



Symposium Report

From Common Principles to Common Practice

International Forum on Assessing
Sustainability in Agriculture
(INFASA)

1st Symposium: Indicator and Assessment Systems

March 16-18, 2006

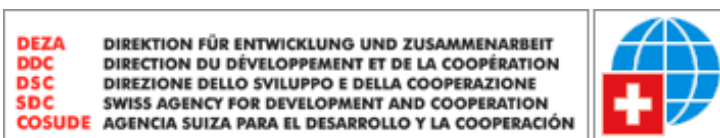
Zentrum Paul Klee and Käfigturm, Bern, Switzerland

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1. Background and Overview

In order to navigate the transition to agricultural sustainability we need measurement and assessment tools adopted at local, national and international levels as well as throughout the supply chain. The need to better understand and overcome barriers to the much wider uptake of indicator and assessment systems prompted the formation of the International Forum on the Assessment of Sustainability in Agriculture (INFASA). Formed through a partnership between the Swiss College of Agriculture (SHL) and the International Institute for Sustainable Development (IISD), INFASA is aiming to cultivate a long term dialogue with lead researchers, stakeholders and decision-makers to further the mainstream adoption and use of indicator and measurement systems in the policy and practice of sustainable agriculture. The pillars of science, policy and practice form the basis of an ongoing dialogue on tools and methods to strategically advance the agricultural sustainability agenda.

An initial step towards this long term dialogue was a Symposium, held on March 16, 2006 and a follow-up workshop on March 17, 2006 in Bern, Switzerland. The goals of the Symposium were as follows:

- Provide an overview of best practices and opportunities for improved coordination and learning in the agri-sustainability indicator and assessment field.
- Connect the applied research community with current and potential users of these information and extension tools.
- Identify expectations, needs and potential areas of added value from the target user perspective.
- Elaborate key elements of a strategy to improve the effectiveness of these tools at regional, national and international levels.
- Initiate joint projects to better match the potential of the tools with the needs of the target audience.

The Symposium was filled to its capacity with 100 participants representing academia, private and public sectors, NGOs, and farmers from 18 countries of 5 continents. Introduction, two keynote addresses and eight presentations provided fodder for lively discussion at the panel session. This momentum was then carried forward at a smaller workshop on March 17. Participants convened into four thematic working groups and discussed the following topics: 1) demand-oriented tools and methods; 2) linkages to policy; 3) capacity building and communication; and, 4) synergies and cooperation. A farm tour on March 18th concluded the Symposium and provided further insight into farm level perspectives.

The Symposium and Workshop resulted in a wealth of interaction and idea exchange. This report summarizes contributions and discussions, and provides a preliminary synthesis. The Symposium Proceedings will include more in depth contributions and synthesis.

2. Presentations (March 16, 2006, ZPK)

2.1. Introduction

INFASA was opened by Fritz Häni from SHL and László Pintér from IISD, acting as conveners and co-chairs of the Symposium and the Forum.

Global Agriculture in Need of Sustainability Assessment

Fritz Häni

Looking at agriculture from the global as well as from a regional perspective - in the South and in the North – we can see a sector with great potential, but also one under great pressure due to multiple, interacting forces of fast change (Table 1).

Table 1. **Growing Pressures by 2025**

• Global climate change (energy requirements)
• Loss of fertile land (erosion, salinization etc.)
• Pollution and biodiversity loss
• 1.5 billion more people, 1.5 billion undernourished
• 2.5 billions living in water-stressed or water-scarce conditions
• Demand for cereals and tubers increased by > 50%
• Demand for livestock doubled in developing countries

Sources: World Bank, CABI, FPRI, Rockefeller Foundation, IUCN, World Watch Inst. (Vital Signs 2005, State of the World 2005), Donella Meadows et al. 2004: The Limits to Growth-The 30-Year update.

Although currently fashionable and often abused, sustainability is neither an outworn nor a dusty notion. It has evolved over the last 20 years with growing importance to a political agenda at international and national level, with particular emphasis on ecological aspects. Although the principle of sustainable agriculture is broadly accepted, the practical application of holistic sustainability assessment tools is still very limited. A major reason for this may lay in the frequent assumption that sustainability is merely an ecological concept. The result is a kind of “greenish” impression that marginalizes economic and social aspects. Not only are they at least as important but also the public awareness for them seems to be growing.

Before we can start talking about assessment tools we therefore need to look at acceptable definitions for sustainability. A well accepted and probably the most broadly used one for sustainability is the definition of the Brundtland Commission¹. We found it to be a very good basis for our work on the Response-Inducing Sustainability Evaluation (RISE) at the Swiss College of Agriculture. But we also felt that some key aspects had to be added. Three more dimensions should be added²: “human dignity”, the (local) “natural environment” and the “global ecosystem”.

The basic definition of sustainable development could therefore read as follows:

Sustainable Development allows a life in dignity for the present without compromising a life in dignity for future generations or to threaten the natural environment and endangering the global ecosystem.

Translated for its practical use in agriculture and to make it operational for assessment tools:

Sustainable agriculture adopts productive, competitive and efficient practices, while protecting and improving the environment and the global ecosystem, as well as the socio-economic conditions of local communities and in line with human dignity.

Although numerous methods to evaluate the degree of sustainability on a global, national and local level have been published and various environmental licensing and labeling options (e.g. ISO 14040, EurepGAP, Organic) are available to farmers, holistic management tools at farm level are still very rare. This is the reason for a specific focus of the International Forum on Assessing Sustainability in Agriculture (INFASA) on such tools. The case studies presented during the first INFASA-Symposium focus on the application of holistic management tools.

Holistic assessments provide farmer and other stakeholders with an insight into ecological, social and economic aspects of the farm and are a key factor to advance sustainability. It is important to start at the farm level in order to be able to aggregate the information at catchment area, regional, national and international levels.

It is crucial, that the farmer can see an added value and can benefit from an assessment. He is still the central, most important actor, at least at the farm level. Nevertheless, he tends to be neglected because the supply chain often provides greater financial added value. Only the farmer can manage and harvest the enormous, natural potential of regenerating raw material (renewable resources) without

1 WCED. 1987. [Our Common Future](#). United Nations World Commission on Environment and Development, Oxford University Press, London.

2 Stückelberger C., 1999. Das Konzept der nachhaltigen Entwicklung um zwei Dimensionen erweitern. In: H.-B. Peter (Ed.). Verlag Paul Haupt, Bern, 103 – 122

having to deplete non-renewable resources. The social and economic situation of the farmer is therefore a key factor for a sustainable society. What certainly must be prevented is that the farmer and the people working on and around farms are “made fools of” or are treated like puppets (Fig. 1).



Fig. 1 The peasant from the puppet-show,
1939, 1200
Paul Klee
29,5 x 20,7 cm

Good sustainability assessment tools will obviously not prevent the current “extinction of farmers” in many countries— in Switzerland about 1600 farms close per year (total 65000), of which about 1000 are full-time farmers (total 45000). Assessment tools obviously cannot prevent farmers from being “struck from the list” (Fig. 2), but they will provide access to information about the current situation (state) and possible future trends (driving force), resulting in an early warning system. Those able to best use the provided, additional information will be the most competitive ones (for the survival of the fittest).



Fig. 2 Struck from the list, 1933, 424
Paul Klee
31,5 x 24 cm
Zentrum Paul Klee, Bern

“Do we really dare to measure, to balance?” (Fig. 3). Yes, that’s why INFASA was founded and its first Symposium on Indicator and Assessment Systems organized. But it is good to be aware that the ambiguity in the title of Klee’s painting is justified. To measure such a complex system is in fact impossible. I used to tell my students for many years that we should never try to do this. I have changed my mind, at least to some extent. I still think it is not possible to really measure such things like the value of biodiversity, but we must try to evaluate it, knowing well that it can only be approximated. This is a necessary first step to get an idea of the whole picture. In a holistic assessment, the entire performance needs to be evaluated and put into context. Only when this is done is benchmarking, a competition in all three aspects, possible.

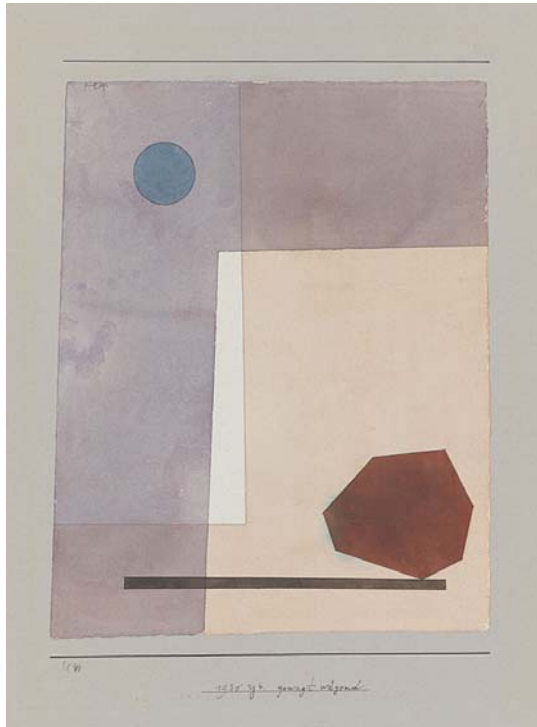


Fig. 3 Daringly balanced, 1930, 144
Paul Klee
31 x 24,5/ 23,5 cm
Zentrum Paul Klee, Bern

Preferably the methods used should be standardized in order to allow comparability while still being applicable around the world. The whole world is the “affected place” (Fig. 4). In a globalized world, sustainability should be measured across regions, countries, commodities. In a fair comparison of advantages and disadvantages, potentials and bottlenecks of different farm types and regions around the world should be visualized. Today, unfortunately only the cost of production is used as the relevant indicator for decision making; often ignoring the framework conditions. This is fundamentally wrong, because it only takes into account part of a farm’s achievement. The methodology has to be reasonably complete, robust and scientifically accurate but still easy to implement. It has to be as simple as possible but not simpler, as Einstein stated. It has to be inexpensive but nevertheless holistic. It needs to be a comprehensive management tool that informs the farmer and other entities about the potential and possible deficiencies of production and therefore call for improvement.

