Farmers' and Plant Breeders' Rights;
- recognise locally adopted technologies and their impacts on the production, political, financial, legal and social levels;
- strengthen the position of small-scale farmers, for example through land reforms and a better distribution of rural wealth;
- strengthen production for local and regional food security, in preference to the growing of cash crops for international markets;
- provide financial resources to participatory initiatives;

• set long-term goals that can be based on sound policy instruments and create a stable situation in which to implement them.

It is also necessary to recognise the paradox between local food security efforts and production of commodities for international markets of food and non-food products. Some recommendations were made to deal with this dilemma:

- take (basic) food production out of the scope of the World Trade Organization (WTO);
- revise WTO rules that allow subsidies for farmers in the North but not in the South;
- use instruments like subsidies wisely to encourage sustainable forms of agriculture;
- strengthen local markets.

Horst Doelle (Scientist, consultant, Australia): "I strongly believe that not all GMO is necessary and we should not go wild in our dreams, but be realistic. A higher protein containing rice in a soybean growing area is also a waste of money."

Georg E. Pilz (Scientist, Honduras): "If a farmer cannot afford a new technology that doesn't mean that the technology should be kept off the market until all farmers can afford it."

Mona Hansen (Netherlands): "The Green Revolution has undoubtedly achieved far higher production results so that India could turn into a grain exporting country. However 'if the poor don't have the money to buy food, increased production is not going to help them' was one of the findings even the World Bank concluded. Besides that the distribution of economic power hasn't been changed, the Green Revolution has led to an enormously increased use of chemical fertilizers and pesticides while at the same time the output per ton of fertilizer has decreased."

Vote on this quote: "Food is a basic requirement and should not be make an issues of resource heaping like industrial goods and luxuries."



Vote on this quote: "The currently developed GM crops offer adjustment in a troubled agricultural system, but open no innovative alternatives."

Yes	No

Elenita C. Dano (SEARICE, NGO, Philippines):

"At the international level, countries have come up with such promising documents as the Global Plan of Action on Plant Genetic Resources (Leipzig, 1996) and in some respect, the recently adopted International Undertaking on Plant Genetic Resources for Food and Agriculture (Rome, November 2001). The GPOA, in particular, includes such commitments as support to farmer/community-based breeding initiatives. Nice words. But, where's the beef? Which country member of the FAO has put that international commitment into national legislation, policy or concrete action? [...] Virtually no government research on the potentials of organic agriculture, because of the inherent biased framework that prevails in the public research community that organic is backward and cannot address the country's concerns on food security. That virtually kills the option for farmers to turn into organic production. Independent efforts of peoples' organizations and civil society organizations are the only initiatives on sustainable agriculture around, and luckily, there are many although they may come in patches. Some cases even showed that farmers involved in organic farming can even surpass the national average yield."

Charito P. Medina (MASIPAG, NGO, Philippines):

We in the Philippines have an experience, the Farmer-Scientist Partnership for Development that we started way back in 1985. [...] The strategy was not only participatory but a bottom-up approach. We collected traditional rice varieties because these were the locally adapted, we taught farmers to breed rice and do selections under conditions of no chemical fertilizers and pesticides. We worked only with organized farmers, otherwise the project served as a creative organizing tool in unorganized farmers. Trial farms (run and managed by farmers themselves) were the borderless laboratory of the farmers and served as advocacy material during field days that were conducted before harvest. Today, 16 years later, we have collected more that 600 traditional rice varieties as source of our breeding stock, we have developed more than 500 selections of rice, we have more than 200 trial farms run and managed by farmers through their organizations, there are more than 500 farmer organizations in our group with an estimated total membership of 35,000 farmers. Today, there are MASIPAG rice varieties in the market (in Visayas and Mindanao), many of which are organically grown. The yield are similar, sometimes higher that the yield of HYVs. And the farmers have greater NET INCOME compared to conventional (HYV) farmers. Also, the farmer-members are no longer exposed to chemical pesticides, and they don't have to borrow capital to buy seeds because they produce their own seeds. Many farmers seek our MASIPAG rice seeds but we just don't give them seeds unless they organize themselves and do a trial farm to select what is adapted in their specific locality."

