Table of Contents

Foreword

By Verena Meyer
President of the Swiss Science Council
Member of the TA- Management Committee

In the question of genetic technology, scientists are being requested for the first time in history to explain and justify the use of a technical achievement to the general public. This became clear at the latest when the vote on the Genetic Protection popular initiative neared and eminent representatives of academic circles went out onto the street to explain to the general public why freedom of research is necessary. The questions around the subject of genetic technology are today still of burning relevance even after the vote on the initiative has taken place. It is therefore not astounding that the second PubliForum, organised by the Technology Assessment Program and dedicated to the subject of "Genetic Technology and Nutrition", was given considerable attention by the general public.

With perseverance and a distinct sense of making subtle distinctions, the Citizen Panel struggled to find wording which could be backed by most of the panel members. Where no unanimous opinion could be reached, the Final Report points out in a transparent manner if a majority or a minority of the Citizen Panel spoke out in favour of the wording chosen. On the whole, however, it must be noted that the Panel - in spite of the pressure of time - has produced results for which even professionals show great respect.

Once again, the Management Committee of the Technology Assessment Programme has been convinced of the benefits and suitability of the "PubliForum" approach. Its members have committed themselves to carrying the Final Report's message on Genetic Technology and Nutrition out into the relevant scientific, political and business circles.

1 Introduction

PUBLIFORUM on "GENETIC TECHNOLOGY AND NUTRITION": The TA-Programme delivers the framework - Citizens decide on the contents.

The PubliForum on the subject of "Genetic Technology and Nutrition" is the second public event based on the "Consensus-Conference"-model developed in Denmark organised by the Swiss Science Council's TA-Programme.

The PubliForum organised by the Swiss TA-Programme is built on the "Consensus-Conference"-model developed in Denmark and since adopted in several European countries (including - amongst others - the Netherlands, the United Kingdom and Norway). A group of people, chosen out of the general population in an as well-balanced as possible manner, is given the opportunity to actively take part in discussions on important social aspects of science and technology policy. The PubliForum pursues two goals: On the one hand to mediate between the standpoints of researchers, political and business decision-makers and the general public and to promote mutual understanding, and on the other hand to give the citizens participating the chance to express their views on the subject matter and subsequently present their recommendations.

Why have a PubliForum on "Genetic Technology and Nutrition"

During the campaign before the referendum and also after the vote on the Genetic Protection popular initiative, it was clear for a lot of those involved that the dialog with the general public plays a very important

role. The result of the voting has also shown that we are a long way away from bringing the debate to a conclusion. Genetic technology is and remains a very controversial subject. While many people consider the use of genetic technology in medicinal areas as acceptable, its use in the foodstuffs area gives rise to apprehensions. Like all new technologies, genetic engineering not only offers opportunities but also involves risks. How we judge these risks depends on our personal views. While, for example, some fear no health problems as the conditions for the registration of GMO (Genetically Modified Organisms) are said to be more stringent than for conventional foodstuffs, others list a whole string of possible health risks which could accompany genetic technology. Where people feel they have no apparent influence on fast-moving developments, a feeling of unease is created.

The "Genetic Technology and Nutrition" PubliForum gives us the possibility to face up to this unease and continue the discussions started during the campaign that took place before the referendum.

It is clear to all involved that genetic technology is a complex subject. The assignment is therefore for the "man or woman on the street" no light job. Both the first PubliForum on the subject of "Electricity and Society" and the present one have made it clear that the citizens participating have been able to grasp the main outlines of difficult problem areas and discuss them in a profitable manner. Those who were present at the hearings with the reference persons in Berne on the 4th and 5th of June 1999 were able to confirm how very involved the Citizen Panel was and how lively the discussions were.

This report is evidence that it is possible for the so-called "Man or Woman on the Street" to voice his or her opinion on such a complex subject and be able to make a contribution to decision processes and the on-going public debate on this controversial topic.

Who took part in the PubliForum?

In order to create an as neutral as possible framework for the PubliForum, an accompanying group was formed consisting of representatives from industry, research, administration, media, politics and various non-governmental organisations (NGOs). This accompanying group had the task of putting the content of the PubliForum into concrete terms and to make sure that the preparation and realisation of the event took place in an as balanced as possible way, i.e. that neither the opponents nor the advocates of genetic technology got to much weight. The accompanying group was also responsible for the preparation of information sheets

meant to help the Citizen Panel familiarise themselves with the subject. Another assignment was that of helping find reference persons to answer the questions and, finally, influence could be made on the composition of the Citizen Panel.

All in all, the secretariat asked around 230 persons if they would be willing to answer - as "reference persons" - the questions posed by the Citizen Panel during the main event in Berne. Among these "reference persons" were professionals from scientific and research circles as well as representatives of the authorities, interest-groups and industry. Altogether, 79 persons were willing to take part, and of these 17 were chosen by the Citizen Panel (the PubliForum method calls for the Panel to select the reference persons who they want to pose questions to themselves).

The main protagonists of the PubliForum - the 28 citizens, were contacted via a so-called "mailing". Several thousand randomly chosen persons were invited to take part in the PubliForum. In this way, around 60 applications to take part were received. As the ideal number of persons for the realisation of the event is around 30, a selection from the applicants was made. The aim was to assure the building of a well-balanced group of people in terms of language, age, sex and profession.

How was the Citizen Panel briefed?

The subject of the PubliForum was very demanding, and, appropriately, the citizens had to be carefully briefed and supported. Information-sheets formed the basis of these activities. The accompanying group decided on the topics for these information sheets and scientific journalists were given the job of writing them. During the discussions on the contents of these information sheets it became apparent that for certain topics no consensus between the members of the accompanying group could be reached on the versions to be used. This is why, for the subjects "Environment", "Health", and "Economy and Society", advocates and critics of genetic technology in the accompanying group were asked to prepare texts which reflected their particular positions on the subjects.

An additional source of information was to be found in the innumerable brochures , newspapers, books and magazines which were placed at the Citizen Panel's disposal. Additionally, the Panel received further information in the form of three lectures by reference persons during the first preparatory weekend, which took place two months before the hearings. These lectures gave a short overview on the basics of genetic technology, the legal and political situation and ethical aspects. After these three lectures at the latest, it was clear to all how complex the subject is,

and many participants can certainly remember the following - for some sleepless- night when all that had been heard was thought over and dreamed about.

What took place during the preparatory weekends?

On the last weekend in March, the 28 chosen citizens met for the first time. A high level of motivation could be seen in the faces of the participants. The first task was to transform these 28 individuals into a working group. Here, all already became aware that the assignment they had let themselves in for would be difficult. Right from the start, however, work was done with strong commitment - even during breaks and in the evening vehement discussions went on. A month later, the Citizen Panel - motivated more the ever - met for the second time.

Clear goals were set for both weekends. On the first weekend the participants were acquainted with the rules and the working methods of the PubliForum. Additionally, an introduction to the subject of genetic technology was part of the programme, as was the definition of subject areas, which were to form the framework for the questions to be raised. On the second weekend, the Panel agreed on a series of specific questions. Additionally, they picked out the reference persons who were to state their position on these questions during the main event in Berne.

During the whole of the PubliForum, it was extremely important that all participants were able to express their opinion and, at the same time, that these opinions were respected by the others. A professional moderator had the task of guaranteeing that this happened. He guided the discussions during both weekends as well as during the main event and his moderation techniques helped the group reach their goals. As the persons taking part came from all language regions, all discussions were accompanied by simultaneous translations.