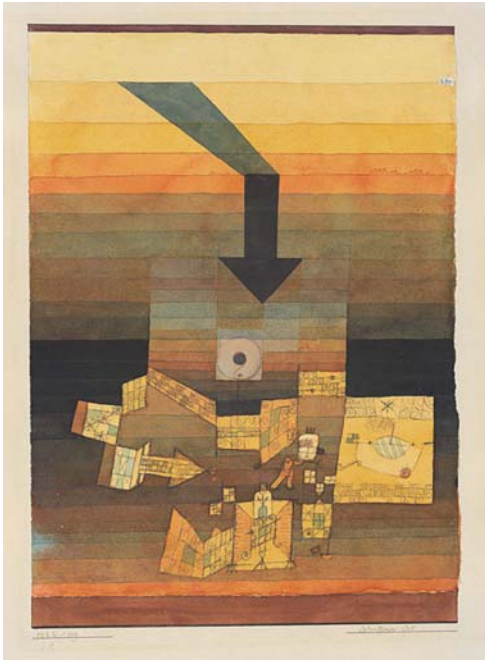


Fig. 4 Affected place, 1922, 109
Paul Klee
30,7 x 23,1 cm
Zentrum Paul Klee, Bern

That is what the International Forum on Assessing Sustainability in Agriculture (INFASA) is all about, to address the global use of indicator and assessment systems for sustainable agriculture. The pillars of science, policy and practice will form the basis of an ongoing dialogue on these tools to strategically advance the agricultural sustainability agenda by linking technical and policy aspects.

The primary objective of INFASA is to communicate the value of different indicator and assessment systems to potential users and to promote their use. To this end, INFASA aims at developing an intensive exchange of experiences – among scientists and developers as well as users – in order to improve and adapt the tools. INFASA thus strives for the application of indicator and assessment systems in the field, in order to advance sustainable agricultural production from a broadly accepted principle to a common practice. Furthermore, INFASA will provide a forum where concrete applied research programs can be conceptualized in response to the needs of specific policy audiences.

INFASA is an open platform, welcoming the participation of all stakeholders (farmers, the agri-food and - supply industry, retailers, governmental bodies, consumers, NGO's). We are quite aware that to work together with such different interest groups may be more complicated than individual initiatives. However, cooperation has the potential to result in a broader impact that results in greater sustainability (in the true meaning of the term). New alliances and co-operations will be necessary for a more sustainable agriculture, in particular in our industrialized countries, where farmers - just like cultural institutions - are often heavily dependent on the goodwill of its fellow

citizens. It is interesting to note that the word “culture” has its roots in the word agriculture.

It is more than a simple coincidence that the first INFASA Symposium took place at the Zentrum Paul Klee (ZPK), a site of important cultural interest. The Swiss College of Agriculture and ZPK have cultivated a rich and vital relationship that interweaves the societal mandates of culture and agriculture. A concert given at ZPK during the symposium connected traditional and modern music with topics of art and nature. In many ways, the concert reflected that sustainable agriculture has a much older history than the sole existence of the term might imply. Pieces composed specifically for this event was not only “cultural program” but thought as integral part of the symposium and inspiration for all participants.

A strategic approach to influencing agricultural policy and practice through measurement

László Pintér

Agriculture is one of the most ancient forms of art and science that ties human development and well-being to natural resources and ecosystems. Although trade in agricultural commodities can create an illusion of separation between farmer and consumer, the two are in fact always tied together. In today’s characteristic mass market and long value chains, the links and interdependencies between producer and consumer are not immediately visible or visible only if supply and demand are out of sync.

As all farmers know, being in the business of farming is inherently risky. Risk comes in the form of myriad factors, from pests and weather to changes in market conditions and government policies. Although sustainability has been defined in many ways, it can be thought of as an ability to manage risk without compromising human and ecosystem well-being over time. Managing risk is an ongoing enterprise and it requires constant learning and adaptation. It involves, among others, regular monitoring of crop status and reserves, market demands for commodities and specialty products. However, it also involves monitoring key aspects of agriculture’s environmental framework conditions, and understanding the social resilience and economic viability of farmers, farming communities and agricultural enterprises.

While agriculture is always risky, there are indications that the sector is entering a more turbulent phase of increased risk and uncertainty. Amidst a mix of signals and interpretations, there appears to be some consensus that profound change is needed to restore stability of the world food system.^{3,4} Among the forces of change

³ Braun, J. von. (2005) *The World Food Situation. An Overview*. Washington D.C.: IFPRI.
<http://www.ipsnews.net/news.asp?idnews=33268>

⁴ Leahy, S. (2006) *Global Food Supply Near the Breaking Point*.
<http://www.ifpri.org/pubs/agm05/jvbagm2005.asp>

the policy issue that receives the most media attention is trade liberalization and the question of agricultural subsidies. Changes in trade and subsidy regimes would no doubt have major worldwide repercussions. However, sustainability concerns of the sector run much deeper. Some of these such as demographic change or consumption habits are set to virtually guarantee that the demand for agricultural commodities and more highly processed food will continue to grow. Others on the supply side point to increasing stress related to climate change, water resources, land quality, agricultural biodiversity, and a range of other interacting problems.

While each of these trends has significant impacts on agri-sustainability in their own right, cumulative impacts are of greater concern. These are harder to foresee and avoid. Sustainable agriculture is not agriculture without risk, which would be unrealistic to expect. It is agriculture that is able to manage risk and maintain its resilience in the face of change and inevitable surprise.

The connection between the increasing vulnerability and complexity of the sector and the vision of INFASA is surprisingly straightforward. Managing risk and navigating the path to sustainability requires strong evidence that can be used for credible diagnosis and effective adaptation. Being able to anticipate and diagnose risk and potential for unsustainability requires measurement tools, processes and institutions that create and use credible tools well.

As evidenced by those participating the INFASA Symposium, technological innovation and an increasing focus on agri-sustainability indicators is growing in the research and policy community. There is, however, significantly more we can do. We can begin by widening our audience to the unconverted. We can also work together to shift the focus of measurement tools from research and pilot projects towards more widespread implementation.

The underlying premise of INFASA is that current measurement tools, processes and institutions involved in assessing the sustainability in agriculture are often not well suited to the task. Market prices, for instance, often do not capture long term environmental risk, nor do they include mounting social stress, fiscal or otherwise, on farm families. Because these factors matter for agricultural sustainability, we need to more widely introduce the tools and mechanisms for which there are already many examples.. I think the farming community is ready for this, as are many in agribusiness and government.

INFASA may also have the potential to help us move beyond the status quo by strategically positioning measurement tools in the context of policy processes and priorities. We can not assume that general arguments about the need to improve measurement systems and tools will alone advance the agri-sustainability agenda. No matter how advanced measurement tools are, they are only means to an end, and without a clear link to information needs and policies they will have limited impact.

The good news is that there is no shortage of policy issues that currently or will require a significantly improved evidence base. For example:

- **Standards:** As the emphasis on standards and certification schemes is increasing, the need to monitor adherence to these schemes, their impact and potential advantages will also grow.
- **Value chain analysis:** Due to longer value chains, the impact of agricultural production is often spread around the globe. From the point of view of trade, countries will want to know that some exporters are not enjoying an unfair advantage by simply externalizing costs (e.g. the environmental costs of production). This cannot be done without regular monitoring and preferably quantitative evaluation.
- **Food security:** As food demand grows faster than supply (at best), analysis and early warning of potential crises will become increasingly important.
- **Full cost pricing and natural capital:** The notion of natural capital accounting has gained prominence. However, the calculation of natural capital requires underlying physical data, such as hectares of land, soil quality, or quantity of groundwater. Indicators are the basis for these calculations.
- **Sustainability reporting and strategies:** Where these are being implemented, indicators are a must to help identify targets and report on progress.
- **Budget processes:** Measurement helps inform the budget process and establish priorities that minimize risk and facilitate adaptation.
- **Impact assessment:** To understand the impact of new technologies or changes in production systems, indicators are needed at regulatory and farm levels, where decisions about technology adoption take place.

As the above examples indicate, the potential for making use of systematic and holistic measurement systems is broad. In fact, many comparable if not identical initiatives have emerged over the last decade or so with a focus on indicator systems that reflect priorities of sustainable agriculture. This growing interest in measurement and assessment almost inevitably leads to increases in the diversity of tools and approaches. While diversity is necessary and useful, it can also hinder building synergies. Communication across the practitioner community is particularly important for building momentum towards joint policy agendas. Without this, the impact of sustainability measurement would be fractured and limited.

INFASA represents an opportunity to bring together the expert and the policy community from both the public and private sector. The Symposium is about mutual learning and dialogue. It is also about crafting a research and possibly, a policy agenda. Its goal should be to move indicators beyond the research phase and into the wider practice of the producer, agri-business and policy community where positive impacts for both human and ecosystem well-being in the future can be realized.

2.2 Keynote addresses - Global View on Assessment of Sustainability in Agriculture

Hans R. Herren

Agricultural Sustainability Indicators: A Global and Developing Country Perspective – Why and Why Not?

Hans Herren emphasized the importance of an appropriate definition of agricultural sustainability. Herren defined it as “*Farming that makes best use of nature’s goods and services while not damaging the environment*”. He added that meaningful production also implies consideration of social and economic aspects. Indicators have to be reliable and representative, reflecting a holistic view of the whole food-system, rather than only food production. Good science with serious research and stakeholder consensus are the basis for design and development of indicators. This requires greater awareness and human resource capacity. It is important to fully assess advantages, disadvantages and constraints of using indicators. Indicators have to be well designed, so that they promote sustainability of the whole system towards sustainable development and not only sustainability of farms.

Abstract: The pros and cons, as well as viable modalities for agricultural sustainability indicators from global and developing country perspectives were presented and discussed. Among issues that are relevant to this topic are agricultural and food system sustainability definitions and criteria.

Indicators can be a politically sensitive issue, particularly, but not exclusively, in developing countries, as they have the potential to expose problems that relate both to practices and policies. As the need grows to move into new modes of agricultural production systems that emphasize sustainability while increasing productivity, the development and application of indicators becomes central to the monitoring process.