4.3 Capacity building

The need to build capacity in developing countries clearly constituted one of the most important aspects of the biotechnology issue. There appears to be a lack of knowledge and skills in Southern countries to make informed decisions and to effectively create and deal with the potential advantages of biotechnology. This technology, and especially genetic engineering requires extensive monitoring and implementation of complex protocols such as the *Cartagena Protocol on Biosafety*. Efforts to create sufficient scientific capacity in the South have been going on for years, but a lot of this capacity has not been used. The question whether this lies in the circumstances under which knowledge is applied, whether there is something lacking in the capacity building programmes, or whether problems even lie somewhere else was discussed. The conclusion was that further assessment is still necessary.

Capacity building should be directed towards enabling individuals and groups to make choices that are both realistic in terms of local resources and responsible within a larger social context. As one participant, George Owusu Essegbey, pointed it out "capacity should be seen as a whole rather than the sum of its parts. For example, training a few university graduate in specialized techniques facilities does not mean that 'considerable capacity' has been built in all sectors of developing countries".

In general, participants indicated that the agencies responsible for capacity building should be more critical of the impact of their programmes. There seems to be a lack of evaluation that inhibits the effectiveness of capacity building efforts. Moreover, capacity building programmes should consider specific local conditions such as ethics, religion and culture. It was also recognized that incorrectly targeted capacity building and market forces could attract trained people away from sectors (or rural areas) where they are needed in development terms.

The introduction and implementation of biosafety regulations provided an example of how complex systems can overstretch local capabilities and therefore slowdown or inhibit technology transfer. The importance of optimising all available resources in capacity building was stressed with examples of making more use of public-private partnerships in scientific research and building on local capacity emerging in the form of local companies and small and medium enterprises. There is an important relationship between the political economies of developing countries and the social and cultural context in which capacity building efforts take place. As several examples show, an entrepreneurial culture can be necessary for the realization of the full potential of scientific and technical capacity.

Alberto Diaz (Scientist, Argentine):

"There will be a strong collaboration between international organizations and local policy makers to put the building capabilities in our social necessities, but first we, in our countries, will have to elect the correct people to direct our politics and also to set up our policies in biotech."



"In my opinion capacity building programmes are not as failed as they are blamed to be. Maybe they failed to create an impact for various reasons aiming at short term goals, lack of long term support, follow up etc. But never can one party (neither donors nor policy makers at local government level) be blamed for failures. Even failures are lessons in the process of development."

V.R. Manoj (Scientist, India):

"There are other priorities such as equitable literacy, greater awareness, co-operation and better management which are being realized as a continuing process."

Andre de Kathen (Consultant, Germany):

"Capacity building shall provide the tool not the products."

Vote for this quote: "Capacity building is useless if the use of it is restricted through lack of options and rights."



K.L. Srivastava (Scientist, consultant, India):

"I think that scientific and technological capacity can be utilized adequately only if the local infrastructure, market conditions, entrepreneurial culture, and social acceptability of those specific technologies are also favourable. Technology alone cannot produce results."

George E. Pilz (Scientist, Honduras):

"I know several cases where capacity has been applied, but they are oriented and not very profit oriented. Zamorano (Honduras) has produced several varieties of dry beans and sorghum for local conditions (diseases, soil conditions, etc.) Instead of trying to market these in a manner which would fund more research, the varieties were simply released into the marketed at the cost of the seeds themselves. This got the seed to the farmer cheaply, but the researcher now has to find

new funds for his research.

R. Muhuthan (Scientist, Sri Lanka):

"Of course there was considerable capacity build up over 30 years in the developing world. but it failed to phase up with increasing population.

Another factor that contributed to the failure was frequent change in the government policies in those countries."

4.4 Rights and choices

How can the different interests of stakeholders be reconciled or at least balanced? What rights and choices does a small-scale farmer have compared to the power of a rich transnational company? How can the rights of minorities be ensured within the biotechnology debate?

One of the nodal points of these questions appeared to be the issue of risk assessment. Almost all participants agreed this to be of great importance. What they did not agree on was under whose responsibility risk assessment should fall. Some argued that governments should take care of this. Others questioned whether governments are they really equipped for this task as they may have too much self-interest? Independent scientific institutions should provide back up. This in turn would of course have to be accompanied by the necessary additional funding. Although transnational companies have ideally to bear the responsibility for the risk their genetically modified products imply, in the discussion it became clear that not everyone finds profit-oriented research trustworthy. Companies could be made to pay for independent research. A multi-sectoral system may be the best approach and should include checks and balances to ensure an even-handed outcome.