How were the reference persons chosen?

The choice of reference persons plays an important part in the PubliForum, as their answers form the basis of the Citizen Panel's report. Their selection is, according to PubliForum rules, the job of the Citizen Panel.

In order to support the Panel in their selection of reference persons, a "profile" of each reference person was handed out which gave information

on his or her occupation and attitude to particular aspects of genetic technology. As a further aid, the accompanying group issued recommendations on which reference persons could best answer questions on particular aspects of genetic technology. The final choice, however, was left to the Citizen Panel. The Panel chose 17 persons to answer a total of 12 questions. The panel had mostly agreed that for each question at least two reference persons - one critic and one advocate of genetic technology - or, exceptionally, a third, neutral reference person were to be chosen. The reference persons received the questions posed by the Citizen Panel two weeks before the hearings in order to be able to prepare their answers. It was, maybe, exactly the above-mentioned choice of reference persons which led to the rather controversial course of events during the hearings which occasionally gave the impression that the answers were more opinions than facts. It must be stated, however, that the task of answering the Citizen Panel's questions in 10 minutes each was well met by most of the reference persons.

How was the Report compiled?

This report was drawn up after a two-day hearing with the reference persons on the following, third day. There was a continuous back and forth between meetings in the groups which edited the various topics and discussions in the plenary assembly. Just how controversial the subject of genetic technology and nutrition is was shown by the long and intense discussions which were necessary before one or more text-passages were found which could be agreed on for certain subjects. The partly contradictory answers of the reference persons did not make the work of the Citizen Panel easy. Already during the first weekend, it became obvious that differing points of view were to be found among the panel members. This resulted in not being able to find agreement on certain points when editing the report. Several votes were made, the results of which are to be found as majority or minority opinions in the report. These ballots sometimes produced only slim majorities, as, for example, on the proposal for a moratorium. When no majority or minority is mentioned in the report, a consensus was reached.

The Citizen Panel Report is divided into different subject areas each containing the questions to which the reference persons stated their opinions. For each question, the Citizen Panel summarised those answers which in their eyes made a relevant contribution to answering the questions posed. Attention should, however, in particular be paid to the opinions and recommendations which will, we hope, give rise to further discussions. Finally, the appendix contains the text of the answers

composed by the reference persons themselves to the questions posed by the Citizen Panel.

What next?

In order to make sure that the Citizen Panel's recommendations are not just filed away and that the discussion among the general public does not ebb away, everything must now be done to spread the report as widely as possible under the general public. A start has already been made in that the rough draught of the report was presented to the public immediately after the PubliForum was concluded. It is important that the people who actually make decisions (Members of Parliament, representatives of the authorities and industry) take note of the report. To make Members of Parliament acquainted with its contents, for example, the report is to be presented in various commissions. To keep the discussion going in the general public, it is necessary to attain as high a level of distribution as possible via the media. Contact to representatives of the media will have to therefore be maintained and increased. Success has already been made in that a documentary has been filmed on the PubliForum. Additionally, several articles have already appeared in the press and also NGOs and other institutions have taken note of the Citizens Panel's work.

Finally, it is hoped that that the report will receive the attention it has earned, in view of the great commitment made by the Citizen Panel.

The Citizen Panel

2 The Citizen Panel

Name	*First name*	*City*	*Age*	*Occupation*
Balzarini	Natalino	Cama	50	unemployed
Barthelmes	Rosmarie	Ronco s. Ascona	52	Nurse
Buttet	Carole	Montey	32	Business assistant
Chollet	Claude-Alain	Anières	33	Winegrower
Christen	Theo	Horgen	51	Businessman
Delrieu	Renée	Montana	60	Retired accountant
Gradwohl	Beat	Starrkirch-Wil	35	Municipality recorder
Hadorn	Liseli	Langnau	78	Retired telephone operator
Hedinger	Miryam	Truttikon	38	Nurse
Henninger	Jean-Pierre	Endingen	41	Secondary school teacher
Hobi	Leo	Binningen	65	Retired accountant

Name	*First name*	*City*	*Age*	*Occupation*
Iseni-Nef	Ursula	Klosters	40	Commercial employee
Kälin	Bruno	Zürich	36	Business information scientist
Kocher	Alberto	Lugano	79	Hotelier
Mettler	Estelle	Yverdon-les-Bains	45	Commercial employee
Morger-Käser	Christine	Zollbrück	36	Nurse
Ott	Simone	Zürich	37	Journalist
Ricci	Ettore Gentile	Neuchâtel	32	Teacher
Rutishauser	Muriel	St. Gallen	24	Student
Salzarulo	Laurent	Ecublens	22	Student
Schicker	Rudolf	Rotkreuz	56	Farmer
Schranz	Danielle	La Chaux-de-Fonds	51	Secretary
Stadelmann	Annemarie	Beromünster	45	Nursing assistant
Stauber	Eric	Meilen	45	Manager
Ulrich-Böhi	Luzia	Dielsdorf	44	Secretary/Housewife
Wagner	Claire	Winterthur	60	Housewife/office worder
Weber	Heinz	Basel	64	Veterinary surgeon
Wisler	Hans	Estavayer-le-Lac	71	Senior citizen

3 The Citizen Panel's Report

3.1 Research

3.1.1 Question

Which goals are set for the research and development of GMO-products?

a) To what extent is research steered by financial contributions made by industry?
b) *Which methods are used to supervise research activities?*

The Reference Persons' Answers: The Citizen Panel's Summary

The main aims of research at the moment in the foodstuffs area are the improvement of agronomic properties of plants (resistance to insects and herbicides, longer shelf life etc.) and the adaptation of plants to other biotopes. In the medium term, research will be working on quality questions (nutritional and taste properties), in the long term it will be looking into the creation of bio-products (Enzymes and medicines as well as other chemicals).

Private and public research pursue different goals. In the private sector, effort is concentrated on the development of products for which there are good chances on the market. Today, foodstuffs research is concerning itself particularly with maize, rape, potatoes, tomatoes, soy-beans, sugar beet and the pumpkin family. The markets targeted are - appropriately -

the industrialised countries. The aim of research in the public sector is basic research, i.e. a better understanding of the mechanisms of biological phenomena. As far as applied research is concerned, public research activities also looks into the needs of developing countries in that solutions are sought to improve basic nutrition (e.g. genetically modified rice with increased vitamin A content, plants which are more resistant to drought).

In Switzerland, public research is funded by the Swiss Federation and the Cantons. This is why it is not exposed to any pressure from private interests. With the current tendency towards cutting-back on public expenditure, a certain risk exists that part of the funding of public research projects may have to be taken over by the private sector.

Various supervisory instances keep research under surveillance (Swiss Specialist Commission on Biological Safety, SFOA, SAEFL, Swiss Veterinary Service). Laboratory experiments have to be notified (supervision by fellow professionals). Some of the reference persons are of the opinion that this sort of supervision is problematical, as it is not subject to democratic controls. Permission has to be obtained for field trials. Public research projects are published and are therefore subject to supervision by the general public.

The Citizen Panel's Opinion

We think that the freedom of public research must be guaranteed and that public funding should remain assured. We would like that the third world be given a greater weight in research, especially in public research and independent of the market. We consider the current supervisory mechanisms to be sufficient, but call for an intensified dialog between the general public and research.