Given the high costs of monitoring, it is also important to have few, but well defined criteria and their respective indicators, that will add value and provide needed decision support information to the formulation of sustainable agriculture policy and program development. Funding agencies also need good reporting mechanisms to assess project success and investment returns. Some key criteria and indicators were described while also pointing towards areas that need further research.

Wilfrid Legg

An OECD Perspective on Using Agri-Environmental Indicators for Policy Analysis

OECD’s indicator work is predominantly focused at the national level and stresses the linkages between science and policy. The focus is on developing indicators that are policy relevant, on updating of already “established” indicators and on the use of OECD indicators in the **Stylized Agri-environmental Policy Impact Model (SAPIM)**. Legg also discussed the questions of indicator comparability and the number of indicators needed to properly assess agri-environmental performance.

Abstract: Agri-Environmental Indicators (AEIs) contribute to the needs of policy makers and other users across OECD countries to track the environmental performance of agriculture and to evaluate agricultural policies. A brief overview is provided of the OECD's work in establishing a set of AEIs and the criteria used in their selection, especially their relevance to policy makers. It was described how countries and international organizations, including OECD, are using AEIs in their own efforts to report on the environmental performance of agriculture and to evaluate policies. An important challenge is to try to fill the knowledge gaps in the methodologies to construct indicators, obtain missing data, and improve the interpretation of the results, so that AEIs can be used to compare developments across time and countries, and help to understand the effects of agricultural activities and policies on the environment.

2.3 Case studies: Experience with the Use of Assessment Tools on Farms and at Institutions

Kathy Lewis

Measurement and Assessment Tools for Sustainable Agriculture in the UK

Lewis indicated that the impacts of agriculture are as diverse as crops and agricultural processes and activities. In the U.K., a variety of techniques are used: measuring and monitoring, self-assessing auditing systems like Environmental Management for Agriculture (EMA), Linking Environment and Farming (LEAF) and Crop Protection Management Plans (CPMP's) and Whole Farm Appraisal by the Department for Environment, Food and Rural Affairs (Defra). Lewis says that current assessment tools are not appropriate at farm level. Improvements must be seen at farm level first before they can be seen at national level. As sustainability is site specific and includes different issues, an integrated approach is necessary. Farmers need support and more access to information.

Abstract: The potential environmental effects of agriculture are numerous. It is not practical to measure and monitor all of them due to resource and financial limitations. Consequently, environmental assessment techniques are required to provide a practical and cost-effective alternative. In the U.K., various techniques have been developed which can be used on farm. For example in 2000, the U.K. government launched a national set of indicators for sustainable agriculture. However, as policy tools, many of these indicators are highly technical in nature and often appear relevant only at the national level so

farm-level equivalents were later developed. Since then, the evolution of techniques for assessing farm level impacts has been rapid and now ranges from simple measures such as environmental audits to complex models such as those being developed as part of FOOTPRINT. A variety of techniques that have been developed in the U.K. and Europe over the past 10 years were presented and some of their advantages and limitations highlighted.

Frédéric Zahm

The Assessment of Farm Sustainability Using the Farm Sustainability Indicators Method (IDEA)

Building indicators using the IDEA method includes various stages. The first stage involves defining “sustainable farm”, developing a conceptual framework and developing hypotheses. This allows for general objectives such as technical and citizen consistency to be developed as well as further identification of social and environmental values. The second stage involves use of a matrix that combines target objectives with relevant indicators, comprising social, economic and ecological components. The third stage involves quantification of sustainability by giving a numeral score for each component and aggregating the scores. The IDEA method is sensitive to differences between diverse farming production systems and to differences within same production systems in similar contexts. Zahm concludes that it is not feasible to use a single index to assess sustainability of complex systems. Multiple instruments are needed.

Abstract: While many indicator sets are available to characterise sustainability, methods and operational tools to assess sustainability in agriculture at the farm level is often reported as lacking. Further, when farm level assessment is conducted by farmers as a form of self assessment, the results can be very interesting. The presentation will begin with an overview of the IDEA method (Indicateurs de Durabilité des Exploitations Agricoles) or Farm Sustainability Indicators method, illustrating a scientific approach developed in France. With IDEA, the concept of farm sustainability is translated into a system of 41 sustainability indicators covering the three dimensions of sustainability. Case study results illustrated how the IDEA method has been tested on the ground. An elaboration on the development of indicators, based on case study results and feedback from end users, followed. The presentation concluded with linkages between the IDEA method and national databases.

Christoph Studer

Tackling Sustainability Deficits on Dairy Farms in Northeastern China with RISE (Response-Inducing Sustainability Evaluation)

Studer introduced the conceptual basis and general architecture of RISE, and illustrated its practical application at the farm level in China. Experience with RISE demonstrates the holistic and at the same time specific qualities of the tool, its value at different levels and its potential for tangible impact. Studer emphasized the importance of collaboration with various partners to keep the momentum and achieve impacts.

Abstract: Response-Inducing Sustainability Evaluation (RISE) is a computer-based tool to assess the sustainability of agricultural production at the farm level in a holistic way. The model not only aims at diagnosis, but at the initiation of measures to improve sustainability.

In a recent case study involving 45 small dairy farms in Northeastern China the RISE model revealed unsustainable practices with regard to nutrient management. The study recommended improvements in feeding, crop fertilization, and manure storage to achieve higher input efficiency, a reduced pollution risk and better profitability.

Nestlé and the regional government who were collaborating in the study responded to these findings with the launch of an extension service team. Demonstration farms and an experimental farm are being set up, and a DVD demonstrating good agricultural practices has been developed. Over 400 biogas generators have been installed, and innovative ideas for farming communities are being promoted.

The application of RISE has thus initiated actions to improve the sustainability of agricultural production at multiple levels (farmers, Nestlé, regional government).

Eduardo Sampaio

Title: Interpretation of overall sustainability on coffee farming: Radiograph of a consultant.

Sampaio's objective was to develop a practical tool to assess minimum standards on coffee production in order to achieve maximum economic yield. For this, specific assessment systems to measure efficiency were developed.

The measurement system includes twelve indicators with a scale of reference. The criteria were based on standards observed on model coffee farms. The indicators included the evaluation of the coffee plantations, control of costs, environmental

suitability, inputs and outputs vs. yields, costs of production vs. net income, average produce quality, sales strategy, social aspects, environmental impacts, investments and processing equipments. Each indicator was explained in detail.

Abstract: An experimental project to determine maximum economic yields in coffee Arabica using non-mechanized systems was initiated at Ouro Fino, Southern Minas Gerais in 1986. Over the past 20 years, research has focused on limiting factors affecting final yields of agricultural systems that use a minimum of agrochemicals. Research results indicate that these farm systems result in significant cost reductions and maximum economic yields. Indicators have been developed and graphically depicted for the following research parameters: degree of biodiversity; use of water; amount of inputs (agrochemicals); fertility of the soil; production (yields); use of energy; produced quality; performance bonus for employees; social benefits; salaries; and amount of labour per hectare. Analysis of some Utz Kapeh's certified farms in South Minas Gerais were conducted using the indicator graphs and research results presented.

David Pendlington

Unilever and Sustainable Agriculture

Unilever is dependant on the delivery of healthy agricultural products and therefore interested in sustainable agriculture. The company is running agriculture programs that have long term contracts with farmers supplying Unilever's factories. Unilever started measuring improvements and indicators in 1997, using a framework for indicators developed by Jules N. Pretty (University of Essex). Ten indicators with baseline measurements and field and factory records were developed. The link from practice to improvement is important because the goal is to maximize the added value for business. Therefore, it is necessary to reduce the level of complexity by setting priorities and a pragmatic approach to measurement. Large amounts of data collected need to be distilled down to a limited number of priority performance indicators.

Abstract: The presentation covered the following aspects: setting the scene – Unilever's sustainable agriculture initiative timeline; approach for measuring improvement – developing indicators and parameters; lessons learned – the good and not so good; thoughts on the future – where Unilever is going next.

Björn Küstermann

Development of an Environmental Management System for Agricultural Farms and its Introduction into Practice, REPRO

Küstermann introduced REPRO, a well-established software and farm management tool in Germany. REPRO means reproduction of soil fertility in connection with interactions on farm level. It describes agricultural enterprises as a system. Methods and models parameters of Repro include adaptation to the conditions of different farm systems. Küstermann explained the mass and energy fluxes on farm level and emphasized the importance of a systemic approach in understanding impacts of farms as operational units on the environment.

Abstract: The model software REPRO is a tool for farm management and consultation. It is distinguished by a systemic depiction of farming systems and can be used in agricultural practice. Indicators are not considered as isolated criteria, but in their mutual relationship. The access to farm related data and site information is the basis for statements about matter cycles (C, N, P, K), humus budget, energy efficiency, erosion, soil structure and harmful soil compaction. This objective requires the surveying of natural site conditions, farm structure and design of production processes with just adequate accuracy – thus a “virtual farm” is generated. In the Federal Republic of Germany, the model software has been used under differentiated site conditions in more than 300 agricultural enterprises of different structure, management intensity and design of production processes. The results show the relationships between the design of farming systems and their environmental effects. The possibility of scenario calculations permits the validation of optimization strategies.

Greg Strain

Using Agri-Environmental Indicators in Policy Development – The Canadian Experience

Policy makers need information about the key factors that affect environmental performance and the costs and benefits of current environmental trends. This enables development of a wide range of instruments that can be used to influence farm activity. Policy makers want to promote innovation and adoption of economic and environmental sustainable farm practices.

Agri-environmental indicators have to be policy relevant, science based and objective, understandable, regionally responsive and feasible to obtain. Communication is a crucial factor for policy makers.

Abstract: Agriculture today must balance a wide and continually evolving array of social demands and environmental challenges. Governments, farmers and other stakeholders are working together to promote research, programming and related actions to address environmental concerns. A decade ago, Agriculture and Agri-Food Canada, the federal department responsible for agriculture, initiated work to strengthen its policy analysis and development capacity for the environment. A significant focus of this work has been on the development of agri-environmental indicators to assess and report on the environmental performance of the agriculture sector and on the integration of these indicators with economic models to provide a policy analysis and forecasting capacity. Agriculture and Agri-Food Canada's experience has yielded valuable insight into the benefits and limitations of the approach.

