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PACIOLI 4

Proposals for innovation of farm accountancy data networks

Final reflection paper

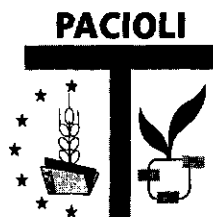
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ABSTRACT

PACIOLI 4; PROPOSALS FOR INNOVATION OF FARM ACCOUNTANCY DATA NETWORKS; FINAL REFLECTION PAPER

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This is the final reflection paper to provide suggestions for the decision making on the further development of the RICA. The reflection papers are submitted to the management committee of the RICA by the concerted action PACIOLI. The concerted action aims to improve the quality of agricultural accountancy and Farm Accountancy Data Networks (FADNs). It is financed by the EC under the AIR specific programme (AIR3-CT94-2456) of the Communities Third Framework Programme for Research and Technological Development and managed by DG VI.FII.3.

This reflection paper summarizes the main results of the concerted action and provides project proposals for innovation. The content of this reflection paper is based on work carried out during the fourth PACIOLI workshop. A lot of ideas for innovating the FADNs were presented during this workshop.

Accountancy/Innovation/FADN/Monitoring system/CAP reform

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*'This is not the end.
It is not even the beginning of the end.
But it is, perhaps, the end of the beginning.'*

Sir Winston Churchill

PREFACE

To most outsiders accounting and innovation are two quite separate issues. Accounting cannot function when the rules of the game are changed too often, and the activity itself is by nature more engaged in looking back than looking forward. Farm accounting data networks, embedded in governmental structures, are often not easily adapted to new demands. Although this characterization suggests that this is an interested area for research, it is striking that in the agricultural research programmes in the European Union not much money is spent on these topics.

Against this background it is fortunate that the FAIR programme of the European Commission found it useful to bring together a group of scientists and administrators of different backgrounds in a so-called 'concerted action' and ask them to coordinate their activities and assess the need for and feasibility of projects for innovation in these areas. PACIOLI (AIR3-CT94-2456) is a concerted action funded by the EC under the AIR specific programme of the Communities Third Framework Programme for Research and Technological Development and managed by DG VI.FII.3.

This report is the final reflection paper of this group. We feel that we have become insiders to the issue of innovation in farm accounting and farm accountancy data networks. More important is that we have been able to create a network of experts, with links that even stretch out to institutions outside the European Union. The project proposals that are reported in chapter 5 of this report are, in our opinion, important to be carried out in the future, be it in research programmes or under the management of RICA. We hope to keep the PACIOLI network alive. The next workshop will therefore be held in June 1997 in Sweden.

Turning a group of outsiders on innovation in accounting into a close group of insiders, would not have been possible without the support of a large group of persons. We are indebted to them all. We thank a number of them more explicitly: Mr. Val Reilly of the European Commission who stimulated us in getting started. The RICA-unit in DG VI, and especially Nigel Robson and Luis Florez Robles, who have treated PACIOLI as an important chance and challenge instead of a threat. The local organizers and their staff of the workshops in the Netherlands, Wye College and Parma: Diederik Spiering, Carlien Pruis, Nigel Williams and Filippo Arfini. And finally 'the back office' of LEI-DLO in The Hague, which carried out many activities that nobody noticed, because nothing went wrong.

The Management Board of PACIOLI,

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MANAGEMENT SUMMARY

Introduction

This reflection paper is the final deliverable of the EU-sponsored concerted action PACIOLI (Panel in ACcounting for Innovation, Offering a Lead-up to the use of Information modelling). This concerted action brought together scientists from several countries and international organizations who are interested in farm accountancy, farm information systems and agricultural policy information (especially Farm Accountancy Data Networks - FADNs). Objectives are the improvement of the quality of data, the stimulation of their use, the improvement of information management and cost effectiveness and an assessment of the need and feasibility of innovation projects. Four workshops have been organized in 1995 and 1996, from which papers have been published. This final reflection paper incorporates the most important results from the whole concerted action.

Reform issues

Information systems that are relevant to farmers and decision makers in agricultural policy should be adapted from time to time to changes in the decision-making environment of their users. Otherwise the information and its sources lose their relevance and becomes obsolete.

An analysis of the Agricultural Strategy Paper by mr Fischler on its effects on the Farm Accountancy Data Networks, shows that the several policy options have different effects (see table 2.1 in the main text). Some changes, like speeding up the data delivery, developing an FADN in Central and East European Countries and gathering more data on cost of production and subsidies will be relevant under all the policy scenarios.

Managing innovation

The management of reform (innovation) in FADNs is not easy. This is partly due to problematic governance, which makes strategic management difficult. Policy makers are usually unable to clearly formulate their need for data in the future. Planning processes are not very common, although the elapsed time from a decision to gather data until the arrival of the data is (too) long. The introduction of a working agenda is proposed to support the solution of this problem.

A stakeholder analysis shows that FADNs have to maintain the support of many, and quite different, stakeholders. In this respect there are also differences between member states. For the purpose of managing innovation, stake-

holders can be classified according to their attitude towards each innovation topic.

Within the European Union there seem to be two archetypes of FADNs, labelled type X and Y (see table 3.2 in the main text for more details). Type X is among others characterized by buying data from accounting offices, which leads to relatively low costs but also to data with a lower value (less detailed etc.). Usefulness of the data in the Type Y system is higher, especially for research and policy analysis, but the system face a higher risk of loosing the support of the stakeholders.

Information engineering, by designing process models and data models, can be used to describe, analyse and eventually change the information systems of an organization, both technical and functional. Main advantages are increased flexibility, inclusion of all definitions including derived statistics, translations and meta-information, separation of decisions on harmonization and transfer, and lower costs of generating software and maintenance. Section 3.5 of the main text provides an example for the European RICA.

Innovation at farm level

The adoption of farm accounting shows large differences between member states. Current expertise cannot easily explain these differences. This lack of knowhow of the factors that determine the use of accounting and accounting software hampers the process of innovation. The issue is also relevant to policy, as several policy measures have been taken to promote the use of accounting. It also implies that it is hard to support innovation from the top of the RICA organization, as good know-how of local circumstances is a key factor in succesful innovation.

A joint innovation process in agricultural accounting offices also seems hard to establish. Reasons indicated for this situation are: the domination of accounting by a fixed framework, the differences in investment level, the nature of the profession and lack of local competition.

Accounting does not seem to be a favourite pastime of many farmers. There seems to be a gap between the normatively supply of accounting data that are difficult to understand and the interpretation needs and skills of farmers.

Accounting methodology is changing. Agricultural accountants are beginning to compare their methodology with those used in other sectors. The IASC works on a specific standard for agriculture that could be beneficial to FADNs.

Project proposals

Based on the analysis in the PACIOLI workshops, we identified a number of actions for improvement of farm accounting and FADNs. The proposed projects are:

New areas for data recording in an FADN:

- A. Economics of high-quality food production systems**
Gathering and analysing data on organic farming, high-quality food products (including special regional products) and good farming practice.
- B. Management of rural development**
Gathering additional regional data in an integrated rural data network, presented in a Geographical Information System.
- C. Recording environmental impact**
Gathering additional data on the environmental impact of the farming systems.
- D. Evaluation of rural landscape**
Evaluating the contribution of particular farm systems to the rural landscape, as seen by the citizens.

Improved use of FADN data

- E. Rapid results**
Providing users of FADN data with more timely data and forecasts.
- F. Agricultural micro-economic information system**
Use of modern information technology to distribute the RICA data to researchers and the public in order to increase the use of the rich data set.
- G. Using micro-economic data to analyse policy issues**
Creating econometric models to supply policy-relevant conclusions on the basis of micro-economic FADN data.

Application of FADN know-how in related domains

- H. Towards RICA for PECO countries**
Creating a network of experts in order to promote micro-economic farm analysis and RICA development in Central and East European countries.
- I. Simplification and development of farm accounting**
Making use of the know-how of farm accounting specialists to develop recommendations to policy makers on the simplification of accounting without losing its benefits for tax purposes and environmental control.

Improving FADNs

- J. MACE: Managing Cost Effectiveness of the FADNs in the RICA Network**
Improving the cost / benefit ratio of FADNs by benchmarking.

2. RICA: REFORM ISSUES CHANGE THE AGENDA

Information systems that are relevant to farmers and decision makers in *agricultural policy should be adapted from time to time to changes in the decision making environment of their users. Otherwise the information and its source loses its relevance and becomes obsolete. An example is the potential effect of the Fischler paper on RICA (the European Commissions Farm Accountancy Data Network).*

2.1 The effects on RICA of the Fischler paper

In his 'Study on alternative strategies for the development of relations in the field of agriculture between the EU and the associated countries with a view to future accession of these countries' the European Commissioner for Agriculture Mr. Fischler (1995) describes several possible scenarios for the future of the CAP. This Agricultural Strategy Paper (as it is shortly referred to) calls them:

- Status quo.
- Radical reform.
- Developing the 1992 approach.

In PACIOLI we tried to identify what the consequences of these three scenarios would be for RICA. As the last one has been indicated by the Commission as the most attractive and realistic one, this scenario has been discussed in more detail.

Status quo

The title of this scenario is clear: no policy changes in a situation of EU enlargement ('Central and East European farmers are entering the community, not the other way around'). This scenario is not seen as realistic in the longer run as it would lead to financial problems of the CAP.

For the RICA this scenario would have a number of consequences. First of all it would be necessary to provide policy makers in the EU with data on the projection of yields, data on quota and set aside as well as cost prices of products. All these data would be needed in a situation with saturated markets, overproduction and an increasing financial burden of the CAP. As the CAP (and DG VI) is organised into market/product divisions, cost prices and results per product are more important than results at farm(-type) level.

Other important effects of this scenario are at management level. The enlargement would make it necessary to enlarge the RICA to (associated) Cen-

tral and East European countries. Secondly the financial problems of the CAP would lead to budget cuts and a stronger need for cost effectiveness. A risk is identified that resources will be reduced, leading to reduced quality of data and problems of having data available in time.

Radical reform

Under the Radical reform scenario, a new CAP would be created, in which support prices, quota and other supply management measures would be (nearly) abolished. Compensatory payments are decoupled from production and reduced over time. Direct income support payments could be given (including payments for environmental services) on a national basis, with or without Community co-financing.

It is not easy to picture the position of the RICA in such a world. The first reaction seems to be that the RICA could be abolished under such a scenario too. The experience of Sweden shows that the FADN was reduced to a smaller sample with fewer data variables at the moment that a large part of the Swedish agricultural policy was abolished. Partly the Swedish FADN survived with an eye to a future EU entry of the country.

However, it was also argued that a FADN could be very useful in a radically reformed world. First of all data on direct payments and data to be able to set the direct payments, would be needed. If member states would be allowed to fix direct income support, an instrument at EU level would be needed to monitor the hand outs by national or regional governments. Member states would like to be sure that these payments would really be decoupled from agricultural production and not distort trade (implying that such payments could be put in 'the green box' in GATT terminology). The RICA could provide this information, at relatively low cost as it is based on a sample; asking all farmers that receive payments for proof how they change their production plan after receiving payments would be much more expensive. Second, it could be that data on other issues (like environmental data, data on regional development) would be needed. However it is not clear if an FADN like exercise, turning the FADN in a 'Rural Area Monitor' (see below), would be the most efficient way to collect this data.

In addition the transition towards the radical reformed situation would ask for data on cost prices and the assessment of the viability of farms (including non farm income data), in order to estimate the number of farmers that could survive under world market prices.

The 1992 approach

Developing the 1992 approach (which refers to the CAP reform negotiated by Mac Sharry) is thought to be, and is officially adopted as the most realistic scenario. It has three important aspects, of which the consequences for RICA will be discussed in detail: towards higher competitiveness, towards an integrated rural policy and simplification.