Another important notion in the area of rights and choices proved to be farmers saving their seed. This traditional right is jeopardized by ownership of seed by companies and restrictive intergovernmental regulations. Emily Bell (Australian farmer) wondered whether the loss of farmers rights over seed was compensated by the supposed benefits of GE seed: "It seems to me that farmers assume all the burdens of all the associated risks of GE, and must pay dearly for the (as yet unclear) benefits." Others, such as Stuart Smyth (Canadian scientist), said companies are right to ask for money if their proprietary seed is (re-)used: "Nobody has the right to save and re-plant seed if it is the lawful property of somebody else." Sometimes GM crops appear where they are not supposed to be, because of cross-pollination or just spreading of seed. In cases, like that outlined by the Canadian farmer Percy Schmeiser, the farmer has had to pay for using protected seed. So, one farmer choosing to grow GM crops may constrain the choice of another farmer to grow whatever he or she wishes. This question of maintaining the integrity of sustainable farming systems is particularly acute with organic agriculture. Many contributions critically questioned the feasibility of maintaining this growing agriculture sector amidst widespread GE contamination. The implementation of GE-free zones could circumvent this problem to some extent. However some participants argued that at least for open pollinating crops these zones would need such wide buffer zones that they would become unfeasible, and could never exclude accidents.

All of the above discussions have to realise that the effects of choice are not equal. The effects of a decision vary in scale in ratio to the power base that underlies the body making the decision. In the context of the GE debate the relative power of different players is as polarised as the arguments. Under these circumstances the rights of a local farmer are easily crushed by the decision of a transnational corporation. Democratic and legal mechanisms are required to safeguard the rights and choices of the individual players and collective organising may help to structure common interests in society.

Despite the various governance mechanisms that may be employed to ensure rights and choices it was argued that it is still necessary to protect the rights of the individual (for example from majority decision). Here it was suggested that the length of time the individual has been engaged in a certain practice important benchmark should be an by which to judge their rights. Discussion of the merits and problems of different agricultural technologies needs to consider the experience and knowledge of the farmer. Technology and practices when misapplied are harmful to the environment and may affect health. For example, in the case of *Bacillus thuringiensis* (Bt) toxin. its use in the organic or GMO setting leads to widely differing and disputed effects. Dispute over insect resistance to this important insecticide also exists, with some arguing that making use of shortterm benefits to boost production was legitimate, even if it accelerated insect resistance caused Bt to be ineffective in future.

R. Muhunthan (Scientist, Sri Lanka):

"In case of open pollinated crop, e.g., Roundup Ready Canola, the GM and non-GM farming system cannot coexist. If you give priority for farmers freedom to choose their seeds then GE free zone is a must in case of open pollinated crop species. But in case of self pollinated crop GE free zone is not important."

S.Sivaramakrishnan (Scientist, India):

"I full agree with the view that it is difficult for GM and non-GM farming systems to coexist especially in the developing world. The reasons are: The holdings are small, monocropping is limited unlike in the US, and seed saving practices still prevail. With open pollinated crops the problems can get aggravated more in a resource-poor farming community."

Elenita C. Dano (NGO, Philippines):

"How do you prevent cross-pollination and establish GE-free zones in situation like the Philippines where the most two-thirds of farmers are either tenants or small landholders who till a land of less than a hectare?"

K. L. Srivastava (Scientist, India):

"Most of the environmental and public health problems are such that the effect of one section of community affects others. But in many cases, there are community institutions, laws and mechanisms for sharing the costs and benefits at individual as well as community levels, keeping in view the local norms. If the gains from GM technology are far more than the costs, the task is to workout arrangements for equitable sharing of costs and benefits."

George Owusu Essegbey (Scientist, Ghana):

"The farmer does have a fundamental right to do what he wants with his or her own seed, [but] hybrid seeds are limited in reproduction and there is nothing the farmer can do about it. So we can say the farmer has a fundamental right to reproduce seeds but that right does not mean much."

Vote for this quote : Environmental risk			
assessment is a governmental			
responsibility.	Yes	No	

1. Participants

A total of 527 participants from 69 countries registered for the online debate. The biggest single country was the Netherlands, followed by India and the USA. Overall there were more participants from Asia than from North America, and about as many from the USA as from Africa.