Vinzenz Jung

Sustainability Indicators: Key Tools for Implementing and Developing Swiss Agricultural Policy

Indicators play an important role in Swiss agricultural policy. They are used for a retrospective (ex post) evaluation every four years and for a prospective (ex ante) evaluation of policy changes. Broad monitoring, supported by sustainability indicators help policy development and evaluation. The work on indicators is challenging and ongoing. Long term commitment and good exchange at international level is crucial.

Abstract: The principle of sustainability is inscribed in the Swiss constitutional article on agriculture. Agricultural policy has to provide the right incentives so that agriculture can fulfill its multiple roles in a sustainable way. Indicators are used at two levels: First, they are used to evaluate whether Swiss agriculture is on a sustainable path. In the presentation, the sustainability evaluation framework and the corresponding indicators used by the Swiss Federal Office for Agriculture are presented and it will be shown how they influence policy decisions. Second, indicators are necessary tools to implement agricultural policy instruments. The example of direct payments which are contingent on ecological cross-compliance conditions is given.

2.4 Panel discussion

Perspectives of Stakeholders on Implementation of Sustainability Assessment Tools

A panel discussion with representatives of different stakeholder groups and areas of activities was moderated by **Padruot M. Fried**, Swiss Federal Research Station Agroscope Reckenholz - Tänikon (ART) and comprised by:

Panelist	Institution	Stakeholder group	Area of activity
Walter Fust (SDC, Director-General)	Swiss Agency for Development and Cooperation (SDC)	Government	Development cooperation
Eduard Hofer (BLW, Deputy Director-General)	Federal Office for Agriculture, Switzerland (BLW)	Government	Agricultural Policy
Géraud Servin (FAO, Environment and Natural Resources Service)	Food and Agriculture Organization of UN (FAO)	Inter- governmental Organization	Global Nutrition
Hans Jöhr (Nestlé, Corporate Head of Agriculture, Vice pres.)	Nestlé	Private Sector	Agri-food Industry
Claudia Binder (ETH, Institute for Human-Environment-Systems)	Swiss Federal Institute of Technology (ETH)	Public Research	Interface natural/social sciences
Frank Pervanchon (Trame, Sustainability for farmers)	Federation of French associations of agricultural employees and farmers (TRAME)	Farmers and Employees Organization	Interests of farmers and employees

Each panelist explained in 3-4 minutes his/her involvement with sustainable agriculture and his/her opinion on the relevance of holistic sustainability assessment, particularly at farm level.

Frank Pervanchon

Trame develops methodologies and tools to train farmers and farm employees. An example is the sustainable farm tree, a tool for assessment of sustainability at the farm level without using indicators. French farmers exchange their experience to improve their practices. French farmers work collectively for individual development.

Eduard Hofer

Policy makers need indicators to assist the implementation and impact analysis of policies. However, there is a big time gap between actions and reactions on the different levels. On one hand, when policies change, farmers react fast. On the other hand, measuring the state of the environment (emissions) is connected with long term analysis, very high costs and environmental and health impacts that can take over 20 years to manifest. Because of this time gap, it is difficult to see progress during the process of developing and using indicators.

Walter Fust

It is important to know what has to be measured and what the goals of monitoring and measurement are. Indicators should be developed to measure outcome and impact and not only output. The impact should show that things work for farmers. So, indicators have to be simple, easy to communicate and understood by the farmer.

Claudia Binder

There are some factors *affecting* the development of indicators. For example, the perceptions and views about the system are different between farmers, policy makers and scientists. Cultural background also plays an important role. At the farm level, farmer opinions and points of view have to be considered. Given differing perspectives, it is important to ask who is defining what is sustainable in any given context.

Hans Jöhr

Sustainable agriculture is fundamental to the food industry. The food industry relies on sustainable supply, which is important to gain consumer confidence and keep business continuity. So, it is important to first understand consumer opinions. Sustainability should not be seen only at farm level, but should also consider policies and consumption trends. Key issues are food safety, quality and legal compliance. Rather than creating hundreds of different sustainability systems that do not add any value for consumers, Jöhr indicated that simple tools or harmonization of instruments are needed. Knowledge sharing and delivery of meaningful tools for non-OECD countries are needed to create real partnerships and build capacity for improvement.

Géraud Servin

FAO goals are to fight hunger and ensure food safety worldwide. Agriculture, trade and market prices are included in FAO's program. FAO generally works on the national level but is extending the scope towards sub-national level as well as building also capacities in developing countries. FAO's impact is somewhat limited due to a small budget in this area, however through partnership, much more can be achieved. *Infasa offers a good opportunity for networking and discussion on the subject.*

The panel discussion aimed at

1. highlighting the **demands** for and **expectations** of sustainability assessment tools by different stakeholders while explaining the usefulness of existing tools

Eduard Hofer

Policy makers often have to make decisions that farmers find difficult to accept. Farmers are afraid of losing their autonomy when the state interferes too much. Swiss farmers for example, had to accept help from the government when the prices fell, but they felt offended in their autonomy.

Frank Pervanchon

Farmers are in need of a methodology to assess indicators. They feel that top-down (scientific) indicators are more suitable for controlling and putting up constraints than as tools to induce improvements in their farms. Farmers want to be able to manage their farm more easily. Social aspects related to agricultural sustainability have been neglected and indicators not properly developed. In the future, the social dimension should be considered in assessment tools.

Claudia Binder

Indicator sets should be developed together with farmers. Farmers contribute to the development of valuable indicators by providing a systemic point of view. They also feel that they are being taken serious. Communication between farmers and experts is important for mutual comprehension of their needs.

Eduard Hofer

The Swiss government developed indicators with the participation of farmers. The experience showed that this does not mean that farmers at the end like or accept the indicators.

2. identifying **obstacles** which hinder the widespread use of existing tools and evaluating opportunities to mainstream the application of assessment systems at farm and institutional level

Walter Fust

Consumers' expectations result in a need for food safety standards. EurepGap and SwissGap were developed to insure product safety. Certification costs are very high, resulting in farmers in developing countries being excluded from market participation. Development of indicators should not become a new technical barrier working against imports. The problem is that food safety standards are being influenced by national interests. Industrial countries are not willing to look beyond their own interests in addressing global problems.

Indicators are not only useful for developing countries. Agricultural sustainability has yet to be reached in industrial countries. Indicators should help farmers with manag-

ing their farms and therefore should be comparable, simple, practical and easy to communicate. Researchers should learn how to reduce complexity.

Hans Jöhr

Trust has to be built at the first stages of the value chain. Also farmers have to take responsibility for the quality of the products they deliver. Quality management systems for good agricultural practices are needed so that farms can deliver exactly what is demanded. Standards increase quality in the food chain so consumer trust is maintained.

Géraud Servin

Conditions in developing countries are completely different than in industrial countries (population, GDP, amount of people living from agriculture, etc). For this reason, we might need different approaches which in turn will have to be compatible (simple and pragmatic). FAO supports compatibility (e.g. in statistical data) in different scales (UN, projects, programs, public sector, different times), to enable communication between people. Cooperation and partnerships between research communities, NGOs etc, are very important.

Questions of the plenary

Question 1

Are GMO organisms compatible with sustainable systems? (Frédéric Zahm)

Hans Jöhr

As a food manufacturer, Jöhr wants to sell his product. So the first priority is to respond to consumer choice. Countries differ in regulatory compliances that need to be respected. To date, there is no scientific evidence that consumption of GMO food is unhealthy. So, the GMO issue is a question of consumption and is not a health issue.

Frédéric Zahm

GMO is not a health issue but an environmental issue and is therefore controversial.

Géraud Servin

FAO does not have an official position as FAO experts have not yet reached consensus on GMOs.

Question 2

How is the cheap food syndrome compatible with a sustainable agriculture? (Hans Herren)

Walter Fust

In this case, the media play an important role. Media are responsible for consumers' education and information. For example, the media has picked up on the notion of fair trade, but not all trade that isn't explicitly "fair" is unfair.

Eduard Hofer

The solution for the cheap food syndrome is not to be found in agriculture. Food can be produced cheaply and efficiently. The key might be to find better alternatives to communicate differences in quality to the public.

Géraud Servin

Farmers receive too little for their products. Reduction of the number of intermediaries and transport would improve the situation. People have to recognize the value of the services provided by ecosystems.

Hans Jöhr

A hundred years ago, Switzerland had about 700 000 farmers producing about one million liters of milk. Today we have only 50 000 farmers producing over three million liters. So, we should think about this.

Do you really believe that prosperity and wealth were created in this country out of agricultural production?

Claudia Binder

People from the south have different ideas about ecosystem services than people from the north. Demand and production don't match with supply and consumption. Different cultures have different values.

2.5 Headlines from the Symposium

- **Participation** is essential for indicator development as it helps increase ownership, buy-in and relevance of indicators to users.
- Balanced **holistic approach** is important for preventing one-sidedness (e.g. social dumping).
- **Quantification** as far as possible and meaningful. Values that can be measured can be attributed a scaled value. But all important values are to be taken into account in order to maintain a holistic approach.
- **Social dimension** is very important, but very challenging to measure; many are struggling with it
- **Tradeoff between complexity and manageability** is needed for simple, robust systems that users can understand (“As simple as possible but not simpler”, Einstein).
- **Communication**, both visually and otherwise, needs to be respectful of multiple audiences.
- **Quality constraints** for assessment tools are fundamental.
- **Harmonization** of approaches while at the same time reflecting unique local conditions is important.
- **Data availability** is needed.
- **Capacity** building at the farm level is needed to make the best use of indicator systems.

- **Linkage to policy** issues and agendas, primarily standards, certification and natural and social capital accounting helps to ensure political impacts.

3 Workshop (March 17, 2006, Käfigturm)

Four groups discussed different questions addressing the advancement of agricultural sustainability through the practical application of measurement and assessment tools. Discussions were based on the results of the presentations at the Symposium on the previous day. The results were then presented and discussed in plenary.