Towards higher competitiveness

Improved competitiveness (which includes product quality, value added through processing, services etcetera) is seen as a key challenge for the future. The ability to export without subsidies will become more important. This means a reduced reliance on price support with direct compensations when necessary, and sometimes linked with environmental and social considerations ('cross compliance').

The effects of this line on the RICA are partly the same as under the radical reform scenario: costs of production and cost prices, a sample representative for production instead of farms, input-output relationships and data on direct compensations will be important issues. Under such a scenario it is important to have methodologies that are comparable with those in the main competing countries (PECO, USA, CAIRNS group) in order to be able to compare costs of production. The data gathering should be extended to variables that provide more product information (quality, services, value added by processing in the chain) and information on marketing (on farm processing, small cooperatives, local brands). Such data would be useful to stimulate (small and medium sized) enterprises (SME) and to support trade negotiations. It could also mean an extension of the sample to include e.g. SME in the agro food sector, a recommendation put forward earlier in the FAST-Programme (FAST, 1988). The analysis of the data should be improved to meet the needs of users, as they are not always able to interpret all the data themselves.

Towards integrated rural policy

During the last ten years the EU has not only undertaken a series of adjustments of its agricultural market policy, but we have also seen a reform of the structural policy (stressing rural development aspects) and an introduction of a relatively ambitious agri-environmental action programme. The different measures partly overlap, and a review of the present arrangements is thought to be useful. This would seek to strike a more sustainable balance between agricultural activity, other forms of rural development and the conservation of natural resources. The multi-functional role of the farmer can transform him into a rural entrepreneur. The diversification of activities in rural areas, with a more balanced geographical spread of activities, will be a key issue.

For the RICA this aspect has several implications. There will be more demand for regional data, which calls for a better regional sample quality. New specific tasks may be identified for the RICA: the identification of 'weak' regions and the transmission of knowledge from one region to another: the FADN as an extension tool to transfer improvements into 'weak' regions. There will be new users of the data, outside the agricultural domain: rural planners, regional authorities etcetera. Data on the multi-functional role of the farmers will be needed: agri-tourism, state of natural resources, contribution to the landscape, use of labour, environmental data. This widened data scope will probably demand integration with other data sources (e.g. transport, population, regional policy). The FADN is not necessarily the only element of a Rural

Area Data Network, but might be a solid basic structure for it. Such a rural area data network would include data on pollution points (non-aggregated data-gathering methods of the FADN could be of use here), income in rural areas and indicators for rural development. The rural area data network should monitor indicators for the viability of the rural environment in regions.

Simplification

Taking into account the complexity of the CAP and bearing in mind the considerable diversity in local situations, the Agricultural Strategy Paper sees a strong case for a radical simplification. This includes a clearer distinction between market policy and income support, and probably implies subsidiarity in implementation. A switch from the yearly price negotiations to a five years framework (compare the US Farm Bill) is also mentioned as a tool.

Simplification is an idea that several administrators in the RICA would prefer. The INEA reported that there is pressure in Italy to make the RICA more representative in the regions and to simplify the data requirements on Mac Sharry payments. From Finland it is reported that the amount of paper work for farmers has increased to such an extent by joining the EU, that this could even influence the response to the FADN in a negative way. Other member states also report difficulties with collecting the detailed information on quota and compensation payments.

However, the policy aspect of simplification is unlikely to lead to simplification for the RICA. If simplification means subsidiarity and regionalization, it involves 'complexification' for the RICA. More information on regional grants and subsidies (with a need for more standardization of this data) will be needed. This includes a better regional sample.

No regrets

Each scenario has specific effects on the future of RICA. Adopting measures to support such an effect has therefore the risk that the scenario will not become true. However, some changes in the RICA would be useful under all scenarios and could therefore be implemented without much risk. Table 2.1 lists the actions for RICA and shows under which scenario they would lead to an improved performance of the RICA. One action, speeding up the delivery of data, was mentioned several times in the PACIOLI workshops and has been added as beneficial under all scenarios.

Besides speeding up the data delivery process, three other actions will not be regretted in the future, as they are beneficial under all identified scenarios: the development of a RICA network in Central and East European (PECO) countries, data on costs of production and cost prices and data on subsidies. Other types of data (like those on the environment and non-farm income) are more tied to one or two views of the future. Two data items (analyse trends in yields and details on quota/set aside) are heavily correlated with the status quo. This type of data (of which details on quota and set aside were introduced in the RICA only recently) could become less needed in the future.

Table 2.1 *Actions to improve the performance of the RICA under different scenarios from the Fischler paper*

RICA actions	Scenario in Fischler's Agricultural Strategy Paper				
	status quo	radical reform	develop the 1992 approach		
			higher compet.	rural policy	simplification
<i>Gather data on:</i>					
PECO a)	+	+	+		
Cost prices	+	+	+		
Non-farm income		+		+	
Farm viability		+	+	+	
Environment		+		+	
Trends in yields	+				
Quota, set aside	+				
Subsidies	+	+	+		
Product quality			+		
Multi-functional role of farm				+	
Regional development		+		+	+
<i>Management issues:</i>					
Lower budget	+	+			
Standardization with non-EU			+		
Regional sample quality				+	+
Links to other data				+	
Speed up data	+	+	+		

a) PECO is the (French) abbreviation for Central and East European countries.

Table 2.1 also shows that it makes sense for the RICA management to invest in trying to predict the future and its consequences, e.g. by building close relationships with users in DG VI: most potential actions are tied to one or two scenarios and are not a clear 'budget-winner' in others. Interesting is the fact that improving the regional sample quality is an issue under all three aspects of the scenario 'develop the 1992 approach'.

3. MANAGING INNOVATION IN THE FADNS

3.1 Introduction

The previous chapter showed that FADNs should evolve over time in line with the needs of their users, to avoid the risk of becoming obsolete. That raises several issues on the management of such a change. This chapter discusses some aspects of innovation management in FADNs. The objective of innovation management is the innovation process that results in an 'innovation'. Innovations can be considered as a drastic change within a particular system; it needs to be distinguished from an evolutionary adaption of the system and from a revolutionary change of the system (figure 3.1). In a certain sense this is comparable with changes in the Common Agricultural Policy that also can be labelled as 'status quo', 'reform' and 'radical reform'.

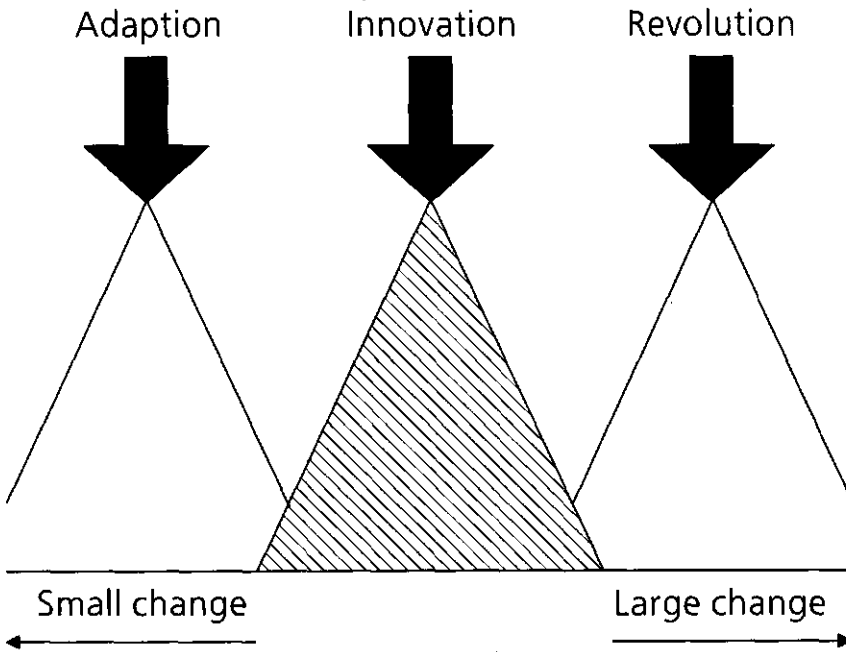


Figure 3.1 Innovation positioned between evolution and revolution

The impact of an innovation (a reform) is more drastic than adaption of the system, it deals with more or less fundamental changes in the system. In the PACIOI context innovation stands for more than the adaption of e.g. data

definitions or harmonizing the samples. One could assume that creating an environment in which these types of adaptations can be rather easily established, might need organizational changes that can be considered as reform. On the other side of the spectrum of change revolution is identified. This differs from innovation in the sense that revolution implies something like 'throw away' the old system and create a new one. Innovation in this perspective exploits the strong points of an existing system and is an attempt to improve it on the weak points. In the PACIOLI context the starting point is that policy makers at national and EU level need information that is based on farm level data and that FADN like institutions are required to supply this information.

Where revolutions are often prepared by a small group of key-persons, and adaptations demand only a small amount of energy from all the persons involved, a reform or innovation asks for an important group that carries out change management. The concerted action PACIOLI has been a breeding place for such change management.

3.2 Problematic governance

The guidance of Farm Accountancy Data Networks has never been easy, as there is a long period between decision making and publishing the results of implemented changes. In these times of governmental budget cuts and reforms in agricultural policies, this often leads to confusion and frustration.

Examples of this are available in many countries. In recent years the Irish FADN nearly disappeared in the process of slimming the public sector. In the RICA unit in DG VI complaints and frustrations were heard that money was dedicated to new topics like Central and Eastern Europe in stead of informatics specialists who could deliver the much requested RICA data on CAP reform. In the UK large budget cuts have been proposed by the Ministry of Agriculture (MAFF) and in the Netherlands the Ministry of Agriculture (LNV) is also actively looking to options to decrease their share of the financial burden of the FADN.

From the point of view of the FADNs, these examples can be interpreted as unsuccessful strategic management and not enough involvement of important stakeholders (persons who have an interest in one way or another in the FADN). Compared with the total agricultural budget in the EU (in regions, member states and the EU) the costs of the FADN are small. So, from the point of view of the stakeholders the diminishing support can be interpreted as a lack of innovation by the FADN to support the relevant stakeholders in their work.

Interviews held by PACIOLI participants with their stakeholders revealed interesting observations about this process of strategic management. Discussions in Finland showed that increasing data needs, more rapid results and lower data collection costs are important issues. A survey in Spain showed huge differences between regions and a clear need for innovation. From the Netherlands a lack of strategic management was reported too. The analysis showed that the changes in the guidance of agricultural research and the stronger emphasis on output-finance have not (yet) led to a clear governance by the Minis-

try of Agriculture of the FADN. This seems to lead to negotiations on finance only, instead of on content and finance.

Strategic planning for the RICA at EU level is - at least for involved observers outside DG VI - not very formalized. There are some activities but they are mostly quite passive ('Study ...') without a clear involvement of important stakeholders. The regulations that installed RICA demand a kind of progress report to be delivered to the CSA (Comité Special Agricole) and the Council every 10 years. It is remarkable that the management committee of the RICA had in the past some meetings with external users of the data ('user-forums') but not with stakeholders in DG VI. One of the interviewed policy makers in the Netherlands remarked that he missed discussions on the RICA in the working group on statistics of the Council (where it could be problematic that discussions are not always value-free but have a policy-impact) or in EUROSTAT's committee for agricultural statistics.

The contribution by B. Hill to PACIOLI also showed that strategic management of the FADN is not easy: most of the recommendations in his 1991 report on the development of the FADN have not been implemented but are still regarded as valid.

Another interesting remark is the fact that (with the noticeable exception of Portugal) neither the Commission nor other member states play any role in the strategic management of the FADN at member state level. The network function of the RICA could be stressed by inviting persons from the EU and from a few other member states for discussions on the development of the national FADNs. In such a way expertise would become available quite cheap, and some coordination would take place in an informal but nevertheless effective way.