The Citizen Panel's Recommendations

- Creation of a fund for the unbiased information of the general public on GMO topics
- Guarantees for the financial independence of public research activities

3.1.2 Question

How far on is research as far as the assessment of risks is concerned?

a) Are we able to ensure that no serious after-effects crop up?
b) How can we quantify risks?
c) *When is a risk acceptable?*

The Reference Persons' Answers: The Citizen Panel's Summary

For some of the reference persons, research into risks has made enough progress to be in a position to allow satisfactory judgement. Others, however, estimate that today's knowledge is insufficient, especially with respect to long-term effects on health and the environment. The reference persons were not able to decide on whether there are GMO-specific risks or not: some are of the opinion that GMO products represent no greater a risk than conventional foodstuffs (and also have to go through numerous tests) and others think that genetic engineering produces additional risks which have not yet been identified. All reference persons consider that, in the long term, a monitoring system will have to be set up. Those who consider that GMO exhibit specific risks call for a moratorium, so that research into the risks can be intensified and refined. A moratorium on the cultivation of genetically modified plants could be selective, in that it would allow field trials and work done in a confined milieu. Measures exist which prevent the hybridisation of wild plants and cross-fertilisation. For example keeping a critical distance between cultures (although there are differences of opinion on the definition of these critical distances), the sterilisation of genetically modified plants (here, socio-economic effects gave rise to criticism) or the cultivation of chloroplasts. As far as the risk of transferring resistance to antibiotics is concerned, it is intended that the marker-genes which carry the resistance be abolished and replaced with genes who express themselves by means of coloured or phosphorescent proteins.

The known and foreseeable risks (such as the appearance of a resistance to Bt-toxin) are measurable. The probability, that such a risk occurs, is low. But, as GMOs are relatively new, it is difficult to define risk probabilities since we do not have enough base data. Unknown risks (e.g. the appearance of unwanted mutations) are obviously not measurable, which calls for the implementation of a monitoring scheme.

How acceptable a risk is depends on a value judgement: we have to weigh up between the benefits gained and the risks taken.

The Citizen Panel's Opinion

The reference persons' answers do not allow us to rule out GMO-specific risks. Since these risks are not measurable, we are not in a position to judge whether they are acceptable or not. We are therefore of the opinion that monitoring is absolutely necessary, in order to be able to estimate risk potential in a better way. Considering these risks which are so difficult to assess, we think it is too early to allow the cultivation of genetically modified plants on a large-area scale.

We recognise that conventional foodstuffs can also bring certain risks (e.g. mad cow disease, introduction of Kiwis).

We do not like the following arguments:

- Justification of a catastrophe by quoting a previous one
- We have very sophisticated test procedures
- No proven risks
- The most strenuous legislation

The Citizen Panel's Recommendations

- Every genetically modified plant - even when officially registered - must be monitored over a certain length of time.
- Promotion of research into the quantification of the risks.
- In order to be able to compare results, a better co-operation between researchers should be guaranteed, including joint research projects.
- A minority of the panel would support the banning of sterilisation.

3.1.3 Question

For research in Switzerland, what would the consequences of a ban on genetically modified organisms be?

The Reference Persons' Answers: The Citizen Panel's Summary

A complete ban on GMO would be detrimental to research and would jeopardise the education of persons who would be able to carry out the analysis and interpretation necessary for monitoring

The Citizen Panel's Opinion

The panel realises that a complete ban on research in Switzerland would have a negative effect. In that we recommend monitoring, we will have to be able to depend on trained personnel and the possibility of carrying out research into GMO.

The citizens question the reference persons

3.2 The Ecosystem

3.2.1 Question

Which are the known and foreseeable influences of genetically modified organisms on the ecosystem?

a) Influence on soil
b) Influence on the atmosphere?
c) Infuence on water?
d) Influence on wild and cultivated plants?
*e) Influence on wild and domesticated animals***?**

The Reference Persons' Answers: The Citizen Panel's Summary

Too little financial means are made available for basic research into effects on the ecosystem. The hearing of the reference person led in this respect to contradictory arguments. On the one hand, it was said that genetic engineering is too new a technology to be able to control all possible effects. Especially the dangers still cannot be identified or measured well enough. On the other hand, moving onward was recommended, since only in this way can new knowledge be won, even if mistakes are made in the process.

a) When talking about influence on soils, one must take into account that very little is known about soils and their micro-organisms and that these ecosystems are very complex.

   For some of the reference persons, the very use of genetically modified plants is an unsolved problem. Others emphasise that the use of certain genetically modified plants could lead to a reduction of the amount of pesticides used, thus having a positive effect on the soil. These contradictory opinions were also expressed in the discussions on the consequences of planting Bt-maize. (This maize contains Bt-toxin, a poison with which the corn borer -an insect pest - is combated.) For some reference persons, the Bt-maize causes no problems with respect to the concentration of Bt-toxin in the ground, whereas according to

other views however, this effect must looked on with certain reservations.

b) In general, the reference persons see no particular problems in connection with effects on air quality. Only one person mentioned that the use of Bt-maize could even reduce the danger of allergies, as the external use of Bt-pesticides (as is possible without genetic technology) can trigger off allergic reactions

c) The influence of genetically modified organisms on water was hardly discussed. Again, the use of Bt-maize was mentioned; thanks to which water pollution could be reduced- through the use of less pesticides.

d) First, some reference persons mentioned that conventional agriculture also brings risks for the ecosystem with it, and therefore is no different to agricultural activities where genetically modified plants are cultivated. The conventional breeding of the presently used plants over the centuries didn't "just happen", but occurred by means of a selection process done by farmers.

   For these reference persons that the responsible use of genetically modified plants would not cause more problems when compared with the cross-fertilisation of two closely related plants, which also often happens in nature. Moreover, by using genetic technology, one would know the selected genes better and would be able to identify them with a greater degree of certainty.

   Other reference persons, however, fear that certain plants could cross-fertilise with genetically modified plants by natural means. Attention was drawn to the problem of gene transfer to closely related plants (e.g. from rape to mustard) by which cross-fertilisation with wild plants would be possible with the result that these would gain the properties of the genetically modified plants (e.g. herbicide-resistance for weeds). It was also pointed out that the possibility exists, that conventional cultures could be contaminated by gene transfer from genetically modified plants.

e) As far as answering this question was concerned, the reference persons restricted themselves to taking a look at the Bt-maize.

   In spite of the known high specificity of Bt-toxin, unexpected effects on organisms - also on useful ones - can occur as was demonstrated by the example of the green lacewing. In field tests with bees, however, no corresponding damage was proven.

Recently, laboratory tests showed that pollen from Bt-maize had a negative influence on the development of the larva of the monarch butterfly.

The influence of genetically modified organisms on domesticated animals is not known (neither the direct influence, e.g. on cows and chickens, nor indirect ones, e.g. on milk and eggs).