- Convenor of the Workshop: Harald Menzi
- Moderators and Reporters: Names in bold letters

3.1 Group 1: Demand-oriented tools and methods

Participants: **Manfred Noll**, **Geraud Servin**, Hans Herren, Brigitte Décausaz, Sónia Rodrigues, Robert Erhard, Fritz Häni

Questions:

- **What critical methodological and design issues of sustainability assessment tools at farm and institution level need to be addressed to fulfill the demand of different target users?**
- **What could be done to address the methodological and design issues identified?**

To better answer working group questions, the group first identified target users. It was assumed that users with different perspectives have needs tools with different levels of complexity. The following list represents a possible classification of the **complexity level**:

High: Educators
Extension staff

Medium: Farmers (differentiated between OECD and developing countries)
Governments
Regional, intergovernmental organizations
Donors, development agencies
Certifying organizations

Low: Consumers
Retailers (e.g. supermarkets)

Researchers are not considered users but rather providers and therefore are not listed above.

Other important stakeholders were identified during plenary discussion, including investors, traders, food industries and the insurance sector.

To respond to different target users, the following key issues have to be addressed:

- **Stakeholder participation in tool development**
Participation of farmers is especially important to create ownership in the development process of sustainability of these target users.
In order to optimize economic, environmental and social issues, all relevant stakeholders have to be addressed.
- **Definition of targets (quantitative and qualitative)**
Targets have to be well defined
Ex ante and ex post analysis are needed (benchmarking; establish targets)
- **Tool and data standardization**
Harmonization of approaches across countries
Optimize services by combining objectives of trade marks with appropriate monitoring tools (e.g. Fair Trade & RISE)
Recognized standard tool
Tools have to include the environmental, social and economic dimensions
- **Practical tools and methods (spider diagram)**
Simple and cost effective
Good visualization (spider diagram)
Criteria should include the whole food chain.

The importance (and problematic) of using spider diagrams was controversially discussed: on one hand, spider diagrams can be appropriate/ practical to visualize the sustainability of several indicators and their complexity; on the other hand, they give the impression that the quality of data is equal (for all indicators) and this is not so. Despite the early stage we are in the development of sustainability indicators, quality of data should be scientifically assured, tending towards quality control. One participant found spider diagrams extremely confusing and academic.

3.2 Group 2: Linkages to Policy

Participants: **Wilfrid Legg, Angela Coulton**, Frédéric Zahm, Greg Strain, Vinzenz Jung, Peter Hardi, Kathy Lewis, Harald Menzi

Questions:

- **What policy areas are requiring (or will require) a strengthened evidence base and measurement of an expanded set of sustainability issues?**

- **What measurement systems and tools are already available or are needed to address the policy issues identified?**

Before asking what policy areas are required it is important to know:

- What are the policy goals that indicator development in agriculture is supporting?
- Are we concerned about evaluating whether policy has achieved its goals or are we trying to define new policy instruments?
- What are the core functions of agriculture? What are the sustainability goals for agriculture?

In fact, agricultural sustainability should be seen first in a broader context comprising relevant issues such as *climate change or national trade goals*. Considerations should include external factors (risk factors), impacts of agriculture on developing countries, and agriculture's contribution to world food equilibrium. There is a need for consistency between sustainable agriculture and overall sustainable development goals.

The group argued for a broader perspective of the food chain rather than concentrating only on agricultural production or even on single products. Food image (and not food mass) is associated with consumer's attitude and decisions and this has an environmental impact that (should) affect policy goals and instruments.

Policy makers need information on:

- Lifestyle issues, consumption system (e.g. food imports, market situation, trends)
- A good evaluation of the whole food chain
- Risk factors
- Tradeoffs (e.g. if they pursue environmental goals)
- A modular approach to food system rather than a detailed lifecycle analysis (food system is extremely dynamic)

This information should be broad, coming from different experts and be well communicated.

There is a need for clear frameworks for policy goals regarding sustainability and development of policy instruments. Different goals and instruments request different types of indicators.

Indicators should consider:

- External inputs on agriculture (e.g. flood issues, climate change, etc)
- Market issues
- Field production and food supply chain systems
- The way production relates to consumption, particularly if balance of imports versus self sufficiency is changing
- Risk factors (e.g. RISE module will address risk factors)

Knowing policy objectives (regulation or support) is needed to be able to link policies and indicators. Moreover there is a need to develop new indicators which link policy objectives with farm activities as they relate to broader levels, such as biodiversity of the landscape. The need for national and international trade rules that include environmental and social standards seems to be of increasing importance.

The plenary discussion brought out the following points:

Across linkages of food supply system there is a need for more research. At the same time consumers need to take greater responsibility for sustainable agriculture. This needs to be communicated to consumers more strongly. Companies respond to consumer pressure and are less concerned with public good (e.g. biodiversity, climate change and landscape). Companies also often appear to be not interested in small farmers. We should identify the difference between private and public sector and also see what responsibility can be shared.

Government response to different interests, opinions and conditions of the food industry and farmers results in a variety of approaches to sustainability. Industry co-operation (i.e. Unilever and Nestle) may be needed to assist with policy making.

The starting point for a discussion about sustainability should be the global context for sustainability in the context of sustainable development goals (SDG). Agricultural sustainability can then be integrated into this global concept.

3.3 Group 3: Capacity building and communication

Washington Ochala, Christoph Studer, David Pendlington, Bella Roscher, Thomas Ledermann, Christoph Wunderlich, Carissa Wieler

Question:

- **What are the key awareness and capacity issues that need to be addressed in order to move sustainability measurement at farm and institution level more into the mainstream?**

To establish sustainability measurement at farm level it is essential to consider the following issues:

- **Practicality of Agricultural Sustainability Assessment (ASA) and indicators use**

This requires a clear definition of 'sustainability', clear goals of assessment, quantity and quality of data. Costs are surely a factor affecting it.

ASA should be linked on emerging local and global themes.

Need to clarify the real benefits (relevance) of ASA to policy makers, farmers, consumers, scientists and other stakeholders.

- **Responsibility of Stakeholders**

The contexts within stakeholders operate (farmers, consumers, policy makers, etc.) need to be addressed. Awareness and perception of responsibility towards sustainable agriculture must be encouraged.

Who takes responsibility to maintain sustainable agriculture?

Who can do what and where (funding, measurement, regulation, certification)?

Who takes responsibility in the food supply chain?

Stakeholders should participate in indicator development.

- **Reliable self assessment systems**

Value of the process for each stakeholder will determine the grade of participation and commitment in the process.

A dialogue between stakeholders, based on trust and sense of responsibility, is possible.

Self assessment tools are needed.

Indigenous technical knowledge must be integrated.

Capacity to develop a farm management plan geared towards sustainability.

- **Target groups**

First of all we should ask whose awareness is needed; who or what the targets are and get a mainstreaming platform (processes, production, targets, awareness, capacity).

- **Assessment of different systems and at different levels**

Farm system or the entire supply chain (whole farm oriented, commodity oriented)

Farming scale (large, subsistence, commercial)

Assessment at farm level

Aggregation at local catchment, regional, national, international level

What could be done to develop the awareness and capacity building?

How can the benefits of sustainability assessment be better communicated to the different stakeholders?

Capacity building is expected from all stakeholders: farmers, extension agents, policy makers, researchers and scientists, consumers, media, processors and retailers, NGOs, community leaders, farmers associations, cooperatives, financial institutions, international organizations, insurances agencies, farm input companies, technology developers.

To gain the needed capacity it is necessary to carry out and use sustainability indicators. Feedback and shared communication will improve awareness and capacity. This can be supported through various activities like: workshops, training programs, symposia, technical committees, performing arts, web sites and internet products, publications, competitions, seminars, internships, stakeholder participation in research and extension projects, collaboration with other programs (regional, national or global).

INFASA can be a form or a platform for communication between stakeholders. Awareness and capacity building strategies can be worked out over time. The group suggested that working groups be formed to address and develop specific issues.

3.4 Group 4: Synergies and cooperation

Padruot Fried, Emeline Fellus, Claudia Binder, F. Pervanchon, Luca Becchini, Andreas Staempfli, László Pintér

Questions:

- **What are the risks and opportunities arising from the current diversity of measurement and assessment tools and methods?**

- **What are the possible synergies between various tools and opportunities for cooperation?**

The group classified risks, opportunities and targets for cooperation in different categories:

Risks

- 1) Normative
 - Great diversity of definitions for 'sustainable development'
 - What are we ultimately trying to achieve?
- 2) Systemic
 - Different time and space scales
 - No comparable indicators
 - Difficulty in aggregating
 - Inapplicable
- 3) Procedural
 - Complexity, associated with time and costs (the more methodologies and indicators we have, the more complex and expensive)
 - Difficult to communicate with a risk of losing the interest of farmers
 - Lost of trust from farmers and other stakeholders

Opportunities

- 1) Allowing openness for learning and different approaches
 - Fertilization of ideas
 - Avoid common blind spots
 - Lower transactions costs (a single set of indicators can be costly; it is better to use several indicator sets corresponding to different scales and conditions)
 - Competition stimulates scientific development
- 2) Applicability to different conditions
 - Local conditions of farming systems (time, space, etc.)
 - Expectations from consumers, farmers, etc.
- 3) Ownership through knowledge building

- If we allow development of specific methodologies and indicators for specific locations, we also foster stronger ownership.

Targets for cooperation

Development of:

- key indicator sets
- improvement of the social dimension
- common conceptual framework

Methodology

- Stakeholder participation (farmers, producers, etc.)
- Development of tools for researchers, farmers, etc.

Find synergies → to manage the problem of competition between stakeholders.

- Working together (objective of INFASA) is a challenge for industry, policy makers and science because:
 1. Different aims of different stakeholders:
 - Consumer confidence (industry)
 - Justification for special support of agriculture (policy)
 - Better understanding of systems, decision support tools (science)
 - Added value for farmers
 - OECD countries vs. developing countries.
 2. Different expectations on detail and accuracy:
 - Complex systems vs. easily communicated, simple and cheap tools
 - Standardization vs. site/stakeholder oriented approaches.
 3. Although different concepts are partly based on the same inputs, the methodology of different approaches is diverse.
- Possibilities to overcome this diverging needs and expectations:
 1. Develop a common language and terminology and harmonize concepts
 2. Communication: Talk together
 3. Identification of common goals in a pragmatic way.