Supporting the process

Policy makers in a ministry usually hamper in articulating their need for data in the future, which means that strategic planning for a FADN is not easy.

To support the process of strategic planning, it has been proposed to use the following table, an agenda which is successfully used by the Dutch Ministry for the Environment in the planning proces of their own research institutes:

Policy products *)	Policy questions	Research questions	Models needed	Indicators and data needed
.....
.....

*) e.g. yearly report on situation in agriculture, price proposals, white paper on et-cetera. Products ordered on a time scale.

In this table the policy makers provide, e.g. once a year, the policy documents and topics that they expect to be on the agenda between today and for

instance 5 years from now. It is clear that the *content* of such 'policy products' cannot be forecasted very precisely. However, it is often not impossible to predict (most of) the topics. Yearly price negotiations are a clear example, but also e.g. the end of the current market regulation of sugar in 2001.

The policy documents deal with policy issues and questions. Some of these questions can be translated in (or are) scientific questions to be answered by statistics or research. From this point on the expertise of the statisticians and researchers can be used to translate policy questions into research problems, to be solved by certain types of models and from databases.

Filling in such a table in a negotiation between policy makers (stakeholders) and FADN managers can create awareness for the guidance of a FADN and can support its finance. The table cannot only be used in a yearly routine, but also on moments of drastic policy changes. For instance the appointment of a new Minister or Commissioner, or the publication of an important policy document can be a trigger for the FADN management to meet with stakeholders and brainstorm on the effects for the agenda. The previous chapter reported such an exercise based on the EU's Agricultural Strategy Paper (Fischler, 1995).

Managing an FADN in the way as described, with data gathering derived from the policy agenda, requires a mature level on 'policy management'. The policy makers have to be explicit about the products and the moment they have to deliver them to the society. Nevertheless a lot of disturbance of the planned policy process will always occur. Planning the data need at every moment is based on the available knowledge. Therefore it is important to interpret the agenda as a 'working agenda' that might change as circumstances for the stakeholders change.

Of course the availability of such an agenda should not push aside two other important aspects of a FADN database. The first one is to have a database available for a lot of actual (short term) policy questions that are not always directly linked to the policy documents on the agenda. The other one is the availability of a public data infrastructure that is also available for the extension service, farmers and other participants in the democratic debate. If necessary, these two aspects could be added to the proposed agenda.

3.3 Stakeholders analysis

Stakeholders are those persons or organizations that have an influence one way or another on the organization, in this case the FADN. In discussing innovation it is necessary to have an overview of the possible influence that stakeholders might have on the innovation traject, positive as well as negative. It must be explicit if and how the various stakeholders are involved in the innovation traject and what their role might be. Figure 3.2 shows the 15 stakeholders that have been identified for the EU's RICA. Nine of them are part of the European Institutions, ranging from departments in DG VI to other European Institutions like the Court of Auditors or the European Parliament. Within DG VI there is a large range of stakeholders, ranging from the legal service and the translation service up to the policy units and the top of DG VI.

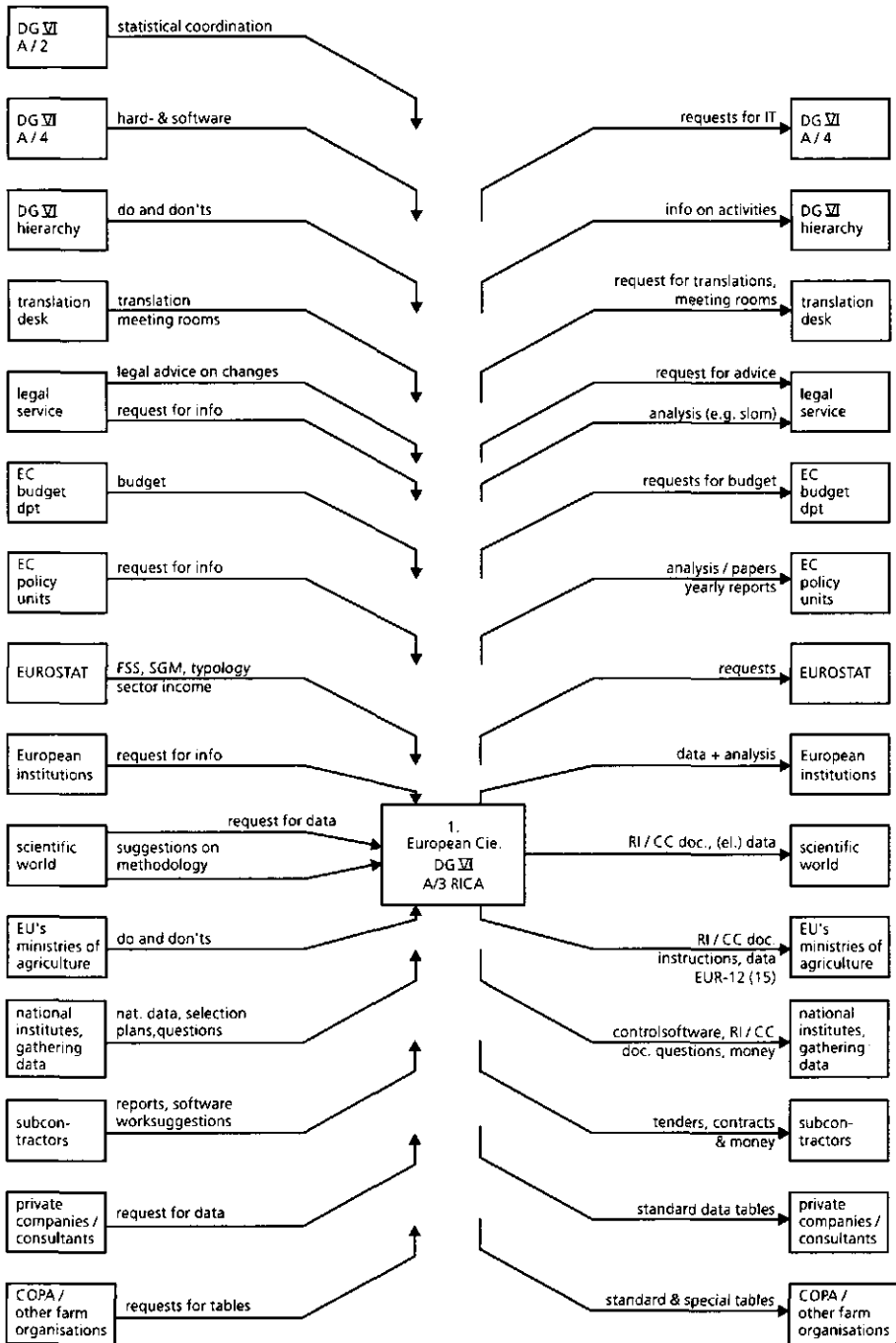


Figure 3.2 Stakeholder analysis RICA

Outside the European institutes, another six types of stakeholders have been identified. Some of them are users (COPA, scientific world, private companies), others are of political importance (ministries of agriculture in member states, COPA).

In some member states the RICA data are gathered and delivered to Brussels by the Ministry of Agriculture. In other countries this job has been handed over to research institutes or universities. In both cases it makes sense to identify the national data collectors (including private accounting companies that work for ministries or national research institutes) apart from the ministries of agriculture. Probably these two types of organizations are motivated by other aspects (political vs. expert and monetary interests) and this will influence their behaviour, especially towards innovation.

About 50% of the stakeholders are (also) users of RICA data. This includes organizations as national agricultural ministries and even the legal service that uses data in procedures like the SLOM-case.

Analyses for the member states show additional differences. Some of them are rather small, but significant; for instance the Belgian LEI gives its publications away free of charge, where the Dutch LEI-DLO sells them. This can partly be explained because the Belgian LEI is much more integrated in the government administration, where the Dutch LEI-DLO is nowadays a not-for-profit research organization at arm's length of the government. For the same reason the Dutch LEI-DLO tends to treat Universities as a potential competitor, where e.g. the French RICA makes data available to the INRA through its ARISTIDE system. Even more striking is that in some countries the data is not used for research very much at all.

It makes sense to classify stakeholders into four categories (table 3.1) depending on the fact if stakeholders have the same vision on the developments and trust the organization. Stakeholders can be classified as 'friends' for one innovation and as 'enemy' for another. Especially opponents and potential allies can be turned into supporters of an innovation by starting to interact with them.

Table 3.1 Classification of stakeholders

	common trust	no common trust
same vision / expectation	friends	potential allies
contrary point of view / expectation	opponents	enemies

3.4 Two types of FADN: Type X and Y

There are important similarities as well as differences between the member states with respect to the organisation of their FADN that influences innova-

tions. At a very abstract level two 'types' of FADNs can be identified. We could call them 'type X' and 'type Y' (table 3.2).

In an FADN of type X, the data are gathered by a commercial accounting office that provides them (as a byproduct of tax accounts) to the Ministry of Agriculture. The accounting office, and sometimes the farmer, are paid for their service. In this type of FADN the information content is often severely restricted by the fact that the Ministry deals with a number of accounting offices (see above) and that data that are not available in financial tax accounts is rather expensive. These circumstances restrict the collection of additional data. The use of FADN data is often restricted to the use in the Ministry of Agriculture for policy analysis. Research institutes do not have access to the data. The political culture is often not used to debates in the public domain on sensitive political issues, based on calculations and research carried out by an independent research institute.

In an FADN of type Y, the data are gathered by a research institute with its own staff. This is probably more expensive, but it also delivers more data, especially on new policy topics, and data that are more relevant for economic research and policy supporting analysis. The FADN is not only focused on monitoring but also on the first stages in the policy process 1). Especially as the research institute (and its FADN) is output-financed, the incentive to have relevant data is high as it gives a competitive edge compared to other research suppliers. Then there is also a clear conflict of interest between the FADN and its financing policy makers, that leads to a higher incentive for efficiency. Due to the high information content, farmers are also more interested in providing the data, as they receive more feedback. In this situation innovation is more easy because there is a win/win situation: the FADN can gather a lot of data on the farms without much additional costs (the marginal cost of an extra data item is very low, once the farm is in the accounting system), or even has to do so to guarantee the farmer's cooperation. In a certain sense the Type Y FADN is in a more unstable equilibrium: once that innovation hampers and the cooperation with the farmer is lost, it will be hard to serve the researchers and policy makers; and as a result policy makers could become interested to abandon their support to the Type Y strategy and choose for a low cost - low value strategy with a Type X FADN.

It is not true that large countries have a lot of the aspects of a Type X FADN and smaller ones of a Type Y FADN. The FADN in Italy (the research institute INEA as central organization) and in the UK (universities playing the role

-
- 1) One can identify 5 stages in the policy process:
 - 1) individuals and lobby groups perceive an undesirable development;
 - 2) the issue is placed on the political agenda, especially by political parties;
 - 3) possible solutions are identified and evaluated ex ante;
 - 4) a solution is chosen;
 - 5) a monitoring system gives information on the gap between the actual situation and the political goal.

The FADN is in essence a monitoring system (stage 5) but is also of help in step 1, 2 and 3.

Table 3.2 Two different types of FADN

Aspect	Type X: 'low cost - low value'	Type Y: 'high risk - high value'
Central organization in FADN	Ministry of Agriculture	Research Institute
Type of finance	internal budget	output-related
Data gathered by	buying from accounting offices	own staff
Farmer's participation	is paid	free
Information feedback to farmers	low	high
Interest by farmers	low	high
Data flow and its: - information content - innovation	low low	high high
Data used by research	incidentally	often, and critical success factor
Political culture	data monopolized by ministry; no open access by others	policy advise and consensus building in the public domain
Main role of EDI	can solve lack of interest	can reduce higher costs
Typical example	Germany	The Netherlands

of the research institute) have several characteristics of the Type Y FADN, and the case of Luxembourg fits in the Type X FADN. It is also not true that a central role for the Ministry of Agriculture implies a small role for research: in France the RICA data are often used by researchers (but it seems that they don't have a big say in gathering additional data).