3.2.2 Question

How are long-term effects on the environment estimated?

a) How can unwanted dissemination be avoided?
b) Do genetic changes cause additional mutations?
c) *Can the release of genetic material be reversed?*

Answers of the Reference Persons: The Citizen Panel's Summary

Just as it is impossible today to predict the weather for next year, it is not possible to know the exact long-term effects of genetic technologies.

a) For some reference persons, plants which produce sterile seeds are a way to prevent genetically modified organisms spreading into conventional cultures. Also, the genes to be transferred can be "embedded" in the plastid (if necessary in chlorophyll-grains) instead of in the cell's nucleus, thus preventing the gene being passed on by cross-fertilisation. There are methods of cultivation, by which this problem can be addressed (especially keeping a minimum distance between fields with genetically modified plants and the corresponding conventional cultures).

   According to other reference persons, however, technologies which produce sterile seeds cause problems in the socio-economic area which cannot be accepted and adhering to minimum distances is illusory.

b) Additional or genetically caused mutations are theoretically possible, but up till now none have been proven.

c) The reference persons are of differing opinions regarding the questions if the release of genetic material can be reversed. On the one hand, reversibility is considered possible, in so far as the propagation was controlled and the dynamics of cross-fertilisation were studied in advance, allowing appropriate

measures to be taken in good time. On the other hand it was said that such propagation can not be reversed.

The Citizen Panel's Opinion to the Ecosystem

Because of the inconsistent and partly one-sided explanations of the reference persons questioned, it is very difficult for the Citizen Panel to form an opinion on the risks for the ecosystem. For some members the risks outweigh the advantages, whilst others consider that genetically modified plants would represent no greater risks than normal plants do.

Part of the Citizen Panel fear that dissemination of transgenic pollen will lead to the contamination of conventional cultures, which would have negative effects on biodiversity. The development of plants with sterile seeds can be considered to be a basis for the prevention of cross-fertilisation with other plants. This method is, however, questionable when seen in a socio-economic light.

The danger exists, that by using Bt-plants, resistance to Bt-pesticides will develop. This would be detrimental to organic farming, where insecticides on a Bt-basis could no longer be used. For part of the panel, it is possible to find solutions to protect organic farming, whereas another part of the panel finds that Bt-maize endangers organic farming.

The Citizen Panel's Recommendations to the Ecosystem

In order to remedy the lack of knowledge about risks, the Citizen Panel recommends that research looking into the area of ecosystem influence be encouraged.

The use of "marker-genes", which eases the identification of genetically modified organisms should be stimulated. The use of these genes will make it easier to "trace" genetically modified organisms in the ecosystem, which will be useful in studying long-term effects.

The protection of biodiversity and organic farming must be assured.

3.3 Health

3.3.1 Question

Which Goals in the health area does genetic engineering follow in its work in the agricultural and foodstuffs areas?

a) For consumers in the industrialised countries (e.g. functional food)?
b) *For the population in the third world?*

Answers of the Reference Persons: The Citizen Panel's Summary

Genetic engineering's goals in the health area

1) Cultivation of plants with resistance to pests and diseases. For health care, this means:
   - reduction of chemical insecticides on foodstuff and
   - reduction of the number of plants affected by disease.
2) Development of plants with better characteristics like:
   - higher ballast fibre content
   - higher proportion of vitamins
   - reduction of toxic agents
   - elimination of allergenic substances, etc
3) Cultivation of plants with vaccines
4) Guarantee of basic nutrition by increasing yields, elimination of toxic substances in the third world's basic foodstuffs (e.g. manyok) and the production of seed which is adapted to difficult climatic conditions (e.g. in the Sahel zone)

One of the reference persons is of the opinion that, with genetic technology, many health problems can be prevented or solved. This reference person mentioned cancer, allergies, osteoporosis the consequences of unbalanced nutrition as well as heart disease and circulatory disorders. Another reference person is of the opinion, however, that people should better learn to nourish themselves in a healthy way

with conventional foodstuffs and not want to correct the results of their bad habits using genetic technologies. And it should also be born in mind that other ways and means should be considered for reaching the above mentioned goals. It is important to note that "functional food" will - for financial reasons - not be available to all. In addition, this reference person pointed out that only one fifth of all allergy sufferers react to a main allergen and that genetically modified foodstuff is only effective for these.

The Citizen Panel's Opinion

The Citizen Panel basically supports the goals of genetic engineering in the health area and accepts it as a possible solution. Research should not, however, be done at the cost of other forms of study which have the same aims. For the third world, guaranteeing nutrition has priority.

3.3.2 Question

What are the short and long-term risks involved when a person directly or indirectly consumes (via the food chain) genetically modified foodstuffs?

a) What medicinal research is being carried out in this area
b) What health injuries are already known (incl. results of animal experiments)?
c) *Which health risks exist during the cultivation of GMO plants (e.g. contamination, contact, inhalation)?*

Reference persons' Answers: The Citizen Panel's Summary

One of the reference persons pointed out that there is basically no such thing as zero-risk in life. This is particularly valid for the area of new technologies. It should also be born in mind that safety regulations for trans-genetic foodstuffs are much more stringent than those for all conventionally produced foodstuffs. This means for example that extensive risk-analyses - including animal experiments - would be carried out. Exactly these risk-analyses would not be made for foodstuffs produced traditionally. The centre of attention during these analyses would be placed on clarifying questions on allergies. These are said to have shown that genetically modified foodstuffs do not give rise to any more risks than conventionally produced ones. On the contrary: research is carrying out work on reducing the allergenic potential of certain

foodstuffs (e.g. rice and peanuts). Furthermore, these are said to have been studied better. Health risks in connection with resistance to antibiotics have also not been diagnosed. No health detriments are known so far which could be attributed to genetically modified food. In addition, research is working on finding out which foodstuffs - like yoghurt and bananas - are suitable as carriers for medicaments and vaccines.

A second reference person, however, is convinced – as is the British Medical Society also – that, as a result of the use of genetic engineering, an increase in the number of allergies and resistance to antibiotics is to be reckoned with. This reference person is of the opinion that genetic technology will result an indifference to the whole context of life. This would lead to both direct and indirect threats, and one must reckon with non-foreseeable consequences.

The Citizen Panel's Opinion

The panel compares the health risks involved with genetically modified foodstuffs with those involved with traditionally produced ones. The panel is of the opinion that up to now, no direct health risks are known for registered genetically modified foodstuffs. Experiments are known, however, which have been carried out on animals and which have caused harm to them. Some of the members of the panel therefore conclude that these sorts of foodstuff could also represent a risk for human beings. According to the opinion of the panel, an estimation of the long-term effects of genetically modified foodstuffs on human health is not possible at the present time.

An increase in the number allergies would occur as a result of the use of genetic technology. This is the opinion of the majority of the panel. The reason for this opinion is that GMO-foodstuffs can never be guaranteed to be pure and that, in conventional foodstuffs, the allergens are known - in contrast with those in genetically modified ones. A minority of the panel argues that, because of the extensive tests and risk-analyses carried out before a genetically modified foodstuff is registered, the opposite is the case. As far as cases of resistance to antibiotics is concerned, the majority of the panel is of the opinion that these would also increase if genetic technology were used. The reason: the use of marker[1] genes or other antibiotics-resistant genes. The minority thinks that resistance to antibiotics will remain constant or even be reduced. Moreover, the opinion was stated that the vitality of food could be influenced. Other members of

[1] Marker genes are genes which allow the identification of a GMO-product

the panel are convinced that traditional foodstuffs are no different in this respect to GMO foodstuffs.