3.5 Headlines from Workshop

- **Definition** of sustainable agriculture and relevant criteria of sustainability must be clear.
- The **aims** should be known before starting developing assessment tools and indicators. What (and why) do we want to measure?
- For which **level** do we want to develop indicators (OECD, national, local, farm level)? At a global level, indicators will be more broadly defined; diversity increases and emphasis changes as indicators become more localized.
- **Diverse stakeholders** interests, expectations and understandings of sustainability. How can this be dealt with appropriately?
 - Stakeholders participation
 - Toolbox of methodologies for stakeholder involvement
 - A range of tools with varying complexity that can be matched to target users (whole farm or commodity oriented)

- Development of a common language and terminology, common goals and harmonizing concepts.
- Consider the whole food supply chain, from production to consumption, with special focus on the farm level
- **Systemic perspectives** show that the social, economic and ecological dimensions differ at each level on the food chain.
- **Social dimension** must be improved. How to approach it? How to measure it?
- Clearly defined (and known) policy goals are important

4. Farm excursion (March 18, 2006, Meikirch)

Participants were offered an excursion to a typical Swiss farm where a sustainability analysis had been applied.

Sustainability analysis of a typical Swiss Farm

Andreas Stämpfli

Since three generations the visited farm in Meikirch, Bern, Switzerland is owned by the family Stämpfli. It is a typical Swiss mixed farm with plant and milk production. The youngest son (31), his parents (67, 77) and the brother of the father (76) are family working forces. Sometimes a trainee is employed during one year within a preparation program for his studies at the Swiss College of Agriculture (SHL).

1 Definition of the evaluated system

According to Pfefferli et al. (2000), a family farm is separated in the three main parts (farm) operation, enterprise and the private part. RISE is doing its evaluation per definition on level farm operation. That means that incomes from outside of the agricultural activities and the private consumption are not included in the analyses. The following polygon shows the family farm at level operation in the year 2004.

2 Response- Inducing Sustainability Evaluation (RISE-model) of the farm operation in 2004

Operating figures: 91'000 kg milk quota per year with 16 dairy cows from own breed; 2.5 ha wheat, 2 ha peas, 1 ha maize, 2 ha triticale, 8 ha artificial grassland and 2 ha permanent pasture.

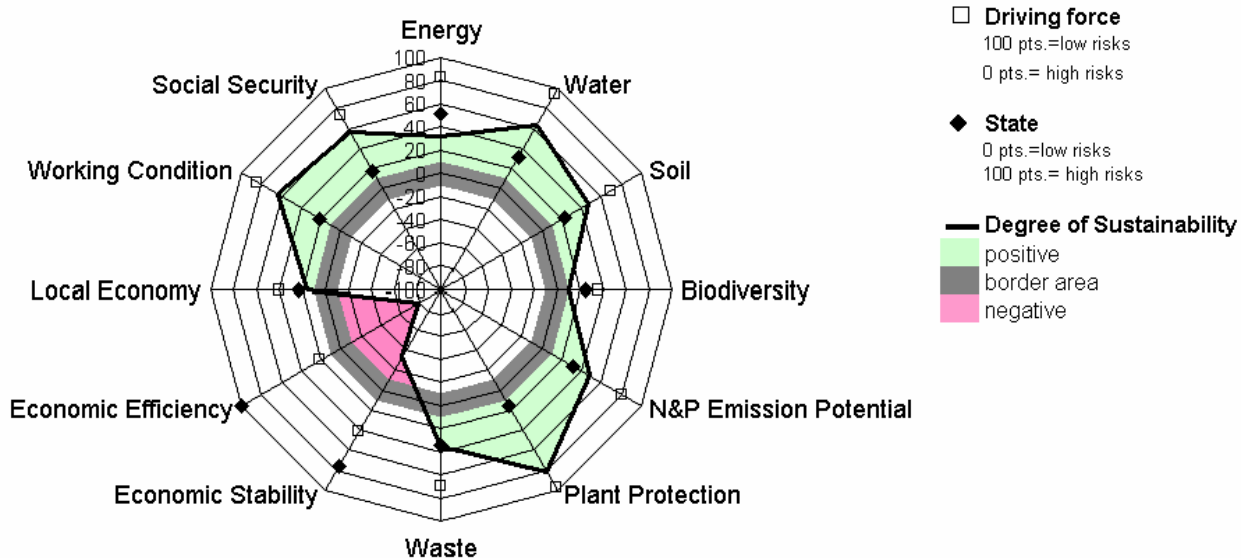


Fig. 1 RISE Polygon of the family farm in 2004 (level operation)

The two indicators “economic efficiency” and “economic stability” are not assessed as sustainable while all social and ecological indicators are in the green area with degrees of sustainability (DS) above +10.

These weak **economic** results of the farm operation are due to calculated loss and low equity ratio.

The **ecological** dimension is considered sustainable. The DS of the indicator biodiversity stands with 11 points only marginally above the grey border area in the polygon (low biodiversity on the agricultural utilized area).

The DS of the two **social** indicators “working conditions” and “social security” are assessed as sustainable. The relatively low salary of the trainee compared to the minimum gross salary of the region is partly compensated by the shorter working time and the high level of social insurances.

3 Discussion

Because on a family farm the agricultural sector is usually not strictly separated from the private sector and side incomes, it is difficult to place a system boundary in a meaningful way. In the present study the system boundary has been strictly limited to the agricultural sector that produced weak economic results. If the side incomes were included these results would be improved. The RISE model requires a high quantity of data and their quality is essential to obtain representative results.

The RISE analysis gives a good overview for the farm management and shows strong and weak points in the polygon (helpful visualization).

5. Synthesis

Coordination and working towards common assessment tools and methods

A unique aspect of the Symposium was the combination of multiple perspectives, including those held by policy makers, corporations, farmers, NGOs and researchers. A central theme emerging from these discussions was the need to work towards common measurement and assessment approaches among the various developer and user groups, even if details are tailored to reflect specific local conditions. A starting point could be at the level of accepting common language, terminology and concepts to describe the approaches we are using. The proposition to use INFASA in a next phase to launch an international *criteria and indicator* process for sustainable agriculture was viewed as worthwhile for serious consideration.

Measurement and assessment tools

At the level of tool development, a number of issues emerged around addressing trade-offs between complexity and manageability, with emphasis on the need for simple, robust and transparent systems that users can understand. Besides aggregation algorithms, visualization and communication were recognized as important. Measurement tool development and use is seen not only as a technical exercise but one in which the participation of stakeholders plays a critical role. In the context of tools, several perennial problems such as data availability and quality constraints, and the challenge of developing indicators for the social dimension received attention.

Linkages to policy

In order to realize their potential, indicators and assessment need to be relevant for and have an impact on policy. The policy arenas within which indicators and assessment have a role are diverse and many of them may be increasing in importance, due possibly to the need for a stronger evidence base and the ability to better evaluate current and emerging risk. The policy areas identified as important included the evaluation of sustainability impact along the supply chain in the international trade context and the increasing need for verification in sustainability certification and standards schemes. Strengthening the evidence base will also be critical for any progress on the economic valuation of agriculture-related externalities, including ecosystem goods and services.

Farm level applications

While many of the assessment related issues arise in the policy domain, ultimately they need to be translated into measures that affect practices at the producer and industry level. We saw several examples of practical, farm level applications that are linked to very specific practices and are producing real results. Rather than being stand-alone tools, there was a discussion of embedding them in farm planning and management systems. Possibilities for application of assessment tools in developing

countries were well illustrated by several examples, including Kenya. Besides government policy, the need for farm level applications can arise through the requirements of agri-food corporations.

The Symposium concluded with a clear message – INFASA is indeed filling a gap by initiating a dialogue across a diversity of policy and application contexts. Measurement and assessment tools and practices are becoming increasingly important in several policy contexts and have demonstrated potential to reorient production systems. In order to match the policy and industry needs with the interests and capabilities of the assessment practitioner community the possibility of learning from the well-established criteria and indicator (C&I) initiatives of other sectors, such as forestry and fisheries was raised and received general support.

Appendix A: Acronyms

AEI – Agri-Environmental Indicators

ART - Agroscope Reckenholz -Tänikon

ASA – Agricultural Sustainability Assessment

BLW - Federal Office for Agriculture, Switzerland

C & I – Criteria and Indicators

CPMP – Crop Protection Management Plans

DEFRA – Department for Environment, Food and Rural Affairs

EMA – Environmental Management for Agriculture

DS – Degrees of Sustainability

ETH - Swiss Federal Institute of Technology (Eidgenössische Technische Hochschule Zürich)

FAO - Food and Agriculture Organization of UN

GDP – Gross Domestic Product

GMO – Genetically Modified Organisms

IDEA - Indicateurs de Durabilité des Exploitations Agricoles

INFASA – International Forum for Assessing Sustainability in Agriculture

IISD – International Institute for Sustainable Development

LEAF – Liking Environment and Farming

NGO – Non-Governmental Organization

OECD – Organization for Economic Cooperation and Development

REPRO – Reproduction of the soil organic matter

RISE - Response Inducing Sustainability Evaluation

SAPIM Stylized Agri-Environmental Policy Impact Model

SDC – Swiss Agency for Development and Cooperation

SDG – Sustainable Development Goals

SHL – Swiss College of Agriculture

TRAME - Federation of French associations of agricultural employees and farmers

ZPK - Zentrum Paul Klee

UN – United Nations

Appendix B: List of Participants

Name			Position Title	Organization	Country
Dr.	Luca	Bechini	Researcher	Department of Crop Science, University of Milan	Italy
Dr.	Claudia	Binder	1) Natural and Social Science Interface 2) Professor for Social and Industry Ecology	1) Swiss Federal Institute of Technology (ETH) 2) University of Zürich	Switzerland
Mr.	Rudolf	Bohren	Journalist		Switzerland
Mr.	Manfred	Bötsch	Director - General	Swiss Federal Office for Agriculture (SFOA/BLW)	Switzerland
Dr.	Alfred	Buess	Director	Swiss College of Agriculture (SHL)	Switzerland
Dr.	Nicola	Castoldi	Doctoral Student	Di.Pro.Ve, University of Milan	Italy
Mr.	Luca	Chinotti	External Consultant	Swiss Agency for Development and Cooperation (SDC)/ Global Issues and Sustainable Development Division	Switzerland
Dr.	Angela	Coulton	Head of Sustainable Consumption and Production Evidence Base Team	Department for Environment Food and Rural Affairs (DEFRA)	United Kingdom
Dr.	André	de Montmollin	Project Leader	Swiss Federal Statistical Office (BFS)	Switzerland
Mrs.	Brigitte	Decrausaz	Staff Ecology	Swiss Federal Office for Agriculture (SFOA/BLW)	Switzerland
Mr.	Stefan	Denzler	Programme Manager	State Secretariat for Economic Affairs (SECO)	Switzerland