These examples show that in reality in most member states aspects of both types can be found. Both types also have a lot in common, and one type is not necessarily better than the other. The analysis shows that a type Y FADN is better in innovation, but even that is not necessarily a good thing. It depends on the historical developments, the local circumstances and the current strategic aims of the stakeholders of the national FADN, which of the two types is relevant in a certain region.

Most important, however, is that a process of innovation should take the differences in stakeholders into account and that within each FADN strategic management is necessary to monitor if the organizational choices are still the best in relation to the current and future circumstances and objectives in the agricultural sector.

3.5 Information engineering as a tool

The framework of Information Engineering can be used in the strategic innovation of FADNs. Information modelling is a cohesive aggregate of methods, techniques and tools which can be used to describe, analyse and eventually change information systems for an organization, technically as well as functionally. The word 'model' should be interpreted in this context as 'map'. For strategical (information) management purposes, PACIOLI workshops made process models for the FADNs in the member states involved and for the EU's RICA. These models describe the current situation. In addition a stakeholder analysis (see paragraph 3.2) has been carried out and an example of a data model has been created.

As an example, and as a starting point for future innovations, figure 3.3 provides the process model for the EU's RICA. The process model contains 9 important functions:

- * strategic planning;
- * data management;
- * operational management;
- * receiving data;
- * weighting data;
- * distributing data;
- * making analyses;
- * making forecasts (rfs).

Strategic planning is not a very structured process, and the initiative is not always with the RICA team. Parts of it (EU enlargement, policy developments) have to do with the interaction with EC-policy. This could result in proposals to change the data collection. Data management consists of activities that guard the methodology of RICA, including the gathering of some external data like exchange rates. The real data handling is carried out in the functions 'receiving data' and 'weighting data'. Data management is more focused on the management of data-definitions.

Operational management includes the 'team-work' of the RICA unit A/3. Typical activities for the Commission have to do with the organization of RICA meetings and with keeping in touch with the member states. The function of the management of the information system is straightforward. It should be noted that some of these activities (especially maintenance on software) is sourced out to specialized companies.

The activity of 'receiving data' includes the maintenance of the control-software. This is a bit arbitrary, as it could also be seen as an activity that belongs to the management of the information system. It has been put here as it calls for a lot of specialist know how, and it is improved continuously in close connection with solving the detected errors. Something similar is the place of the process 'distribution of control software'. This could also be seen as a part of the 'management of member states' or as a part of a (not identified) function 'distribute data and software'. Taking into account the way the work is organized at this moment, the process model is a good description.

The function 'weighting data' includes the collection of data on the observation field. One could argue that there is some overlap between 'comment selection plan/report' and 'control representativity'. However, at the moment comments are not made frequently and are often restricted to a small discussion in the RICA committee. Quite apart representativity is checked in the unit with an eye to the analysis made.

The function 'distributing data' is clear: it includes the publishing of electronic tapes to member states and (from time to time) a statistical publication. The support of external users includes the creation of (special) tables on their request.

The function of 'making analyses' includes several activities that have to do with the key production activity of the unit: to perform analysis for the DG VI hierarchy. Although there is probably no clear intake-procedure for new requests a separate process has been modelled: in connection with the operational process 'weekly work planning' the head of the unit is involved in the decision to carry out an analysis or not. 'publishing' and 'after sales service' should be taken with a grain of salt: most of the analysis are not formally published, even not after some time. At best they will be presented as an RI/CC document to the RICA committee. After sales service is used as a descriptor for activities as the presentation of the paper to policy departments and answering their additional questions.

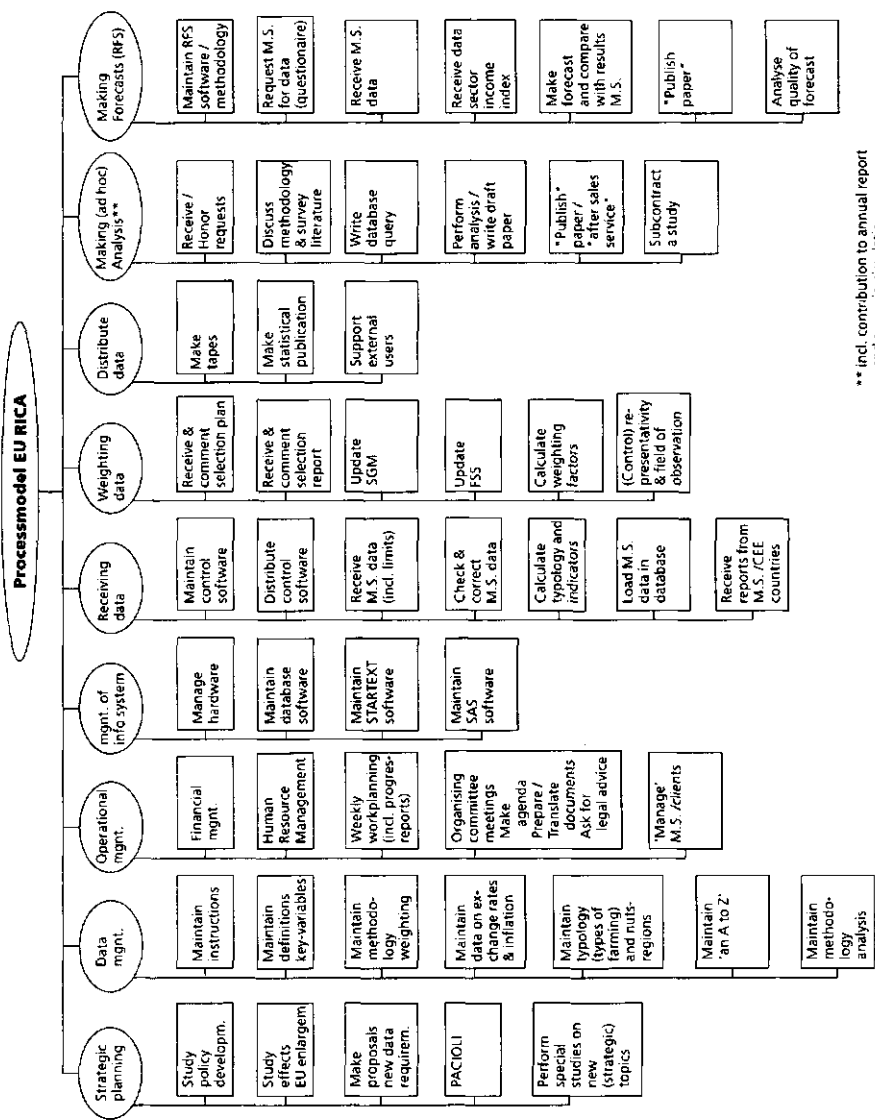
The process 'subcontract a study' has been placed in this function because some studies are carried out by contractors. It should be noted however that contractors have also been or are involved in studies on methodology (e.g. weighting, data quality) and on new data requirements (e.g. a consultant on non-farm income). An alternative model would be to include a decision on subcontracting in several processes (receive requests, weekly planning) and to have a process 'contract and monitor subcontractors' under operational management.

The function 'making analyses' includes so called scenario-simulations. In practice a lot of the activities for these studies are equivalent to those of 'normal' studies. The main difference is that in scenario-simulations additional assumptions are made on future circumstances (e.g. higher yields, lower prices) and on farmer behaviour (e.g. lower prices will lead to a reduction of inputs).

A special type of analysis are the income forecasts for the current year by the Rica Forecasting System. This has been modelled in a special function.

The process model for RICA is of course a bit different from those of the member states. For instance the Dutch, Finnish, French, Basque, Swedish, English and Belgian process models have special functions for accounting. But most functions are more or less similar: e.g. all of them have strategic and operational management in common.

Process models identify activities that are common between member states and between the member states and the EU's RICA. Hereby areas for potential cooperation can be identified, e.g. in innovation or software development. Activities like 'maintain control software' or 'maintain methodology weighting' are found in most process models. Until now the RICA committee has not allocated much of its time to share expertise between member states



** incl. contribution to annual report and scenario-simulations

Figure 3.3 Process model RICA

in these fields. More cooperation in similar processes between national FADNs could lead to a higher cost effectiveness, due to economies of size. Experiences, methodology, data models and even software could be exchanged. This is often thought impossible due to the differences in local circumstances and the language-problem. However, this view is exaggerated as it focuses too much on current software for local accountants. It is less true for software used by academic staff (who are often used to English software like Lotus123, SAS, SPSS etc.), and it is probably not true for the development of software. Today's standards for software development start with the creation of detailed process and data models, which are the basis to generate (partly automatically) software. The process and data models can easily be translated and used as a reference model to be adapted to local circumstances. This is a similar activity as the use of reference models for accounting in general (which are for sale on the market) to adapt them for an agricultural accounting package.

One step further is the use of the process model to outsource some of the activities. The RICA itself could be used as an example: the mission of the RICA unit in DG VI is to provide (often confidential) policy information to DG VI and not to improve agricultural accounting or to make statistics. Hence the name of DG VI A/3: analysis of agricultural holdings. The RICA is a tool for that purpose, not an end. The point was made that the RICA unit needs control over the instrument to fulfill its function and that harmonized changes in the instrument cost a lot of resources (time) or are nearly impossible. This carries the risk that it threatens the mission of the RICA unit one way or another, due to too much time dedicated to data management or due to outdated data.

This dilemma could be made more clear by the process model: the mission of the RICA unit is closely correlated with the functions 'making analysis' and 'making forecasts' (figure 3.3). However, most of the time available is dedicated to the functions 'data management', 'management of information systems', 'receiving data' and 'weighting data'. Probably the FADNs in the member states face similar situations.

A potential solution for the EU's RICA is to see if quality still can be guaranteed if some of the activities that are not the corebusiness, are hived off. At least part of the functions 'data management', 'weighting data' and 'distribute data' can be carried out by others. This is already (partly) done for software development, making publications (the last statistical publication was made by France), maintaining the methodology of weighting (supported at the moment by LEI-DLO) and special studies.

The process model can also make clear that such an outsourcing has effects for the other activities: the function 'operational management' (financial management and planning) has to be strengthened if one chooses for more subcontracting and management and less in house processing of data.

Data-model

The Farm Return describes the data that are exchanged in the RICA. It is structured as a set of tables and origins from a time in which punch forms were used. It is not optimally geared to the accountant supplying the data, nor to

the user. Since the Farm Return offers no room for voluntary supplements of data, the RICA cannot play a role in gradual innovation by expanding the data set for some of the surveyed farms.

Since the introduction of the current Farm Return in 1977 RICA's environment has changed, to put it mildly. The PACIOLI workshops identified some important trends that will influence farm accounting and the RICA in the coming years. Political circumstances changed (see chapter 2) and technological trends suggest that more and more farmers (will) own computers. Electronic links between computers are being established. This provides technical possibilities to access local databases and has huge consequences for the steering of information flows. One of the political issues is the budget constraints that demand cost effectiveness more than ever. The enlargement of the EU and changing rural policies (agricultural as well as environmental ones) lead to an increasing heterogeneity in farm systems. This makes it less and less likely that data gathered with the current Farm Return describes the real world efficiently and correctly. Where some farmers have a low interest in information and a correspondingly low interest in joining an FADN, others might be willing to provide a lot of data as long as they are rewarded by a feed back of reference information for bench marking. This asks for a flexible response, where access to data of the farm held by third parties (banks, suppliers etc.) could be helpful.

Where the current data management in RICA is based on an old, inflexible punch form approach, and current trends demand more flexible instruments, information models can come to the rescue. Information modelling provides, among others, a data model that describes on a logical level all the things of interest to an organization of which data should be stored. A data model can be used by informatics experts to define data stores and files to be used in the transfer of data. PACIOLI provided an example related to table C of the current Farm Return.