In the second round 68 participants actively participated and contributed a total number of 408 reactions. The discussion was mainly between participants from Europe and Asia, esp. the Netherlands and India. A technological gap due to different access to the internet did not unbalance the discussion. On the contrary, throughout the debate there were similar numbers of contributions from Africa, North and South America.





2. Results of Round 1

This report is also available online at www.southernvoices.nl



Round 1: allowing the participants to define the discussion topics

In many countries population pressure, natural disasters, and changing climate conditions demand an urgent solution to the problem of food security. Gene technology seems to offer promising solutions, but is this a technology that can be applied with trust – and if so, under what conditions? From our experiences and the experiences of other people throughout the world we are searching for answers to such questions. The aim of the first round of this online debate was to let the participants identify the issues they wish to discuss in this context. Starting from the four dichotomies described over the following pages, 421 participants from 68 countries registered to discuss biotechnology and food production over a period of two days (October 31 to November 2, 2001).

As this report highlights, a number of topics re-occurred across the different discussion rooms. This report provides a short overview of some of the key issues that were raised in each room and described the methodology used to define the four topics which will form the basis for the indepth discussion aimed at in round 2. The four topics that will be explored in round two are: "Poor patents"

"Options in food production"

"Rights and choices"

"Capacity building"

Sound intriguing? We look forward to your contributions in round two, starting on November 6 and ending November 13, 2001.

Monitor



www.southernvoices.nl: An online debate on biotechnology and food Round one: Setting the discussion agenda, 31.October – 2 November 2001



some background information

This online debate is a response to the activity and discussion surrounding a Dutch Government initiative – <u>The Terlouw Commission</u> - to involve public and private interest groups in the debate about gene technology and food. This discussion has considerable implications outside the borders of the Netherlands itself. The complexity and global character of the agricultural chain and the intensity of trade in agricultural products with developing countries means that the issue of introducing genetically modified food crops is of critical importance to policy makers, researchers, civil society organizations and consumers, throughout the South. This debate aims to gain insight into the arguments from the South as well as those from the North in order to inform the Dutch parliamentary debate on the subject.

The discussion is organized by The European Network University (<u>www.netuni.nl</u>) and the Biotechnology and Development Monitor (<u>www.biotech-monitor.nl</u>). The Monitor is a quarterly journal concerned with the socioeconomic impacts of biotechnology in developing countries. The Monitor is published by the European Network University.



www.southernvoices.nl: An online debate on biotechnology and food Round one: Setting the discussion agenda, 31.October – 2 November 2001





Our	methodology

1. Identification of eight main issues in each room	THEME	
	1. тнеме тн	ЕМЕ
	THEME 8 KEY THEMES THEME PER TH ROOM THEME	THEM 1EME
2. Overview on the discussion in each room with special focus on those issues where the opinions between North	0	/ERLAPPIN THEME
and South differ, and on those that could have implications for Dutch politics.	SHORT OVERVIEW OF EACH ROOM	DIFFERENT
	SI	OME POLIC
3. Where does the discussion in the four rooms overlap? The four emerging themes will form the basis for the second round of discussion.	OVERLAPPING THEME OVERLAPPING THEME	ERLAPPING
onitor	OVERLAPPING	



Food safety vs. Food security







David Brew: "Co-existence of Organic, GMO and Non-GMO crops is possible but, as in all cases of co-existence, accidents will happen"

Stuart Smyth: "If consumers want to buy organic products, they should have to pay the cost, not the rest of society." Rod Harbinson: "Meanwhile millions of the world's poorest farmers in the South

rely on traditional organic agriculture as their only means of sustenance."

Elenita C. Dano:

"Are complex monitoring and safety systems a way of excluding the South from participating in the growing organic food sector, or should this rather been seen as an opportunity to promote capacity building and good governance in the South?"



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Global vs. Local







Public vs. Private: some quotes from the discussion

K.L. Srivastava:

"The social control on future of food and agriculture industry is essential for equitable and just development of the society."

Devinder Sharma:

"Science has to be accountable to the people. Only then will scientist come out with viable and sustainable alternatives."

V.R. Manjo

"We must yet again fundamentally understand that a private sector cannot be forced into public service other than to essentialities as a normal member of community."