The Citizen Panel's Recommendations

- A monitoring system which should accompany all GMO foodstuffs, in order to be able to trace the direct and indirect effects in the long term. If marker genes are used, they should not be antibiotic resistant.
- It is absolutely necessary to guarantee that the withdrawal of a foodstuff be put immediately into effect when negative effects are found.
- The majority is of the opinion that the third world has to be given access to the achievements of genetic technology at privileged conditions. The minority is of the opinion that industries which produce agricultural products using genetic technology should not be given different treatment when trading with the third world than other industries who trade with third-world countries.
- Extensive risk-analysis is to be made in the area of medicinal research.
- For every registration for genetically modified foodstuffs, plans must be available for the protection of human health in case unwanted effects appear. A statutory obligation should ensure that public authorities inform the general public immediately of any unwanted effects caused by genetically modified foodstuffs.
- The panel calls for comparative studies of substantially equivalent products produced in organic and conventional ways and genetically modified foodstuffs in order to find out if health is influenced in various ways.

3.4 Ethics

3.4.1 Question

How do you judge genetically modified foodstuffs from the moral / ethical point of view?

a) How can it be ethically and morally acceptable that animal genes be implanted in plants?
b) From the ethical point of view, is it morally acceptable to base arguments about genetically modified foodstuffs on workplace problems?
c) *How do you consider the ethical questions involved with the use of genetic technology in the third world (hunger, technological dependence)?*

Reference persons' Answers: The Citizen Panel's Summary

a) Since the genetic material of all living organisms is constructed in the same way, there are - according to one opinion - no fundamental moral scruples on transferring a gene from one organism to another. Such moral reservations do not stand up to a sober ethical examination. Genetic engineering should be judged to the same standards as today's forms of farming. These too are an artificial "agro-ecosystem" (e.g. hybrids). On the other hand, massive reservations were expressed on the infringement of the integrity of organisms. The ethics of genetic technology are described as reductionistic, i.e. ethics of the creation of dependencies.

b) The workplace-argument should not be used for the justification of genetic technologies.

c) The world's nutrition problem has not only technological causes: genetically modified plants, however, could provide a contribution to improving the situation.

   However, the world's nutrition problem is - according to another reference person - no ethical argument for the justification of genetic technologies, but a social and economical problem which can be solved by conventional agricultural means. Ethical reservations were

made in connection with the increasing dependence of developing countries on large business groups in the industrialised countries.

Further comments made by reference persons (also other than the above-mentioned ones) during the discussions:

- The opinion of the general public, the majority of which disapproves of genetically modified foodstuffs, cannot be seen as a moral instance. It would be desirable to take the opinion of the majority into consideration.
- Legislation is not the right way to solve ethical problems. On the contrary, co-operation with the third world, for example, should be supported and it should be made sure that independent, publicly funded genetics research is furthered.
- One decisive criterion is the question of necessity: Can we not meet our needs using conventional production methods - do we need genetically modified foodstuffs at all?

The Citizen Panel's Opinion

Our questions were answered in a very controversial manner. The spectrum ran from basic, undisputed acceptance through to the complete rejection of the use of genetic technology in the area of foodstuffs.

a) Intervention in the genetic structures of organisms has in our opinion an ethical dimension, even when from the biological point of view the "genetic basis" of all organisms is based on a common principle.

Half of the Citizen Panel is for the following wording:

a1) Genetic technology encroaches arbitrarily on life-processes which are millions of years old, and produces forms of life which nature would never have created itself and whose effects on the ecological equilibrium have not been sufficiently looked into. The dignity of the creature must be preserved. The use of genetic technology in the area of foodstuffs can - from the ethical point of view - only be accepted if an independent, comprehensive risk-analysis were carried out and when an essential demand would exist which cannot be met using natural resources.

The other half of the Citizen Panel is for the following wording:

a2) Genetic technology should meet the same, but not more stringent ethical requirements as traditional production methods. Intervention in natural life processes has already taken place in traditional production methods. The use of genetic technology is not a different sort of intervention.

b) The majority of the Citizen Panel is of the opinion that work-place arguments should not be used in the ethical discussion around genetic technology. In which ways the use of genetic technology in the production of foodstuffs has an influence on the employment situation should be looked at from the economics point of view.

c) Assuming that the criteria mentioned in a) are fulfilled, genetic technology can also offer useful solutions for the third world. Genetic technology should, however, only be used as a supplement to traditional or local farming methods. No additional dependence of the third world on industrialised countries should ensue.

The Citizen Panel's Recommendations

Research projects on genetic technology in the foodstuffs area must be accompanied by in-depth ethical analyses.

We would like to see fairness and solidarity in the price policies of industry as far as third world countries are concerned. Third world countries whose genetic resources are used by industry should be financially compensated.

3.5 Business and Industry

3.5.1 Question

What are the economic chances and risks involved with genetic technology in the agrarian and foodstuffs industry?

a) What are the chances and risks involved with genetic technology on the business and national economic levels in Switzerland?

b) *What consequences would unilateral measures (e.g. moratorium) have for Switzerland?*

Reference persons' Answers: The Citizen Panel's Summary

Only two of the recommended reference persons gave their opinions on this topic. In doing so, their answers clearly bore the stamp of their professions.

Today, genetically modified products such as soy-beans, maize, rape, potatoes, sugar-beet and cotton are being cultivated on a large sale in North and South America. For genetically modified soy-beans, the cultivated area has grown as follows:

- 1996: two percent
- 1998: thirty percent
- 1999: presumable fifty percent

The use of genetic technology allows the following chances to be quoted:

- Farming and the agricultural industry can make more profit. Although the genetically modified seed costs around five dollars per hectare more than conventional seed, cost advantages- depending on location - of 20 - 150 dollars per hectare result after all costs are subtracted.
- In the future, plants should be changed in such a way as to exhibit enhanced features as far as nutritional physiology is concerned.
- As a result of the sceptical reaction of consumers to genetic engineering, the turnover of organic products in the grocery business

might increase. Genetically modified foodstuffs have therefore no advantage from the business economics point of view at the moment, which implies the promotion of integrated and organic agriculture.

- The use of genetically modified additives in the processing of foodstuffs is viewed in a positive light.

Genetic technology is afflicted with the following risks:

- The feeling of unease among the consumers and the possibility of incurring a loss of good image appear too large to allow jumping on the genetic technology boat.
- Genetic technology will result in structural changes occurring which will restructure the whole industry. Because of changed job profiles, there will be winners and losers.
- Unilateral action by Switzerland could have negative consequences on business, since Switzerland as a location for research in this area could be endangered.

The Citizen Panel's Opinion

Backing out of genetic technology in the sense of a unilateral Swiss policy is, according to the majority of panel members, not an option any more, since this would lead to important economic disadvantages, primarily in the Swiss research area and secondarily because of the dependence of Switzerland on imported raw materials, which could in the future contain GMO-components.

First of all, the question on how far a need for the use of genetically modified organisms exists in Switzerland must be answered. For this, comparative studies are necessary to show which types of cultivation in Switzerland could actually lead to advantages in both economical and ecological terms and therefore which releases of GMO could make sense in Switzerland.

At the same time, the angle of view should not be solely placed on genetic technology. The existence of traditional, genetic-technology-free agriculture as well as organic farming must be guaranteed, in order to provide consumers with a free choice, both today and in the future. Instead of GMO production, organic farming could be a chance for Switzerland, as at the moment no contamination is to be feared.