Main advantages of a data model approach are:

- * increased flexibility: for each attribute (data item) it can easily be agreed upon on which farms it should be recorded.
- * all definitions (including derived statistics and translations) can be included in the model.
- * the decisions on harmonization and transfer of data are separated.
- * meta-information can be supplied to users
- * the data model and its physical representation (the data dictionary) can be stored in a work bench, which supports maintenance of the model and helps to generate software in a cost effective way.

Balancing the advantages, problems and potential solutions, and taking into account the need for more flexibility in the Farm Return and the existing tools to create this, it looks worthwhile to investigate if more flexibility can be created in the Farm Return with information engineering. This flexibility could be based on a data-dictionary containing a data-model with the entity-types and attributes of the current Farm Return and that can be widened to incorporate additional data of interest for e.g. pluri-activity, cost of production, environmental issues, forestry etc. (figure 3.4). In the longer run one could imagine a situation where a huge virtual logical data base exists in which all the rele-

vant data that are available in the Member States are described. Retrieving the data would become a technical and juridical issue. Within the data dictionary of the data base the hard core would be the current Farm Return that defines the data to be provided by all member states on all farms in the network. Perhaps that it is even possible to reduce this data set (e.g. by omitting details in table K) for application in Central-Eastern Europe and for speeding up data delivery in Western Europe. In addition to the current Farm Return additional data sets would be identified that some member states are willing to exchange (e.g. on a voluntary basis) on some farms. The fact if data are transmitted in advance (creating data bases in several member states) or can be retrieved on the moment of demand by using the data dictionary becomes a technical and juridical issue that can be settled on attribute level and that can be recorded for each attribute in the data-model itself.

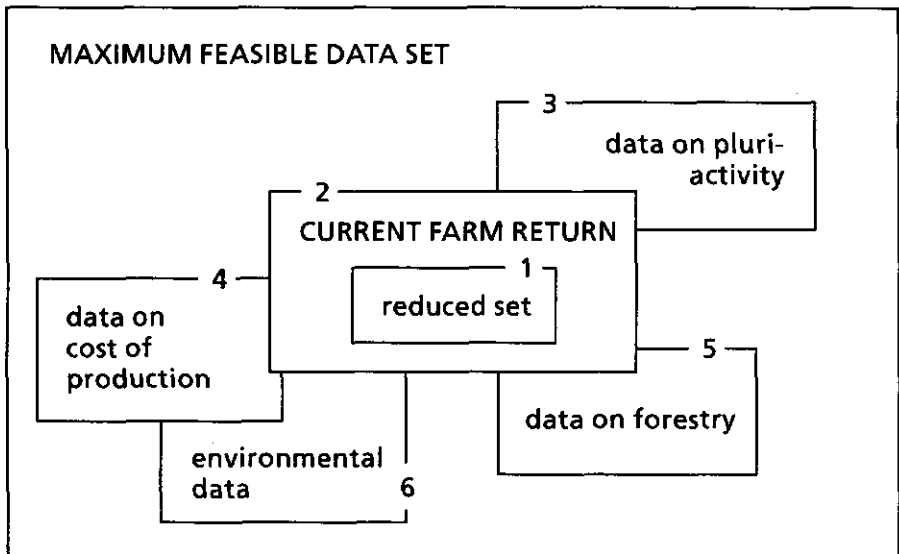


Figure 3.4 Data dictionary/logical data base focused on a more flexible exchange of data

4. NEED FOR INNOVATION AT FARM LEVEL

4.1 Introduction

For some innovations in an FADN it is important to note the process of innovation at farm level. The adoption and use of accounting at farm level is however poorly understood. Tax regulations as well as agricultural policy (e.g. Council Regulation EEC 797/85 on the improvement of the efficiency of agricultural structure) can make accounting by farmers obligatory. Farm accounting is often hived off to professional small and medium-sized enterprises that are an important rural industry. Positive research on farm accounting is however very scarce.

Nevertheless PACIOLI has been able to reflect on the adoption and use of farm accounting, the role of accounting offices, and - in addition - on recent developments in farm accounting methodology.

4.2 Adoption of farm accounting

There are large differences between countries in the adoption of accounting and farm accounting software. Market and institutional factors could be important factors in explaining these differences. Some of these factors are given in table 4.1. They include facts like: an obligation for fiscal bookkeeping, the availability of production records, the complexity of (tax) regulations and ownership structures etc. Such factors explain the need for accounting, be it for management purposes or as an obligation by (fiscal) law.

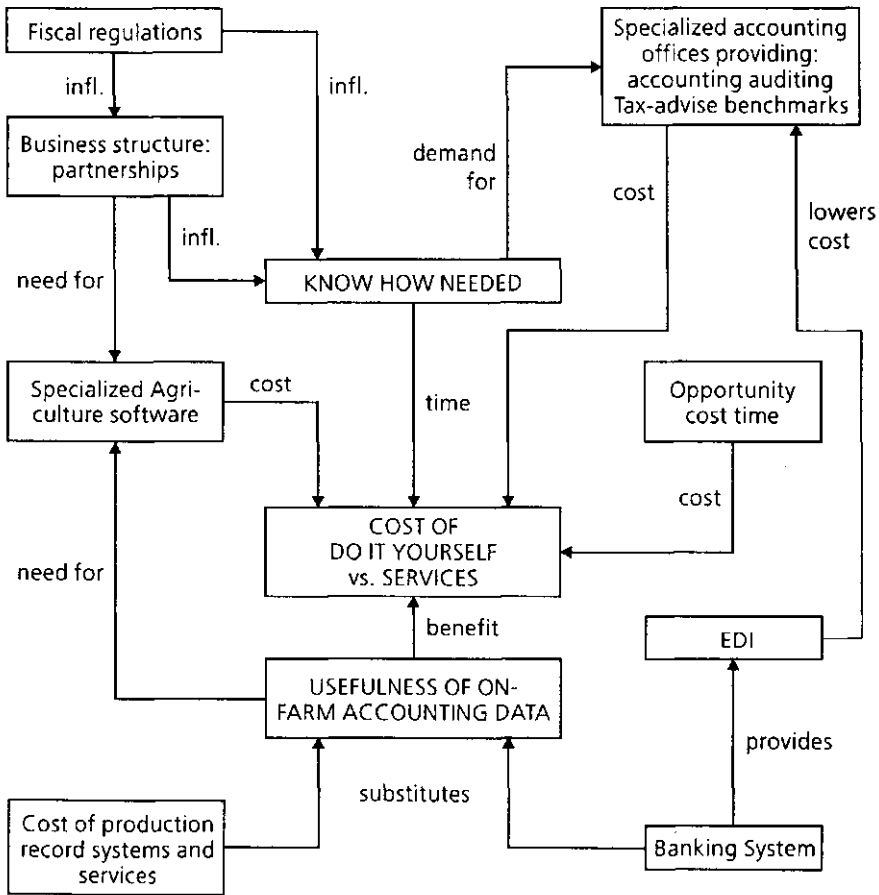
Accounting can be done by the farmer himself (on a personal computer or by more traditional methods) or can be handed over to a professional accountant. Once again institutional factors (like the complexity of fiscal regulations) can play a role. But also economics are at work here: competition between banks (providing cash flow statements), production records and accounting as a source for management information is influenced by the degree of specialization and the availability of electronic data interchange (EDI). For the Netherlands these influences can be illustrated with figure 4.1.

The data in table 4.1 can not be explained easily by current expertise, even if we accept the fact that some of the data are only best guesses and that the interpretation of the headings varies between the countries ('unharmonized data definitions'). It is also unclear if a situation where more farmers have accounts or use on-farm PC's for accounting is attractive in the sense that it leads to better farm management. This is often assumed (even in EC Regulations that prescribe accounting if modernization aid is accepted or the Fischler

Table 4.1 Facts *) on farm accounting

	unit	NL	BE	FI	FR	SP	SW	UK
Number of farms in country	#	120	75	120	800	900	90	240
Farms with on-farm PC	(*1,000)							
Farms with bookkeeping: total	#	40,000?	?	17,500	50,000	5,000	7,000	35,000?
Farms with bookkeeping: on own PC	#	all	25,000	all	600,000	10,000	all	all
Fiscal bookkeeping	#	8,000	<2,250	10,000	30,000	<1,000	>6,000	?
obliged by law?	yes / no	yes	no	yes	yes	no	yes	yes
Complexity of fiscal regulations	high/low	high	high	low	high	low	high	high
Complexity of ownership situations	high/low	high	low	low	low	high	high	high
Specialized agrarian bookkeeping								
software available on the market?	yes / no #	yes 3	yes 2	yes	yes >10	yes 3	yes	yes
Farms with production record system	#	40,000?	yes	30,000	?	9,000	?	?
Comparison of results between farms common?	yes / no	yes	yes	no	no	yes	yes	no
Specialized agrarian accounting offices?	#	25	151	several	200	30	>100	50
Average 'out of pocket' accounting costs per farm with bookkeeping	ECU	2,200	2,350	268	2,500	240	800/500	6,000
Specialized agricultural banks	#	1	2	1	1 to 2	3	1	0
Market share specialized banks in the agricultural sector	%	90	75	70	90	40	45	0
EDI services available?	yes / no	yes	yes	yes	yes	no	yes	no

*) result of estimations by experts for the 2nd PACIOLI workshop. Interpretation of definitions could be different between countries.



infl. = influences

Figure 4.1 Factors influencing the low adoption of on-farm accounting software in the Netherlands

paper that recommends farm accounting for PECO-farmers), but there is not much research available on this assumption.

This lack of knowledge on the factors that explain the use of accounting and accounting software by farmers hampers the process of innovation. As farm accounting is heavily influenced by local circumstances, it will not always be easy to copy successful innovations from one region to another. For the RICA system, as far as it depends on farm accounting practices, this implies that demands for new types of data (e.g. on environmental issues) or quicker data

delivery will be easier to meet by some regions than others. It also implies that it is hard to support innovation from the top of the RICA organization, as a good know-how of local circumstances is a key factor in successful innovation.

4.3 The role of accounting offices

Another important difference, also with an eye to innovation in FADNs, is the role of data providers. In some countries independent commercial accounting offices play a big role in gathering the data for an FADN. That makes it important to analyse their stakeholders and motives. Some of them are now interested in using the same accounting methodology as in non-agricultural sectors. In a recent Dutch paper a director of an important agricultural accounting office argued that a joint innovation process in agricultural accounting is hard to establish (Maasdam, 1995). Several reasons for this were indicated:

- * fixed framework: accountancy is dominated by a fixed, self-controlled framework. Conceptual frameworks are based on external standardising committees. New employees are trained by the profession and departing opinions are not easily accepted. This makes innovation as a reaction of demands by clients more difficult;
- * investment level: accountancy methods are reflected in information systems. Changes in work processes lead to high costs for new software and a disruption of efficient activities. Training will be needed. So change is most attractive at the time that an old information system is written down and has become obsolete. One of the problems in a joint innovation process is that the individual accounting offices have differences in the modernity of their information systems: one office will have an old system up for replacement, where another will be recently modernized. In such a situation the offices will react differently to proposals for innovation;
- * the nature of the profession: accountants are by profession a bit defensive, oriented on formal responsibility and accountability. Correctness goes above just-in-time. Long-term comparability of data is important. In recent years problems of liability-issues have dominated the headlines. This nature of the profession does not foster innovation towards providing more advise to the farmers (e.g. management accounting, planning, analysis etc.), as this is seen as a risky form of consultancy.

Maasdam (1995) concludes his analysis with the proposition: 'the formality of the accounting profession (especially in financial accounting), the information technology in the accounting office and the increasing trends in liability claims, lead to a reinforcing process that hampers changes in agricultural reporting to farmers'.