Arslan Gurkan: "I think the blurring of the disctinction between public-private refers to the kind of R & D work that is being conducted in different types of insitutions. This is because the funding is coming increasingly from the private sector, which determines its priorities based expectations on profits and dividends. With a move towards reducing public fiscal commitments and government intervention in the operations of markets, the research agenda of most biotechnology research institutes is converging and resembling each other more and more. Unless funds are somehow found and allocated to R & D areas that may eventually address the needs of those who do not have such resoruces, i.e. the poor and the food insecure, then current research will continue to go in the direction that is dictated by the "exigencies of the market".

Vote for this quote : Private companies resort mainly to genetic engineering because patents give them market control.



<u>Hen</u> Genen



Colophon

Colophon

The moderators

Theo van de Sande (Ministry for Foreign Affairs, The Netherlands)
 Victor Konde (Harvard University, USA; Zambia)
 Elenita Daño (SEARICE, Philipines)
 Miguel Rojas (University of Quebec, Canada; Costa Rica)

The organizers

Lara van Druten (The Network University)
 Antje Lorch (Biotechnology and Development Monitor)
 Mona Hansen (The Network University)
 Heidrun Woltering (The Network University)
 Lotte Asveld (The Network University)
 Floor Nusink (Biotechnology and Development Monitor)

Software development

•Michel Caillat (The Network University) •Shahar Haramati (The Network University) •Rolf Kleef (AidEnvironment)

Under the auspices of the Dutch governmental commission on Biotechnology and Food: www.etenengenen.nl



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3. Letter to the participants

On behalf of the Netherlands' Commission on Biotechnology and Food Safety:

a warm Thank You to all who helped making the Southern Voices Debate into a success. Thank You for having been candid: for having shared thoughts on the issues which were presented. Thank You for having contributed insights and shown the complexity of the issues we are discussing. Thank You also for having continued to exchange views, especially the 60 odd participants to the Second Round.

In this Round the Debate maintained the interest of at least 525 registered participants, which is quite a bit for one room to hold. Of these, some 60 participants engaged actively in the Debate, and about half of these activists came from the South. Having participated in quite a few debates on biotechnology these past months, I have not been in any single meeting where so many Southern participants with widely differing views, were actively involved. I have been in meetings where people came together who were largely against, and in other ones with people being in favour of introducing GMOs into the food chain; not in many meetings where Southern participants were free to take sides on different issues. That was, in my view, the principal strength of the present set-up.

A number of participants have contributed proposals for Dutch policy making. We, in the Commission, shall pay special attention to these ideas. Since the debate is public, I know that ministry officials have already taken note of some proposals. The Commission will also study them and present them to the Netherlands' Government, especially the Minister of Agriculture and the one for Development Cooperation. Our Report to the Government will appear in January and will be brief. Therefore the scope and depth of all insights and views cannot be adequately represented in it. However, a special report is being made of the Southern Voices debate, which will be made available on-line. If you would like to receive a copy, please inform the SouthernVoices Webmaster.

Remains one last Thank You, to the organisers. The Biotechnology Monitor has been a trusted source on the manifold relations between Biotechnology and Development. It did an excellent job in bringing its knowledge network into the present Debate. The European Network University showed what it has learned in managing virtual conferences like the present one. Together, they have articulated other voices to enter into the Dutch Debate: Southern Voices.

Louk Box

4. Colophon

Moderation

First round

- Theo van de Sande (Ministry for Foreign Affairs, The Netherlands)
- Victor Konde (Harvard University, USA; Zambia)
- Elenita Daño (SEARICE, Philipines)
- Miguel Rojas (University of Quebec, Canada; Costa Rica)

Second round

- Gerd Junne (University of Amsterdam, The Netherlands)
- Antje Lorch (Biotechnology and Development Monitor)
- Rod Harbinson (Biotechnology and Development Monitor)
- Marilyn Minderhoud-Jones (Biotechnology and Development Monitor)

Organization and authors of final report

- Gerd Junne (The Network University)
- Lara van Druten (The Network University)
- Antje Lorch (Biotechnology and Development Monitor)
- Mona Hansen (The Network University)
- Heidrun Woltering (The Network University)
- Lotte Asveld (The Network University)
- Floor Nusink (Biotechnology and Development Monitor)
- Vic Klabbers (The Network University)

Software development

Michel Caillat (The Network University) Shahar Haramati (The Network University) Rolf Kleef (AidEnvironment, The Netherlands) Lara van Druten (The Network University)

Under the auspices of the Dutch governmental commission on Biotechnology and Food: www.etenengenen.nl

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