The majority of the Citizen Panel is of the opinion that bans are questionable, since they would cement the current state of knowledge. If

no GMO-releases are allowed in Switzerland, no site-specific experience can be obtained. This would inhibit research into risks and therefore increase our dependence on know-how transfer from other cultivation areas. This is problematical, as the ecological circumstances could be basically different.

The Citizen Panel's Recommendations

The majority of the Citizen Panel recommends being careful and acting with restraint on the use of GMO products in Switzerland's finely-structured agricultural areas. Risk of mutual contamination is high, which means that extensive fundamental research in risk-assessment has to be done. A minority of the panel calls for a ban on cultivation for the same reasons.

Additionally, we welcome the current tightening-up on questions of liability, as this leads to a more careful use of genetic technology.

3.5.2 Question

What are the consequences of the world-wide patenting of genetically modified organisms (e.g. use of seed by farmers for their own use, i.e. for sowing in the next season)?

Reference persons' Answers: The Citizen Panel's Summary

One reference person was of the opinion that the patents do not refer to the plants themselves, but only to the method of isolation, the genetic construction and its transfer to the recipient. Patenting seems justified, since research costs can thus be covered and since protection against imitations is necessary.

In connection with the patenting question, the licensors (i.e. the chemical industry) are making so-called technology-contracts with farmers in the USA. This means that farmers put themselves under an obligation to use only the company-specific herbicides. In addition, they agree not to foresee the reuse of seed. The possibility exists, however, of opting out of the agreements at the end of the farming year and returning to conventional cultivation methods.

For the third world and Europe, other licensing conditions would have to be developed. On the part of industry, it could be envisaged that, in the third world, the reuse of seed could be allowed.

It was additionally argued that, because of patenting, an increase in the dependencies between the North and the South will be seen. A race against the clock is now in course, as the specific know-how of primitive people - such as the different ways plants can be used - is being systematically collected by industrial companies in order to secure active substances for future genetic technologies.

Further, the question arises if genes are patentable at all? From time immemorial, farmers have exchanged seeds amongst themselves, which would mean that patents on seed are considered reprehensible.

The Citizen Panel's Opinion

The majority of the Citizen Panel is of the opinion that, at the moment, each farmer has the possibility to acquire GMO-free seed.

However, there is a trend that the smaller seed producers will disappear in the long term because they will not be able to compete with large multi-national industry, which would mean that a dependence could develop. A development in this direction can already be seen today by looking at market shares, which are quickly growing.

In the third world, this dependence is being additionally highlighted by the fact that know-how on the use of the new technology is available in the industrialised countries, but has not been transferred to the countries of the third world.

The patenting of living organisms is for many of the members of the panel not acceptable. On the other hand, patenting creates more transparency, as the applicant has to publish his research results before the patent is granted. It is also understandable that the high costs of research have to be made to pay for themselves somehow.

The Citizen Panel's Recommendations

The panel requests that license contracts for third world parties be set up in such a way that the personal reuse of seed be allowed, in order that the livings of the farmers there are not additionally endangered.

Some members request that the biological diversity in the third world be given the same protection as is given to cultural heritage in industrialised nations.

The citizens question the Reference persons

3.6 Legislation and Legal Compliance

3.6.1 Question

How to you rate the legal rules for the development and marketing of GMO products, and in which areas do you think there is scope for action?

Reference persons' Answers: The Citizen Panel's Summary

Giving precise answers to questions on genetic technology is difficult for various reasons:

- Legal uncertainty, as regulations are not yet or only partly in force.
- Lacking legal practice, hardly any jurisdiction on the subject.
- Genetic technology is covered by a number of laws, e.g. Foodstuffs legislation, environmental laws etc.

The reference persons consider (today's) legal regulations on development and marketing as being sufficient. Action is called for in the creation of legal security by the clarification of the meaning of various expressions, such as, for example, the protection of the dignity of the creature, benefits for society, dialog with the general public, sustainable use of biological resources etc.

The Citizen Panel's Opinion

Obtaining an overview appears to be very difficult because of the number of laws and statutes involved. We see an additional problem in the verification and assertion of legal regulations.

The Citizen Panel's Recommendations

The Citizen Panel would like to see stiffer regulations for supervision and verification such as on quality assurance in production or compulsory declarations. The panel requests that the Swiss Federation makes sure that the implementation of the laws by the cantons is done in a consistent and stringent way.

3.6.2 Question

What do the liability regulations look like? Who is liable for how long and to what extent?

Reference persons' Answers: The Citizen Panel's Summary

Swiss liability law is characterised by the maxim that he or she who is done harm has basically to bear the burden himself / herself, unless legislation foresees the possibility of claiming damages from the party responsible. Product and environmental liability are given special emphasis. Today's statutory period of limitation is set to a maximum of 10 years after the introduction of a product. In environmental liability legislation, an extension of the period of limitation of up to 30 years is foreseen.

The Citizen Panel's Opinion

The Citizen Panel is conscious of the fact that the unequivocal tracing of damage back to a GMO is very difficult. If such evidence exists, it must in all cases be possible to prosecute those responsible (e.g. the producer). The consumer must, however, also be aware of the fact that when consuming GMO-foodstuffs, he will have to carry any possible residual risk himself.

The Citizen Panel's Recommendations

The Citizen Panel welcomes the founding of a fund for damage caused by genetic technology, which should cover damages caused by those at fault who become insolvent or when the claims already fall outside the period of limitation. This fund should be financed by the owners of companies and plants.

3.6.3 Question

Which regulations exist today - or are planned - for the declaration of GMO products, and who verifies compliance to them (also for processed products)?

What is the definition of GMO-free and GMO products?

Reference persons' Answers: The Citizen Panel's Summary

According to the Foodstuffs decree, article 15, GMO are defined as follows:

"GMO are genetically modified animals, plants and micro-organisms whose genetic material has been modified in vitro in a way which is not possible under natural circumstances through cross-fertilisation or natural recombination.

On the 1st of July 1999 new foodstuffs regulations come into force which define three types of foodstuff:

- Foodstuffs with the declaration "made of genetically modified ... (e.g. soy-beans or maize)" = more than 1% share of GMO.
- Foodstuffs without any GMO or foodstuff which is contaminated with up to a maximum of 1% GMO.
- Foodstuffs with the declaration "produced without genetic technology" = it is not possible to analytically detect any traces of GMO, and the tracing-back of material flows is guaranteed.

In addition, there is a zero-tolerance for GMOs which are not recognised by Switzerland, i.e. non-allowed GMOs are banned even when the purity limit of 1% is met.

For the verification of compliance to the regulations, not only are companies obliged to self-check themselves, i.e. through quality assurance, traceability and investigation, but also monitoring by the authorities in the form of inspections and spot checks is foreseen.

The Citizen Panel's Opinion

It is indispensable that a clear regulation concerning declaration limits for GMO products exists. The consumer should have a freedom of choice between GMO products and non-GMO products.

The Citizen Panel's Recommendations

In order that consumers can easily tell the difference between GMO-foodstuffs and other foodstuffs, we recommend the creation of a distinct GMO label.

GMO foodstuffs could be placed separately from the other foodstuffs in the shops.

The Swiss Federation should inform the whole population on the use and implementation of genetic technology.

3.6.4 Question

Which tests do GMOs have to pass before they are registered?