One aspect not mentioned by Maasdam, but perhaps important in the background is that in some regions of the EU, agricultural accounting offices do not face a lot of competition. They are sometimes linked to the local farm-

ers organization and in general farmers cannot easily judge the quality/price relationship of different competing accounting offices. As the accountant deals with data on income and wealth, and those data are seen as quite private in some regions of the EU, there is often a lot of trust involved in the relationship between farmers and their accountant. That makes competition less severe. It implies that the thread of competition is not a big incentive for innovation. On the other hand competition seems to be increasing in some regions (e.g. the Netherlands) and farmers complain about increasing costs. That makes it hard to allocate cashflow gained by the marketpower towards innovation.

4.4 Interpretation of farm accounts

Accounting is probably not a favourite management tool of many farmers. Table 4.1 showed that many farmers do not use it, if they are not obliged to keep books. The characteristics of agriculture (like small holdings with marginal remuneration, not necessarily maximizing profits) can partly explain this (Poppe, 1991).

Some authors have (correctly) argued that researchers and accountants are also to blame. Christensen, Lund and Pedersen (1984) concluded that the interest of farmers is mainly focused on the bio-technical process and that the use of economic information is defective. That is mainly to blame on the impossibility of farmers to place themselves in accounting and budget practices and definitions. As a result of a historical process, the authors stated, these are more over directed too much at research and policy making.

In France, Brossier et al. (1984) made a similar remark: 'In general in France the studies to calculate the profits of farmers to support agricultural policy-making has not favoured micro-economic work. The example of the FADN is revealing'.

Discussions in PACIOLI showed that the situation in France has not much changed. It was argued that the development of information systems is very much 'top-down': system developers start with a general decision model that leads to an information model and the supply of data in the framework of that model. However to be able to interpret data, decision makers (like farmers) need an interpretation model to give the data a meaning. This interpretation model involves references (or standards) that are not neutral. For example: a solvability (net worth in % of total assets) of 60% has no meaning unless one knows e.g. the type of farming (intensive livestock farms are more indebted than cereal farms with a lot of owned land), the age of the farmer, his cash flow, his risk attitude etc.

The French RICA (and probably this holds for other countries too) is defined as a *micro-economic data network to be used at a macro-economic level*. Averages calculated from the FADN data are not necessarily useful as references for farmers, as this asks for a normative step: the farmer (and/or his advising expert) should decide that a certain indicator and a value for this indicator can play the role of a normative standard for his farm. This asks for the definition of a peer group, the definition of a score card and the comparison of data,

like in benchmarking exercises outside agriculture. Work done by the ENITA in France and LEI-DLO in the Netherlands shows that expert systems can play an attractive role in bridging the gap between accountants and farmers. However this involves more explicit user involvement in information systems development and a 'bottom to top approach'. This could also imply that FADN users and cooperating farmers have partly a different need for data.

Another method to bridge the gap between accountants and farmers is to include technical data (physical data, production records) and financial data in one (accounting) system. This is now more and more possible, as technical as well as financial data are available in electronic form. The integration of these types of data in one application can improve the understanding of financial data, and the economic decision making by farmers.

Such an integration could also be useful, or even necessary, if farmers' records have to be audited to monitor their individual environmental performance, e.g. to receive subsidies or to prevent penalties (Breembroek et al., 1996). Product data flows in the total agricultural chain (e.g. to increase the value added by closer cooperation in the product chain and to direct consumer response to agricultural producers) will also lead to a link of technical and financial data. The FADNs could be useful instruments to provide monitoring reference information (the base-line situation) to such product data chains.

4.5 Developments in accounting methodology

Agricultural accounting techniques that are used in many farm accountancy data networks differ from those used in fiscal accounting or those used outside agriculture. This is partly due to the characteristics of agriculture, where farm comparison is important, and farms differ in the relative use of family inputs. Hill (1991) describes the current know how on indicators for income, profitability and viability of farms.

Making use of this expertise is not always easy. It has been suggested earlier (Power et al., 1989) that there could be a certain lack of harmonization in the RICA. Discussions in PACIOLI showed that the application of current cost accounting, especially in herd valuation, is far from easy. Debate on the split of the increase in value in a holding gain and an income component is easily possible. And although current cost accounting is nowadays not very much in vogue outside farming (if it ever has been), it seems to have given a more realistic representation of the costs of owning and using fixed assets in the RICA.

An interesting development in the accounting methodology is that in several countries agricultural accountants are starting to compare their concepts with those used by the accounting profession in non-agricultural cases. Several factors explain this trend: (1) more formal training in the (conceptual frameworks of the) accounting profession, (2) larger farm businesses and (3) accounting offices and banks that diversify to non-agricultural clients and vice versa.

On certain points, like the use of current cost accounting, the valuation at market prices and notional charges for family inputs, farm accounting and the RICA departs from GAAP - General Accepted Accounting Practices. The financial accounting statements used in RICA are sometimes ill-defined. The profit and loss account measures the income, but not the efficiency. The introduction of tradeable quota seems for a long time to have been overlooked by the RICA. It has also been argued that the cash flow statement used by RICA could benefit from recent literature that discusses IASC's Exposure Draft 36 'Cash flow statements'.

It is likely that the debate between agricultural accounting practices and GAAP will intensify in the coming years. This is especially true now that the International Accounting Standards Committee (IASC), which is the main accounting body involved in the setting and promotion of accounting standards in an international context, started to develop a specific standard on accounting for agriculture that will come into force in 2000. Although the RICA is not yet very much involved in such standardization efforts, it seems to make sense to do so: the RICA committee is in a certain sense itself a standard setting body and it will be effected by IASC decisions anyway 1). The current IASC draft proposes the introduction in the accounting statements of biological assets, to be valued at 'fair value'. This seems quite acceptable from the point of view of the current RICA methodology.

1) This would be in line with a Green Book of the Commission discussed in COREPER on 15 November 1995, where arguments were given for an international harmonization between IASC and EU Directives on Accounting.

5. PROJECT PROPOSALS

5.1 Introduction

Based on the analyses in the PACIOLI workshops, as partly reported in the previous chapters, the PACIOLI participants identified a number of actions for improvement of farm accounting and FADNs. The third PACIOLI reflection paper (Poppe and Beers, 1996b) described the ideas for these actions. In the fourth workshop (Beers and Poppe, 1997) these ideas were upgraded to project proposal. This chapter gives an overview of these proposals. After the workshop some polishing has been carried out by the PACIOLI management.

The polishing included the addition of a 'background' paragraph for each project proposal, in which some of the original text from the third reflection paper has been included.

The project proposals are:

New areas for data recording in an FADN

- A. Economics of high quality food production systems
 - B. Management of rural development
 - C. Recording environmental impact
 - D. Evaluation of rural landscape
- Improved use of FADN data*
- E. Rapid results
 - F. Agricultural Micro Economic Information System
 - G. Using micro economic data to analyse policy issues
- Application of FADN know-how in related domains*
- H. Towards RICA for PECO countries
 - I. Simplification and development of farm accounting
- Improving FADNs*
- J. M.A.C.E.: Managing Cost Effectiveness of the FADNs in the Rica Network
 - K. Typology 2000+ (Typo2000+)
 - L. The issue of quality in harmonization of FADN data
 - M. Standardization of datahandling in FADNs and RICA

5.2 Description of proposals

A. Economics of high quality food production systems

Summary

This project develops an information system and reports for policy makers on production costs, incomes and environmental performance for three types of farming involved in high quality food production: organic farming, high quality food products (including special regional products) and good farming practice, all in comparison with standard farming practices.

Product

The product is a report for policy makers and consumer organizations with information on production costs, environmental performance and income for three types of farms: organic, high quality products and good farming practice, all compared with normal/standard farms.

Information for policy makers and farmers includes data on production costs, environmental situation and level of integration with the market. Data for the consumers: are more information on quality of food in order to let consumers know that it is important to pay subsidies for some products in some areas and be sure about health aspects of food (i.e. quality beef, BSE).

It will be possible to give information about three different types of farms, that reflect demand of three different types of consumers.

Objectives

In many regions of the European Union large groups of farms are characterized by producing alimentary goods with a very high quality (vegetables, organic farming, vine, cheese, olive oil, etc.), besides many farms that produce commodities at lower level of quality. It is possible to identify two large areas of analysis:

- * control the production costs and income of production of high quality food. To control the costs could be important, because in the future we probably will have an unique market price.
- * control the quality and agronomic practice for these commodities.

For policy makers it is important to know if the high quality food is competitive in the market in order to maintain some areas in good conditions or if some subsidies are needed. For this products we do not need to check the quality but we need to know the production costs in farming activities and the proceeding activity at the farm level. The RICA could be organized in sub samples by sort of production and could be increased with extra data in order to understand the level of integration of the farm and which kind of contract they have with the agribusiness.

For the commodities it is important to know what the level of intensity of the farming activity is, in order to prevent environmental problems (this part of the analysis has to be organized together with environment indicators). RICA could collect data about the use of inputs and the production costs.

Activity plan

- stage 1: review of literature, report on current know how, workshop with presentation of know how and inventory of issues for field research.
- stage 2: define three types of farming (organic, high quality, good farming practice) and additional data to be gathered, also per type of farming. Select regions and products (based on importance of products/ types of farming and on willingness of local FADNs to cooperate).
- stage 3: gather data for 3 years.
- stage 4: analyse data first year, write report and present in workshop.
- stage 5: analyse data over a three year period and write the final report.

Project organization (incl. stakeholder involvement)

Partners:

- * researchers with experience in analysing data from such types of farms;
- * FADN organizations that have good data on such farms or that are willing to gather this data; these organizations should be willing to change their data collection without asking for a lot of funding;
- * policy makers at national and regional level;
- * organizations of farmers;
- * marketing institutions.

Project organization:

- * steering committee with partner funders and some policy makers, also from farmers organizations.

Benefits (for each stakeholder)

- Regional level: improvement policies to preserve local area under economic point of view and setup strategy for marketing in farms.
- National level: improvement of the national policy for quality in agribusiness and from an environmental point of view.
- Farmers organization: awareness of the production cost in order to help the farmer to manage their activity inside the market.

Critical success factor

To have the interest of policy makers in EU (DG -6, 11), in Member Countries and producer organizations. Do not try to do this with 15 Member States; take case studies from important regions. Regional FADNs should see this as important, a way for survival, not a source for money.

Estimation costs and funding structure

EU (consultancy to policy department or FAIR) pays the cost of research, coordination and costs of changing data collection systems in regions. National member states or regions pay the data collection by providing funds for extra FADN farms or by reducing the RICA sample by 10% and using this capacity for farms in this research.

Communication and dissemination

Study report, scientific article, workshops, feed back to farmers that take part, articles in farm press.

Remaining remarks

None.

Background

As the management of the environment, landscape and food quality (included value added through processing) become more important at farm level, and is more and more integrated in agricultural policy, farmers and policy makers have a need for information on these aspects. In the PACIOLI project, several examples have been provided, e.g. on mineral balances. Pesticides, use of water and energy balances are also mentioned in this respect. A discussion with policy makers in Brussels indicated a need for data on organic farms and farms that practice 'integrated farming' and 'Good Farming Practice'. Data on using an organic farming system are sometimes available in an FADN to make clear that a zero-use of pesticides is not an accounting mistake. Although not harmonized in definition, data that make clear what an integrated farm looks like, are thought useful. Another important issue is representativity, especially of organic farms. With 1-2% sample rate such farms will not easily enter the sample. It was indicated as very useful to restrict the representativity to e.g. 55,000 farms and gather data with the FADN system (to have comparable data as on 'standard farms') on 5,000 organic farms that are not necessarily representative, but at least provide data on such a new development.

PACIOLI participants involved

- Fillipo Arfini (Italy);
- Krijn Poppe (The Netherlands);
- Simo Tiainen (Finland).