Dr.	Adrian	Dubock	Head, Biotechnology Ventures	Syngenta International AG	Switzerland
Dr.	David	Dubois	Senior Scientist	Swiss Federal Research Station for Agroecology and Agriculture (FAL)	Switzerland
Mr.	Gil	Ducommun	Professor for Development Politics and Rural Economy	Swiss College of Agriculture (SHL)	Switzerland
Ms.	Monika	Egli	Administrator	Swiss College of Agriculture (SHL)	Switzerland
Mr.	Robert	Erhard	Agriculture Service Executive	Nestlé	P.R. China
Mrs.	Emeline	Fellus	Coordinator	Sustainable Agriculture Initiative (SAI) Platform	Belgium
Dr.	Padruot	Fried	Head International Relations	Agroscope FAL Reckenholz	Switzerland
Mr.	Walter	Fust	Director-General	Swiss Agency for Development and Cooperation (SDC)	Switzerland
Ms.	Jaqueline	Garcia-Yi	Doctoral Student	University of Bonn	Germany
Mr.	Daniel	Goldstein	Journalist	Der Bund	Switzerland
Mr.	Kaspar	Grünig	Journalist	"Die Grüne"	Switzerland
Mrs.	Maryline	Guiramand	Manager	Guiramand & Co	Switzerland
Mr.	Hans Ulrich	Gujer	Scientific Collaborator	Federal Office for the Environment (FOEN/BAFU)	Switzerland
Dr.	Fritz	Häni	Professor of Plant Protection, Head of Agroecology	Swiss College of Agriculture (SHL)	Switzerland
Mr.	Werner	Harder	Senior Adviser	Swiss Federal Office for Agriculture (SFOA/BLW)	Switzerland
Dr.	Peter	Hardi	Senior Fellow	International Institute for Sustainable Development (IISD)	Canada
Dr.	Hans	Herren	President	Millennium Institute	USA

Mr.	Felix	Hintermann	Information Specialist	InfoAgrar	Switzerland
Ms.	Brigitte	Hofer	Responsible Consumer Policy	Coop	Switzerland
Dr.	Beat	Huber-Eicher	Project Coordinator	Swiss College of Agriculture (SHL)	Switzerland
Dr.	Philippe	Jeanneret	Project Leader	Agroscope FAL Reckenholz	Switzerland
Dr.	Katharina	Jenny	Senior Advisor, Natural Resources and Environment	Swiss Agency for Development and Cooperation (SDC)	Switzerland
Dr.	Hans	Jöhr	Corporate Head of Agriculture	Nestlé	Switzerland
Mr.	Vinzenz	Jung	Adviser	Swiss Federal Office for Agriculture (SFOA/BLW)	Switzerland
Mr.	Thomas	Kägi	Scientific Employee	Agroscope FAL Reckenholz	Switzerland
Mr.	Maximilian	Kainz	Assistant	Chair of Organic Agriculture, Technical University Munich	Germany
Mr.	Andreas	Kläy	Associate Director	Centre for Development and Environment (CDE), University of Berne	Switzerland
Mr.	Simon	Kohler	Head of Continuous Education	Swiss College of Agriculture (SHL)	Switzerland
Ms.	Annette	Kolff	Head, Agriculture Team	Intercooperation	Switzerland
Mr.	Karl	Kupper	Ing. agr. ETH	Freelance Consultant	Switzerland
Mr.	Björn	Küstermann	PhD student	Chair of Organic Farming, Technical University Munich	Germany
Mr.	Thomas	Ledermann	PhD candidate	Centre for Development and Environment (CDE), University of Berne	Switzerland
Mr.	Wilfrid	Legg	Head of Policies and Environment Division, Agriculture	Organisation for Economic Co-operation and Development (OECD)	France

ture Directorate					
Dr.	Kathleen	Lewis	Reader & Head of Research Group	Science & Technology Research Institute, University of Hertfordshire	United Kingdom
Mr.	Zdenek	Lokaj	Consultant for IPM Lecturer	University of Brno	Czech Republic
Dr.	Jon-Andri	Lys	Executive Secretary	Swiss Commission for Research Partnerships with Developing Countries (KFPE)	Switzerland
Dr.	Michel	Marie	Maître de conférences	Ecole Nationale Supérieure d'Agronomie et des Industries Alimentaires, Nancy (ENSAIA)	France
Dr.	Harald	Menzi	Research Coordinator	Swiss College of Agriculture (SHL)	Switzerland
Dr.	Ludwig	Mittermeier	Global Product Stewardship Manager	Syngenta Crop Protection AG	Switzerland
Ms.	Micheline	Ndoh	Project Manager	EREP SA	Switzerland
Mr.	Manfred	Noll	Agricultural Specialist	Nestlé	Switzerland
Dr.	Washington	Odongo Ochola	Senior Lecturer	Egerton University	Kenya
Dr.	Roux	Olivier	Scientist	Swiss Federal Office for Agriculture (SFOA/BLW)	Switzerland
Mr.	David	Pendington	Sustainable Agriculture Coordination Manager	Unilever	The Netherlands
Mrs.	Annette	Pensel	Junior Expert GTZ - Coordinator 4C Support Platform	Gesellschaft für Technische Zusammenarbeit (GTZ)	Germany
Dr.	Frank	Pervanchon	Sustainability Expert for Farmers	Trame (French Farmers' and Employees' Association)	France
Dr.	László	Pintér	Director, Measurement and Assessment Pro-	International Institute for Sustainable Development (IISD)	Canada

gram					
Mr.	Hans	Porsche	Scientific Collaborator	Swiss College of Agriculture (SHL)	Switzerland
Ms.	Sonia	Rodrigues	Scientific Collaborator, Project RISE	Swiss College of Agriculture (SHL)	Switzerland
Ms.	Bella	Roscher	Int'l Coordinator, WWF Forest Conversion Initiative	WWF Switzerland	Switzerland
Dr.	Jérôme	Rosnoblet	Research Engineer	Ecole Nationale Supérieure d'Agronomie et des Industries Alimentaires, Nancy (ENSAIA)	France
Mr.	Ueli	Salvisberg	Rural Engineer	Swiss Federal Office for Agriculture (SFOA/BLW)	Switzerland
Mr.	Eduardo	Sampaio	Agronomist	Utz Kapeh	Brazil
Mrs.	Flurina	Schneider	PhD student	Centre for Development and Environment (CDE), University of Berne	Switzerland
Mr.	Fritz	Schneider	Vice Director	Swiss College of Agriculture (SHL)	Switzerland
Dr.	Jürg	Schneider	Senior Advisor	Federal Office for the Environment (FOEN/BAFU)	Switzerland
Ms.	Regina	Schoell	PhD Student	Swiss Federal Institute of Technology (ETH), Institute for Human-Environment Systems (HES)	Switzerland
Mr.	Géraud	Servin	Environment Officer	Food and Agriculture Organization of the United Nations (FAO)	Italy
Mr.	Martin	Sommer	Manager - Natural Resources and Environment	Swiss Agency for Development and Cooperation (SDC)	Switzerland
Mrs.	Rosemarie	Sommer	Scientific Collaborator	InfoAgrar	Switzerland
Mr.	Andreas	Stämpfli	Project Collaborator	Swiss College of Agriculture (SHL)	Switzerland

Dr.	Bettina	Stäubli Dreyer	Information Specialist	InfoAgrar	Switzerland
Dr.	Franz	Stoessel	Desk Officer	Swiss Agency for Development and Cooperation (SDC)	Switzerland
Mr.	Greg	Strain	Director, Agri-Environmental Policy Bureau	Agriculture and Agri-Food Canada (AAFC)	Canada
Dr.	Christoph	Studer	Professor	Swiss College of Agriculture (SHL)	Switzerland
Mr.	Thierry	Suard	Student	Swiss Federal Institute of Technology (ETH)	Switzerland
Dr.	Christian	Thalmann	Scientific Collaborator, Project RISE	Swiss College of Agriculture (SHL)	Switzerland
Ms.	Alice	Thomann	Junior Programme Officer	Swiss Agency for Development and Cooperation (SDC)	Switzerland
Dr.	Carmen	Thönnissen	Programme Officer	Swiss Agency for Development and Cooperation (SDC) - East Asia division	Switzerland
Dr.	John	Tzilivakis	Senior Researcher in Agricultural Sustainability	Science & Technology Research Institute, University of Hertfordshire	United Kingdom
Mr.	Max	Welter	Journalist	Landfreund	Switzerland
Ms.	Carissa	Wieler	Project Officer	International Institute for Sustainable Development (IISD)	Canada
Dr.	Felix	Winkenbach	Professor emeritus	Swiss College of Agriculture (SHL)	Switzerland
Dr.	Josef	von Ah	Professor emeritus	University of Bern	Switzerland
Mr.	Christopher	Wunderlich	Assistant Coordinator, Sustainable Commodity Initiative	International Institute for Sustainable Development (IISD)	Spain
Ms.	Eva	Wyss	Journalist	Schweizer Bauer	Switzerland

Mr.	Frédéric	Zahm	Researcher	Cemagref	France
Mr.	Marc	Zoss	Programme Coordinator	Swiss Federal Institute of Technology (ETH) - Swiss Center for International Agriculture	Switzerland