Reference persons' Answers: The Citizen Panel's Summary

According to the decree on the permission process for GMO foodstuffs and GMO processing additives (PAGMO), the application for registration

must be accompanied by a number of documents and test results, e.g. assessment of toxic and allergic effects, product risks etc.

The Citizen Panel's Opinion

According to the information provided by the reference persons, it is apparent that there are no standardised testing methods available by which different studies can be compared with each other. Doubt also exists if and when supervision is carried out.

The Citizen Panel's Recommendations

Standardised and comparable tests are to be used. In addition, long-term studies should be set up to investigate the effects of GMO foodstuffs.

3.6.5 Question

How do international commitments affect the import of GMO foodstuffs, both today and in the future?

Reference persons' Answers: The Citizen Panel's Summary

In the framework of various international agreements (e.g. WTO agreement, EFTA agreement), Switzerland has committed itself to orientate itself on international recommendations. These international commitments place restrictions on the autonomy of Swiss legislature in the genetic technology area.

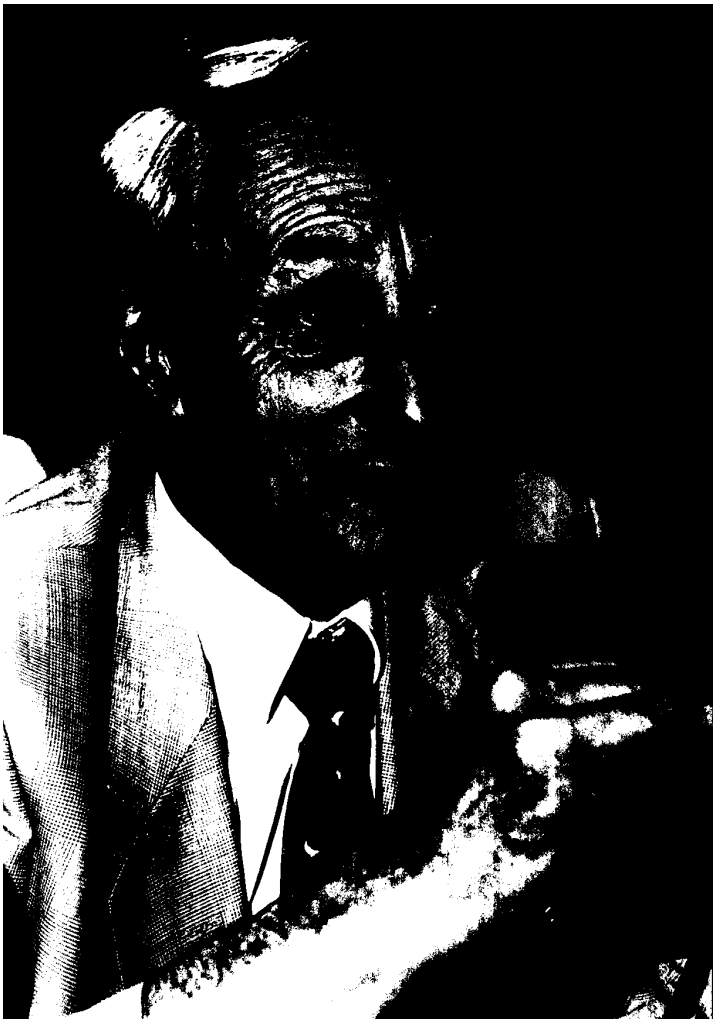
The regulations in the EU are different from those in Switzerland. The international commitments (WTO) represent an obstacle to the preservation of the true freedom of choice for consumers.

The Citizen Panel's Opinion

Since Switzerland has made more progress in this area of regulation as - for example - in the EU, Swiss legal regulations could have an indicative character. The freedom of choice of Swiss consumers has to be assured to the utmost degree.

The *Citizen Panel's Recommendation*

Switzerland should make use of its role as a pioneer in GMO legislation.



The citizens question the reference persons

3.7 Conclusions and Main Recommendation

Today's level of scientific knowledge does not allow us to rule out the existence of specific risks resulting from genetically modified organisms. As one can not quantify these risks, we are not in a position to make any judgement on their acceptability. As a result of the above-mentioned arguments, the majority of the panel recommends a moratorium on the production and marketing of genetically modified organisms. Clearly defined field trials (specifically: by public institutions) should be permitted and supervised in order to obtain extended knowledge on any risks.

Hearing of the reference persons

Appendix I - PubliForum Order of Events / Programme

First preparatory weekend , Monte Verità, 27th - 28th March 1999

Friday, 26th March	from 18.00	Reception of the participants
	19:00 - 21:00	Dinner
Saturday, 27th March	09:00 - 10:00	**Introduction** The organisers introduce themselves: What is the TA-programme? The participants introduce themselves: Motivation and current activities
	10:00 - 10:30	**PubliForum "Genetic Technology and Nutrition": Aims and Methods** Why hold a PubliForum on "Genetic Technology and Nutrition"? What's PubliForum all about?
	10:30 - 11:00	Coffee-break
	11:00 - 12:00	**Basics of genetic technology and their application in the foodstuffs area** Lecture by Beat Keller, biologist, Zürich University Questions and discussion
	12:30 - 14:00	Lunch
	14:00 - 15:00	**Genetic Technology and Nutrition: Legal and political situation** Lecture by Hans Schwab, Federal Office of Health Questions and discussion
	15:00 - 16:00	**Genetic Technology and Nutrition: Ethical aspects** Lecture by Andrea Arz de Falco, president of the ethics commission for genetic technology in the non-human area Questions and discussion
	16:00 - 16:30	Coffee-break

	17:00 - 18:00	**How PubliForum works** The organisers explain the order of events. Who does what, how and where?
	18:00 - 18:30	Summary of the day
	19:00 -	Dinner
Sunday, 28th March	From 08:00	Breakfast
	09:00 - 09:30	**Structure of the day and constitution of work-groups**
	09:30 - 11:30	**Which topics should be discussed in the PubliForum?** Discussion in work-groups
	11:30 - 12:30	**Which topics should be discussed in the PubliForum?** Collection of the results of the work-group discussions
	12:30 - 14:00	Lunch
	14:00 - 16:00	**Which topics should be discussed in the PubliForum?** **Continuation and conclusion** Preparation of a catalogue of topics
	16:00 - 16: 30	**Summary of the weekend**
	16:30	End of the first preparatory weekend

Second preparatory weekend , Charmey, 8th - 9th May 1999

Saturday 8th May	10:00 - 10:30	**Introduction state of progress** S. Bellucci, D. Bütschi, TA-programme
	10:30 - 11:00	**Posing questions, evaluation of answers, writing a report: a short introduction** Rosmarie Waldner, president of the accompanying group and journalist
	11:00 - 12:30	**Which questions are to be posed and dealt with during the PubliForum** Work in groups
	12:30 - 14:00	Lunch
	14:00 - 16:00	**Which questions are to be posed and dealt with during the PubliForum** Continuation and conclusion
	16:00 - 16:30	Coffee-break
	16:30 - 17:30	**How to deal with reporters** Some rules and current projects Rosmarie Waldner, president of the accompanying group and journalist, Carla Ferrari, TV-journalist