B. Management of rural development

Summary

The Common Agricultural Policy of the last decades has sharpened the lack of balanced development, increasing the territorial disparities inter & intra regions of the EU. The diversification and the geographical spread of economic activities are seen by EU and National Authorities as a priority issue to develop rural areas and increase the political and economic 'Cohesion'. For an Integrated Rural Policy a more sustainable balance between the agricultural activity, other forms of rural development and the conservation of natural resources is necessary.

Through this decade the sectoral and regional policies are becoming more closely related. But the assessment and evaluation of rural development strategies need some indicators to measure their efficiency. The emerging information needs can have some implications for RICA such as the convenience of expanding the current sectorially oriented Data Networks (like FADN), in order to create an integrated Rural Data Network into a GIS (Geographical Information System) framework.

Products

A rural data network to provide rural policy makers instruments for policy making and the assessment of policy impacts. This data network must gather relevant indicators adapted to regional and EU needs and shall be closely linked to the FADN system. This means that FADN should be expanded with new characteristics concerning rural aspects. The indicators must gather several aspects related to:

- population dynamics;
- economic activities in the region;
- income;
- sustainability of different activities taking into account the environment, situation of natural resources, landscape, etc. (measurability of some of this indicators must be clarified with scientists).

The FADN, as a sectoral data network, can be a useful information framework (because of its infrastructure and the detailed micro level data it gathers from farms - scale economies) to provide an extended sectorial information layer (enlargement of the data domain), completed with other information sources to accomplish the rural areas requirements.

Use regional weighting (adapted farm typology) to aggregate up to national/EU level. Supply regional & national data to national governments, OECD and EUROSTAT.

Objectives

- * Define the data needs for rural policy;
 - * 'Rural data mining';
- There are several statistical sources which describe rural conditions. The expanded FADN should be regarded as one important tool that in combi-

nation with other statistical sources could good information about several aspects of rural development.

The whole set of different regional and sectoral data sources must be taken into account (Geographical data on the territory, REGIO; Population Surveys, Sectorial Structure Surveys, etc.), with their sample representativity, levels of aggregation, the homogeneity in their variable definition as well as their spatial and temporal homogeneity at the national and European level;

- * To show the interaction between agricultural activity and other activities going on the countryside:
 - Define the subset of rural area variables/indicators to be incorporated in RICA. Related with the multifunctional role of the agricultural household (handcraft, food processing, agri-tourism, landscape characteristics, state of natural resources and environment) and local organizations (i.e.: city and provincial councils managing landscape, natural resources & environment). This would allow for the measuring of the contribution of agriculture, other rural economic sectors and the rural policy (in a broad sense) to family and regional economies;
 - Construct a reference information model.
- * Improve the regional representativity of the RICA sample (is it possible to reduce the sample?)
 - Design record farm return (fiche).
 - Use regional weighting (adapted farm typology) for aggregation.
- * Analyse the Geographical Information System (GIS) for different information layers corresponding to RICA + other regional & sectoral data networks (Information Technology).

Activity plan

- stage 1: Investigate all kinds of statistical sources that exist today and which describe rural conditions (see objectives).
- stage 2: Consult OECD/EUROSTAT to define rural indicators using international standards.
- stage 3: Look for possibilities to combine FADN data with one or more existing sources (see objectives).
- stage 4: Look for possibilities to use data from other new parts of FADN (environment, landscape) for rural statistic purposes.
- stage 5: Evaluation of necessary expansion of the variable list in FADN to cover new needs for rural statistics.
- stage 6: Look after the sample design. Is it correct for fulfilling the rural statistics demands?
- stage 7: Production of a plan for carrying out a new expanded FADN (interaction with other FADN projects is here of vital importance).
- stage 8: Implementation of the planned new designed FADN.
- stage 9: Data and software quality checking.

Project organization (incl. stakeholder involvement)

The practical work should be carried out by of one or two secretaries. These person should continuously report to a working group in which representatives from the following stakeholders are represented:

- DG 6 A3;
- the national FADN committees;
- local policy makers;
- farmer organizations;
- statistical offices.

Benefits (for each stakeholder)

- European Commission: Be able to respond to Commission inquiries within an integrated rural policy framework. To be effective some rural indicators could be related in a rapid results scheme (see project on rapid results).
- National FADN committees: To have a better perspective of what is really happening in rural areas, where agricultural activity in a narrow sense will represent in the future even a lower share of economic activity. Important also for economic policy decisions at a national level.
- Local policy makers: To get a full picture for their national and regional FADNs.
- Farmer organizations: Farmers and their organizations are each day more involved in backward and forward linkages of agriculture (industrial activity, commercialization, inputs). They are already moving also into activities not directly related to agriculture, like rural tourism. To have an unified picture of economic activity in rural areas where they have an stake is important.
- Statistical offices: Profit from more integrated data.

Critical success factor

Political feasibility of combine different data banks (big brother syndrome).
Technical possibilities of integrating data from different sources.
Cooperation with farmers, rural industries, accounting offices and other involved to obtain good quality data.
Coordination of multidisciplinary research team.
Coordination with OECD & EUROSTAT about indicators as well as with other PACIOLI projects.

Estimation costs and funding structure

Very rough estimation: 250,000 - 300,000 ECU spread over three years for each participant. Shared between Commission (75%), national governments

(20%) and regional governments (5%). National and regional contribution in manpower and equipment.

Communication and dissemination

Include the information in Internet sites. Final Workshop with participants, local and national authorities and other stakeholders. Conventional publications (research and extension journals).

Remaining remarks

The quick structural change affecting European agriculture, the need of farmers to develop extra agricultural activity, the attractiveness of the country side as location for services and light industry are factors changing the face of the rural areas. New situations make new tools necessary, specially when scarce budgetary resources have to be efficiently allocated. All this reflections contribute to give this project a very high priority.

It is important to link this project to other projects which concern environmental, landscape and other questions which are related to rural development.

Background

For an integrated rural policy (and monitoring its effects) indicators are necessary that measure regional development and the contribution in it of agriculture and agricultural policy. These indicators could be different for different parts of the EU: e.g. special Mediterranean or Nordic rural indicators are thinkable. After a definition of these indicators, a system to gather the information has to be developed. Partly it could be the RICA, for instance by adding data on e.g. agri-tourism, non-farm income, pollution and agricultural processing. However it is also possible that RICA is not the most attractive tool for a Rural Data Network.

An additional point of research in this project would be the improvement of the regional RICA sample in certain member states (like Spain and Italy). In some regions the use of the RICA could also be stimulated, as this could lead to better cost effectiveness and improved data quality.

On the IT site it could be noted that this project proposal could include research on the use of Geographical Information Systems (GIS) for RICA and other regional data. By putting such a tool on the Internet, regional authorities would be stimulated to compare their own region with others.

PACIOLI participants involved

- Inma Astorquiza (Spain);
- Fillipo Arfini (Italy), Per Persson (Sweden);
- Miguel Merino (Spain).

C. Recording environmental impact

Summary

There is a lack of information of environmental impact, especially of feedback on environmental policy measures and regulations. This project proposes to develop an additional record in the FADNs to collect data for monitoring environmental impacts. The aim is to provide policy formation information, to monitor policy and provide extension information. The project is linked with Project 'Typology 2000+', 'standardization of data handling' and 'High quality food' and 'rural Landscape' Projects.

Product

An additional FADN (RICA) Record which can be used for monitoring and forecasting of environmental impacts of policies and regulations both at the national, regional and farm level. Content for the record: Farm Referenced Environmental Data.

Objectives

To link farm specific environmental impacts to that of the economic, geographic and physical aspects of holdings. This means to create a crude tool for the evaluation of policy impacts while taking account of both economic and environmental data at farm level.

Collect environmental data for the FADN sample. Use environmental 'weighting' (*adapted Farm Typology*) to aggregate environmental impact up to national/regional level. Supply national/regional environmental data to national government and international organizations.

Provide data for the analysis of environmental impact of policy/economic changes at the regional and national level.

Give feed-back to farmers and extension service to assess performance regarding the environment.

Key aspects: * Measuring mineral balances, energy balances and efficiency
* Measuring factors affecting ground water level and quality
* Pesticide residues, atmospheric pollution, biodiversity

Activity Plan

stage 1: Summarizing existing knowledge.

The coordinator consults with OECD/Eurostat and the EU-research programmer on Regulation 2078.

A starting up workshop with the whole project group is conducted to organize the whole project and discuss the literature in the area and how to summarize the existing knowledge. Country representatives consult scientists and review literature. The literature may be divided among the country representatives.

Resource estimation: Coordinator 1 month

Country representatives: 1.5 month each

stage 2: Defining key concepts and measurement variables

Define the need to collect micro level data. Each country representa-

tive defines the areas or questions where in the future the policy makers and the farmers will need information. The approach is to interview policy makers and farmers.

Define key concepts with which we can describe the environmental effects (endogenous variables) and the factors affecting the environment (exogenous variables). Define variables and methods to measure the key concepts (measurement variables). Ensure that external data are not collected twice, e.g. rainfall. Define weighting frame. Each country representative conducts case studies of farms, where the farms are as different as possible in the relevant aspects. The aim is to identify influencing variables and get information about the interval of the variable values.

The results of the country activities are discussed on a common workshop. The coordinator summarizes it.

Resource estimation: * country representatives 2 months each;
* field assistants 1 month per country;
* coordinator 2 months.

stage 3: Synthesizing

Construct a Reference Information Model. As a conclusion of the workshop according to stage 2, the broad lines of a reference information model are drawn. The details of the model are developed by the coordinator or one of the country representatives and tested. Resource estimation: 3 months.

stage 4: Conclusions

Define the need to redesign Record Farm Return in an interaction with the project on the standardization of data handling.

Define the need to redesign the farm typology in an interaction with the project on farm typology (we may need a subsample representing various types of farming and ecosystems).

Resource estimation:

- * The coordinator or one of the country representatives two months;
- * Work by project 11 and 3 according to the estimations by these project groups.

stage 5: Implementation

Prototypes of new software systems are developed, such as systems for quality checking, in an interaction with the project on harmonization and quality management.

Resource estimation: Work by project on harmonization and quality management.

Defining collection methods and training staff are left to each country to implement.

stage 6: Concluding

The results of especially stage 3 - stage 5 but also the whole project are discussed in an concluding meeting. The final report is summarized by the coordinator.

Resource estimation: coordinator 2 months.

Project Organization

Link with OECD to define international standards for environmental variables. Insure that these results are 'collectable' and 'feasible', and has a basis in science at farm level.

Project Group: Environmentalists, Soil Scientists, Information Technologists FADN Staff, Management Scientists and Extension agents.

Reference Group: Stakeholder Reps'- Farmers Groups, Natural Resource Ministry, Community and National level policy makers.

Benefits

Possibility of crossing & checking with other economic, technical & scientific data. Good quality micro level environmental data for policy making. Feedback to farmers and extension service.

Critical Success factors

Cooperation of farmers & accounting offices to get good quality data.

Technical and financial support of the European FADN, the Commission and the national governments.

Coordination with OECD & EUROSTAT about indicators.

Coordination of a multidisciplinary research team.

Estimated Costs and Funding Structure

Funding structure based on:

- * Environmental programmes of DG VI, DG XI as well as the Agricultural Statistic Unit;
- * National environmental programmes as well as national FADNs/Agricultural Statistics.

Communication and Dissemination

Publish results in scientific and extension journals.

Extension services feedback.

Extended data base available for different type of users.

Different sources data swap (economic, ...).

Remaining Remarks

Contact points OECD: Kevin.Parris@OECD.ORG. Mrs Pao, Eurostat F3

Background

None.

PACIOLI participants involved

- Bo Öhlmér (Sweden), Alastair Baily (United Kingdom), Nicole Taragola (Belgium).
- Beat Meier (Switzerland), Inma Astorquiza (Spain).
- Gunnar Larsson (Sweden), Carlos San Juan (Spain).