List of Presenters

Type of Presentation	Name			Title	Affiliation	Country
Roundtable	Dr.	Claudia	Binder	1) Natural and Social Science Interface 2) Professor for Social and Industry Ecology	1) Swiss Federal Institute of Technology (ETH) 2) University of Zürich	Switzerland
Roundtable	Mr.	Manfred	Bötsch	Director - General	Swiss Federal Office for Agriculture (SFOA/BLW)	Switzerland
Workshop	Dr.	Angela	Coulton	Head of Sustainable Consumption and Production Evidence Base Team	Department for Environment Food and Rural Affairs (DEFRA)	United Kingdom
Facilitation	Dr.	Padruot	Fried	Head International Relations	Agroscope FAL Reckenholz	Switzerland
Roundtable	Mr.	Walter	Fust	Director-General	Swiss Agency for Development and Cooperation (SDC)	Switzerland
Co-Chair Keynote	Dr.	Fritz	Häni	Professor of Plant Protection, Head of Agroecology	Swiss College of Agriculture (SHL)	Switzerland
Keynote	Dr.	Hans	Herren	President	Millennium Institute	USA
Roundtable	Dr.	Hans	Jöhr	Corporate Head of Agriculture	Nestlé	Switzerland
Presentation	Mr.	Vinzenz	Jung	Adviser	Swiss Federal Office for Agriculture (SFOA/BLW)	Switzerland
Presentation	Mr.	Björn	Küstermann	PhD student	Chair of Organic Farming, Techni-	Germany

					cal University Munich	
Presentation	Mr.	Wilfrid	Legg	Head of Policies and Environment Division, Agriculture Directorate	Organisation for Economic Co-operation and Development (OECD)	France
Presentation	Dr.	Kathleen	Lewis	Reader & Head of Research Group	Science & Technology Research Institute, University of Hertfordshire	United Kingdom
Facilitator	Dr.	Harald	Menzi	Reserach Co-ordinator	Swiss College of Agriculture (SHL)	Switzerland
Poster Session	Dr.	Washington	Odongo Ochola	Seniour Lecturer	Egerton University	Kenya
Presentation	Mr.	David	Pendlington	Sustainable Agriculture Co-ordination Manager	Unilever	The Netherlands
Roundtable	Dr.	Frank	Pervanchon	Sustainability Expert for Farmers	Trame (French Farmers' and Employees' Association)	France
Co-chair Keynote	Dr.	László	Pintér	Director, Measurement and Assessment Program	International Institute for Sustainable Development (IISD)	Canada
Presentation	Mr.	Eduardo	Sampaio	Agronomist	Utz Kapeh	Brazil
Roundtable	Mr.	Géraud	Servin	Environment Officer	Food and Agriculture Organization of the United Nations (FAO)	Italy
Presentation	Mr.	Greg	Strain	Director, Agri-Environmental Policy Bureau	Agriculture and Agri-Food Canada (AAFC)	Canada
Presentation	Dr.	Christoph	Studer	Professor	Swiss College of Agriculture (SHL)	Switzerland
Presentation	Mr.	Frédéric	Zahm	Researcher	Cemagref	France

Appendix C: Feedback

Summary of the *Participants Questionnaires*

1. What were the three most important messages you heard during the Symposium?

Diversity of tools available
Cheap food syndrome
Indicators are critical for sustainable agriculture
Differences between indicators and the necessity to harmonize
Need to be inclusive and standardized
Consumption is part of the cycle
Sustainable agriculture must become a home-grown concept in developing countries
Sustainability = social, economic and ecological issues
Indicators are critical to ASA
Indicators must be situation specific, policy relevant and practical
Linkage is a key nexus/axis
Social criteria are a deficit in most concepts
Some tools are too academic (complexity)
Integration of different food sectors is required
The farmer's opinion was missing
How to achieve cheap and good food
Requirement of international coordination
Differences in definition of thresholds
Definition of stakeholders and objectives is necessary
Farmers are required in the development of tools
Many similarities in the presented models
Keep it simple and unambiguous
Partnerships are key
Sustainability must be defined by all stakeholders
Communication is necessary to find common basis for over 50 tools
No progress in the last 10 to 15 years
Holistic approach is a must
Policy indicators might not be suitable for farmers
Coffee and sustainability are en Vogue
There is no political demand for indicators that show what goes wrong
Disconnect of farmers and indicator developers

2. Were there any important matters that you think were missing from the Symposium given its stated focus?

Farmers as most important stakeholders (*this comment came four times*)
Retailers
Consumers
Contact information on participants list
Submitted papers were not available
Certifiers
Practical experience
Interco relation of social, economic and ecologic indicators
EurepGAP representatives
Uncertainty in calculations
Software aspect
More focused (on one aspect of agri-environmental indicators)
More stakeholders from developing countries
Most information was 10 years old and more
Discussion/critical questioning → time issue

3. Did you find the Symposium to be a worthwhile event? Please select from the following three options:

9 Very useful 7 Useful 2 Somewhat useful 0 Not useful

What did you like the most about the event?

Personal contact
Selection of location
Organization that needs to be grown
Get an overview on the subject
Side venues and activities
Panel discussion was well managed and coordinated
Good time management throughout the day
Case studies
Key notes
Great place, great participants
Met 25 new people
Awareness for the needs of different stakeholders
The forum should act as a mean to promote the preparation of proposals for funded projects
Communication platform

What should be improved?

Stakeholders and objectives should be more clearly identified in presentations
More concrete outputs, activities, cooperation's
Time for debate

Time for panel discussion
Time allocation for speakers → Panel at the end had too much time
Panel session did not work
Projection was too high up; first row too close to the panel
No translation from English
More representatives of different stakeholders (mainly scientists now)
Too many too scientific tools → more real case studies of applications (like RISE)
Relevant information should be published in peer reviewed journals (not scientific report)
InfoAgrar could help with the organization
Breaking the topic down into different work groups

4. What future directions would you like to see for assessing sustainability in agriculture, in general, and for INFASA, in particular?

Need of a common framework to define standardized indicators
Drivers of SA
ASA should redirect effort towards agriculture-environment-society nexus
Assessment of the future of SA-Scenarios
Having a multidisciplinary workshop involving all sectors of the value chain
Rio 92 is 14 years old
Test all presented tools on one farm to see the differences
Long-term action program, good overview, networking
Unification of all the different tools
More cutting edge methods
INFASA as information hub / exchange
Improved scientific approaches
Involvement of farmers

What subject would you like future symposia to address?

Harmonization
Standardization
Shocks and uncertainty
Sustainability and shipping → Globalization
Scenario evaluation
Software aspects
More specific cases → pilot farms
Communication of sustainability to all stakeholders
Which indicators to show what
Scaling-up of indicators for policy investment
Link between agri-environmental indicators and poverty assessment
More involvement of retailers, media and consumers on same subject
Strategic alliances

Unsustainable practices
Scale of sustainability
Geo-spatial data
Remote sensing
Theme selection
Comparison of how scientists from different fields assess sustainability
Networking of different initiatives
Thresholds for Biodiversity
Modelling

- 5. Would you attend a similar symposium in the future, and is there a specific role that you would like to see the symposium undertake?
Would you prefer to attend a similar symposium every year or every second year?**

2 Every year **13** Every second year **2** Yes but indifferent

Appendix D: Link to Culture

Culture and Agriculture (a concert review)

On March 16th Jörg Ewald Dähler, internationally known harpsichordist and conductor, and Kaspar Zehnder, flautist, musical director of the Zentrum Paul Klee (ZPK) and artistic director of a number of leading European orchestras, gave a remarkable recital in the auditorium of the ZPK in Bern. The concert, "In Klee's Garden", comprised three Bach sonatas and an air from the year 1996 for flute solo, written by Japanese composer Toru Takemitsu on the occasion of Aurèle Nicolet's 70th birthday.

At the heart of the concert was the première of Dähler's "Impressions of Plants by Paul Klee" for flute and harpsichord. Whereas contemporary music often takes some getting used to, here the audience received a direct line to the music by way of pictures projected onto the wall.

The first picture "Vegetal-strange" ("pflanzlich-seltsam") from the year 1929 seems to forebode the horrors of the Nazi era. In the centre of the picture you can almost discern a frightened human face, in a wig. A longer look at the picture and the colours begin to change: the solemn tones of the music emphasise this perception.

In contrast, the second picture, "Tendril" from 1939 is cheerful, and the musical impressions embody this mood. The piece ends with a long-held note on the flute, musically echoing the horizontal line in the centre of the picture which the tendril has wound itself around.

The third picture, "Garden Plan" from 1922, is accompanied by notes of baroque polyphony and a piece of classical music. The passages suddenly break off, like a plan which has failed to be carried out. This humorous end to the piece was met with smiles from the audience.

The composer captured the atmosphere to perfection with every picture, the notes matching the illustrations beautifully, the dark areas, the fine, curved lines and the capricious dots of bright colour. The music, the pictures, the unique surround-

ings of the ZPK with its countryside sculptures, gave this première a unique and impressive touch of festivity.

The concert opened with the Sonata for Flute in B Minor, BWV 1030, by Johann Sebastian Bach, which was arresting for its strong architecture. The harpsichordist's right hand, left hand and voice of the flute grew together to form one instrument - with particularly stunning piano passages.

The concert's final piece was the Sonata in E-Minor, BWV 1034. Here the right hand took over the Continuo to Basso-Continuo, which in this Sonata is particularly demanding.

The flautist mastered the technically demanding interval jumps with perfect ease. In the fourth movement of this Sonata there are notes of a duet in the Bach Cantata No. 79 with the text: [Let Your word shine brightly for us; although harshly against us the enemy rages.] Emotion abounds, therefore, in spite of the older form of Sonata Continuo.

The third Sonata for Flute performed on this evening was composed by Carl Philipp Emanuel Bach. The similarities in the minor passages of this Sonata in D Major (WqTV No. 83) to the father's Sonata in the parallel key of B Minor are unmistakable. The second movement is every bit in father Bach's style. Yet the composition keeps taking surprising turns. In this piece, too, the two musicians play together to an impressive degree. The encore, an original composition for flute and harpsichord composed by eight-year-old Mozart, brought this excellently planned concert to a perfect end.

The concert took place at the centre Paul Klee ZPK in Bern, Switzerland on the first day of a Symposium of the newly founded International Forum on Assessing Sustainability in Agriculture INFASA, organized by the Swiss College of Agriculture (Bern-Zollikofen) and the International Institute for Sustainability IISD (Winnipeg). Snuggled as the Centre is in the heart of a farming area, the musicians skillfully brought together two art genres (painting and music), and spanned the bridge between agriculture and culture.

Rudolf Bohren (music reviewer) and Fritz Häni