	17:30 - 18:30	**Which reference persons should be chosen?** Work in groups
	18:30 - 19:00	Summary of the day
	20:00 -	Dinner and free time
Sunday, 9th May	08:00 - 09:00	Breakfast
	09:30 - 10:30	**Which reference persons should be chosen?** Continuation
	10:30 - 11:00	Break
	11:30 - 12:30	**Which reference persons should be chosen?** Continuation
	12:30 - 14:00	Lunch
	14:00 - 15:00	**Which reference persons should be chosen?** Continuation and conclusion
	15:00 - 16: 00	**Which questions are to be posed during the PubliForum?** Definitive wording (translations)
	16:00 - 17:00	Summary and further course of events
	17:00	End of the second preparatory weekend

PubliForum "Genetic Technology and Nutrition", Berne, 4th - 7th June 1999

Friday, 4th June	10:00 - 10:30	**Official opening of the PubliForum** - Ruth Grossenbacher-Schmid, national councillor - Danielle Bütschi, TA-programme, responsible for the PubliForum project - Rolf Schicker, member of the Citzen Panel
	10:30 -11:30	**Citizen Panel questions on the topic of "Research"** Answered by: - Jean-Pierre Zyrd, Biology professor, Lausanne university - Daniel Ammann, manager, Swiss Working Group on Genetic Technology (SAG) - Angelika Hilbeck, biologist, Federal Research Institute for

		Agricultural Ecology and Farming, Zürich-Reckenholz
	11:30 -12:30	**Citizen Panel questions on the topic of "Ecosystem"** Answered by: - Klaus Ammann, biologist, Berne University - Daniel Ammann, manager of the Swiss Working Group on genetic teechnology - Andrea Raps, biologist, Federal Research Institute for Agricultural Ecology and Farming, Zürich-Reckenholz
	12:30 - 14:00	Lunch
	14:00 - 14:45	**Citizen Panel questions on the topic of "Health (I)"** Answered by: - Arthur Einsele, Novartis Seeds AG, responsible for communications - Elisabeth Bücking, biologist, Eco-Institute, Freiburg (Germany)
	14:45 - 15:30	**Citizen Panel questions on the topic of " Health (II)"** Answered by: - Beda M. Stadler, professor for immunology and allergology, Berne University - Hans Ulrich Albonico, chief physician, department of complementary medicine, Langnau regional hospital
	15:30 - 16:00	Break
	16:30 - 18:00	**General discussion between Citizen Panel and Reference persons**
Saturday, 5th June	09:00 - 10:00	**Citizen Panel questions on the topic of "Ethics"** Answered by: - Philipp Balzer, moral philosopher, Zürich University - Florianne Koechlin, SAG and WWF - Grégoire Raboud, Green Party , Valais
	10:00 - 11:00	**Citizen Panel questions on the topic of "Business and Industry"** Answered by: - Helmut Wagner, Monsanto (Germany) GmbH - Thierry Pellet, Employee of "Bernese Manifest", Lausanne - Brigit Hofer, economist, COOP Switzerland

	11:00 - 11:30	Coffee-break
	11:30 - 12:30	**Citizen Panel questions on the topic of "Legislation and Exicution"** Answered by: - Stefan Kohler, lawyer, Homburger solicitors, Zürich - Hans Hosbach, Federal Agency for the Environment, Forests and Landscapes (SAEFL) - André Hermann, cantonal chemist, Basle
	12:30 - 14:00	Lunch
	14:00 - 15:00	**Genetic Technology and Nutrition: Legal and political situation** - Lecture by Hans Schwab, Federal Office of Health Questions and discussion
	14:00 - 16:00	**General discussion between Citizen Panel and Reference persons**
Sunday, 6th June	09:00 (open end)	**The Citizen Panel writes the report** (no public access)
Monday, 7th June	10:00 - 10:30	**The Citizen Panel presents its report**
	10:30 - 11:30	**Reactions from the audience and discussion**
	11:30 - 12:30	Conclusions - Sergio Bellucci, TA-programme director - Urs Klemm, vice-director, Federal Office of Health - Ruth Gonseth, national councillor - Beat Hodler, manager, Federation of Foodstuffs Industry (FIAL)

Appendix II - List of reference persons questioned

Name	*Organisation*
Hans Ulrich Albonico	Regional hospital, Lengnau. Head of department of complementary medicine
Daniel Ammann	Swiss Working Group on Genetic Technology (SAG); manager
Klaus Ammann	Berne University; biologist
Philipp Balzer	Zürich University; moral philosopher
Elisabeth Bücking	Eco-Institute Freiburg (D); biologist
Arthur Einsele	Novartis Seeds AG, responsible for communications
André Hermann	Chemist, Conton Basel
Angelika Hilbeck	Federal Research Institute for Agricultural Ecology and Farming, Zürich-Reckenholz; biologist
Brigit Hofer	COP Switzerland; economist
Hans Hosbach	Federal Agency for the Environment, Forests and Landscapes (SAEFL); head of the bio-technology and material-flow section.
Florianne Koechlin	Swiss Working Group on Genetic Technology (SAG) and WWF (member of the board of councillors)
Stefan Kohler	Lawyer and biologist, Zürich
Thierry Pellet	Bernese Manifest, Lausanne
Grégoire Raboud	Green Party, Valais
Andrea Raps	Federal Research Institute for Agricultural Ecology and Farming, Zürich-Reckenholz; biologist
Beda M. Stadler	Berne University; professor for immunology and allergology
Helmut Wagner	Monsanto (Germany) GmbH; PR and PA director for Germany, Switzerland and Austria
Jean-Pierre Zyrd	Lausanne University; Professor for biology

Appendix III - Accompanying Team, Organising Staff and Mediator

Accompanying Team

Name	*Organisation / Function*
Siegfried Adamer	Nestlé Switzerland AG; Head of GMO task force
Françoise Bieri	B.I.C.S, Basle; director
Olivier Félix	Federal Office for Agriculture, Berne; head of means of production department
Oreste Ghisalba	SPP Bio-technology SNF, Basle; head of programme
Ruth Gonseth	National Councillor, Liestal; president of the Swiss Working Group on Genetic Technology
Beat Hodler	Federation of foodstuffs industries (FIAL) Berne; manager
Urs Klemm	Federal Office of Health; vice-director
René Longet	Swiss Society for the Protection of the Environment, Geneva; director
Bernadette Oehen	WWF Switzerland, Zürich; project manager for genetic protection
Johannes Randegger	National Councillor, Bettingen; Head of Novartis Services AG
François Schorderet	Novartis Consumer Health AG, Nyon; Head of Global Search and Evaluation Nutrition
Simonetta Sommaruga	Foundation for Consumer Protection; manager
Michael Teuber	ETH Zürich, department agrarian and foodstuffs science; professor
Rosmarie Waldner	Tages Anzeiger Zürich; science editor
Kurt Weisshaupt	Federal Agency for the Environment, Forests and Landscapes

Organising Staff

Name	*Organisation / Function*
Sergio Bellucci	TA / Swiss Science Council Head of TA-Programme
Danielle Bütschi	TA / Swiss Science Council Project-leader PubliForum
Esther Inniger	TA / Swiss Science Council TA-Programme Office
Lucienne Rey	TA / Swiss Science Council Public Relations TA-Programme
Adrian Rüegsegger	TA / Swiss Science Council Responsible for "Life Science"
Franziska Schwab	Trainee TA-Programme
Brigitta Walpen	TA / Swiss Science Council TA-Programme Office

Mediator

Name	*Organisation*
Ulrich Egger	Egger, Philips + Partner, Zürich