D. Evaluation of rural landscape

Summary

It is proposed to develop a methodology to evaluate positive and negative externalities of agriculture regarding its effects on landscape. The point is to establish if a *particular type of farm* is doing some contribution to landscape improvement or not. Due to the fact that productive industrial agriculture in Europe is facing mounting difficulties, the job of the farmers as landscape 'gardeners' (or destroyers) has to be duly evaluated. Agricultural policy is turning into rural policy, which includes also tourism and landscape. A system to evaluate these very subjective aspects *based on opinion panels* of citizens picked at random -not related to agriculture - will be tested. The panellers will be confronted with graphic materials and asked a) to express their subjective impressions and b) to try to put monetary values on individual landscape elements and combinations of elements. The main aim is to resume this evaluation in simple variables (*visual-aesthetic indices*) that could be included in the farm returns. The use of the information to build the core of an specialized data bank is not excluded.

Recapitulation:

- * agriculture has positive and negative effects on landscape.
- * perception of landscape is very subjective and surely nationally and even regionally differentiated, but there are methods to estimate their value (as contingent valuation CV).
- * public support of agriculture can partly be justified by positive externalities concerning landscape; present policy lacks good information basis as decision support.
- * the project identifies elements of landscape, that fulfill the following conditions:
 - a) perceptible by the public;
 - b) value can be assigned;
 - c) measurable on farm level.
- * study has two different elements: empirical valuation of demand and empirical measurement of supply of landscape.
- * project shows regional and intrasectoral differences in landscape 'production' in connection with differences in willingness to pay from the demand side and production costs on the supply side: those are the basis for decision support.

Products

An operational methodology to evaluate positive or negative landscape contributions of agricultural activity in different European regions. Creates a theoretical and empirical basis for future development of agricultural policies. From a purely political point of view, such a method could create the basis for defending European agricultural policies in trade discussions within the WTO.

It will be also possible to integrate revenues and costs for landscape activities in the RICA FADN data banks with revenues and costs from other farm

activities and establish trade-offs between landscape 'production' and more conventional agricultural activities.

Objectives

- * Identify a set of landscape elements and combination of elements which are positively or negatively evaluated by the public opinion of different regions.
- * Boil down those elements into a set of operative variables, which could be integrated into RICA data banks or in other specialized information systems to be created.
- * Establish monetary values for the identified elements.

Activity plan

stage 1: Adjust needs and feasibility through literature research, expert opinion, consults with the Commission, national and regional partners (total for stage 1 = 1,5 months).

1.1 Project meeting and data bank research in RICA

1.2 Coordinate activities among participants

1.3 Work with the RICA data bank

1.4 Literature research

1.5 Coordination with regional and national authorities

Objective: coordination, get acquainted with RICA data bank, pick up some extra ideas from the Commission, explore feasibility of different approaches.

stage 2: Define landscapes, and prepare graphic material for subjective evaluation-picture, slides, videos (total for stage 2 = 3 months)

2.1 Define landscapes (1 month)

2.2 Shot pictures (2 months; 20 days each season).

Objective: have homogeneous material available, which captures in pictures the influence of agriculture on different landscapes of the particular region to be studied. The pictures and filmmaterial have to be as objective as possible. Touristical material will not do. Most of it will be shot anew, with special consideration of objectives sought. In order to avoid a season effect, the same shots should be made in all different seasons, which delays the progress of the project. The netto - working time, however, will be the three months for this job.

stage 3: Select and train panels, prepare surveys, run a 'pre-test' with a reduced panel, administrate panel surveys (total for stage 3 = 3 months).

Objective: establish 'landscape juries' and obtain the raw data. Landscape tastes being very subjective and culturally determined, the members of the panel have to be told what is sought, without being influenced by the researchers. The members of the panels should have a varied socioeconomic background. The pre-test should identify technical problems, risks of the approach but also further possibilities of the method.

stage 4: Analysis of results, definition of measurable variables, eventual integration of relevant variables from other sources. Assign values (positive and negative) to landscape elements and sets of elements. The contingency valuation methodology will be used (total for stage 4 = 4 months).

Objective: a whole array of new variables has to be determined and made operational. The project will be moving on unexplored terrain. Careful consideration of the situation of the RICA data bank, of policy needs and of the needs of other stakeholders will be necessary.

stage 5: Oral debriefing, report, diffusion, final meeting (total for stage 5 = 3 months).

The project should be completed with a time investment of 14,5 months. In order to be able to get landscape pictures in different seasons, an interruption of the work of some months seems unavoidable, unless it is decided to use pictures of only one or two seasons, giving away the possibility of including the variable 'season' into the study.

Resumed time schedule

Stage	Activity	Duration
1	Preparatory activities	1,5 months
2	Graphic material	3 months
3	Organice/administrate surveys	3 months
4	Analysis results	4 months
5	Reporting and diffusion	3 months
	Total	14,5 months

Project organization (incl. stakeholder involvement)

The project will be organized on a country basis, but implemented regionally. This is specially important in countries with high landscape variability like Spain, for instance.

Main stakeholders involved are, besides the Commission, related Ministries at national and regional level (Agriculture, Environment, Tourism). Consumers and farmers unions are also to be consulted. Researchers on environmental economics (externalities) are also to be considered.

Benefits (for each stakeholder)

The benefits for the stakeholders are already discussed (see above). They can be resumed as being in possession of relevant information which will constitute the basis of policy making decisions in the very near future, both at European level and in front of the main competitors.

Critical success factors

The discussed elements have a certain value in public opinion, and should be identifiable on farm level. It is an open question, if the inclusion of identifiable elements in FADNs is feasible and optimal. This question has to be explored by the project itself.

The proposed methodology -contingent valuation method (CV) for landscape - is at a very early stage in Europe. Research, however, should not be discouraged for this reason.

Alternative applications of the model -not only RICA FADN should be considered. A possibility could be to integrate the obtained visual -aesthetic indices into multicriterial simulation models in order to estimate financial convenience of 'producing landscape' against more conventional productions. This is a research line already being pursued in Italy 1). Shadow prices of landscape can also be estimated. But we consider that this questions should be introduced in a follow-up project.

Estimation costs and funding structure

Funding institutions: governments, Commission, regional bodies, tourism, farmers bodies, considering the methodological aspects, research funds in general should be available.

Communication and dissemination

Final workshops with participants and stakeholders in participating regions; technical, scientific and journalistic reports.

Remaining remarks

The urgency of including the evaluation of the rural landscape within a policy framework can be felt. A development of alternative activities in rural areas, for farmers and other citizens are already well under way. The present project should help to 'nail down' an array of abstract concepts and make them economically operational.

Background

Landscape is also thought to be important, although it is difficult to measure and to separate from environment and biodiversity issues. The expectation is that this issue will become more important in WTO discussions (as the North Americans do not accept subsidies to farmers on such issues) and as PECO countries have a comparative advantage in the 'production' of landscape.

1) MARANGON, F. and T. TEMPESTA: Farm income versus agricultural positive and negative landscape externalities: a multicriteria approach. University of Udine and University of Padua.

PACIOLI participants involved

- Miguel Merino (Spain), Jouko Sirén (Finland)
- Beat Meier (Switzerland)
- Per Persson (Sweden)

E. Rapid results

Summary

The purpose is to provide users of FADN data with more timely data, with early indicators of income changes on major farm types and with data on key indicators (yields, product prices) that can be used for forecasting purposes.

Products

Rapid production of FADN results, based on a full farm return, directly after accounting year end from a subsample of farms, representing key farm types. Provide information on prices, yields, investment expenditure, farmer intentions etc. before full data set becomes available.

Objectives

To improve value of FADN to policy makers, their advisers, researchers and consultants. Do this by providing a full fiche completed for subset of 5% of specified key farm types within 2 months of their accounting year end (these are farm results that are available to the national network at the time, they are not pre-specified by RICA).

A long term objective is to have full RICA results in public domain by December (within 6 months of last accounting year end) would be desirable.

Activity plan

stage 1: Meeting with RICA to agree need for reform.

Within 6 months: RICA to provide quality control software.

At the same time: RICA to develop system for disseminating results quickly and define data needs.

stage 2: RICA/National FADN to:

- * generate a sub sample, define type of co-operators by farm type/size/region;
- * Fast track data cleaning and processing;
- * Distribution of results to clients/stakeholders;
- * Data made available to wider client base via Internet?

Project organization (incl. stakeholder involvement)

DG VI - To define objectives/target sample, set timetable RICA

- National Ministry/Practitioners

- Coordinating of data collection and processing

Benefits (for each stakeholder)

Policy makers:

More recent data on farm performance to inform policy making.

Early indications of farm performance.

data for forecasting models.

Cost savings as some one-off studies are no longer needed.

Researchers etc.:

More recent data.

Data for forecasting models.

Farmers:

Improved feed back.

Critical success factors

Willingness of national FADNs to develop new working practices and improved management of RICA. New integrated computer based quality control mechanisms (see project quality in harmonization). Data on the Internet for fast dissemination of results (see project or a micro economic information system).

Estimation costs and funding structure

As this project will be especially useful for policy makers, the European Union should fund most of it. National governments could contribute too, because they will gain from the project. Farmers organizations might be interested too, but their interest could be in conflict with this of the governments (negotiations on price levels, subsidies etc.).

The analysis could demand the equivalent of the work of two researchers for one year, about 150,000 ECU, including overhead costs. Not included is the additional work in the national FADNs.

Communication and dissemination

Rapid results should be made available at the earliest opportunity to be of benefit. Researchers should be informed of the existence of the rapid results, this could stimulate them to cooperate in collecting the needed data for the rapid results (market prices, analyses and forecasting of market situations, previsions on yields etc). This could reduce the operating costs in later years and would have a positive effect on the quality of the rapid results. Good qualitative rapid results would lead to satisfied users, this could bring up new funds for improving and even extending the methods for rapid results.

Remaining remarks

This is a very important innovation of the FADN. The success of the project will be dependant on infrastructure improvements covered by other PACIOLI project proposals so that the data can be processed rapidly.

Background

Providing results to users within a short time after the end of the accounting year is not a quality mark associated with the current RICA. In the second PACIOLI workshop it was noticed that large multinationals publish their annual reports within 4 to 5 months after the end of the accounting year, where RICA needs nearly 3 years (calculated from a non harmonized calendar year).

There are a number of ideas that are associated with this project indication: the current Rica Forecasting System (RFS) could be run more as a joint activity/publication by the member states. This improves the quality of the forecasts as more information is available in regions than at EU-level. Actions on this

front are already taken by DG VI-A/3 and could in the future perhaps lead to an annual outlook conference.

Most to gain however is from making better use of current information technology like EDI and the Internet. Working procedures should be redefined: at the moment the system is very much batch oriented, and data are only transferred as a large number of farm accounts in a region is finished. A visit to Wye College for instance learned that the first accounts of a new accounting year are available in January, where the Ministry of Agriculture (MAFF) sometimes is not ready before June to accept a tape, that carries a large batch of farms. Similar experiences exist in Spain, where the signing of tender contracts leads to delays.

One could even wonder if data still have to be physically transferred: distributed database technology enables somebody in Brussels or Paris to use (and download) data in databases at Wye and Helsinki.

One step further is to look more to cashflow-data which often come available at a monthly or quarterly basis at the level of the farm and the local accounting office. The suggestion worked out here is to split the RICA sample in 5% 'rapid rica' farms and delay the other 40,000 holdings. In this project proposal is not suggested (another idea) to use a more simple farm return for the 'rapid rica' farms as this would complicate software.

There seems to be a relation between such ideas and the project indication on cost effectiveness: it could be beneficial to use the current RICA payments (at EU- and national level) to improve the performance. Payments are now only provided to farms that are accepted by the Commission as error-free. Why not differentiate this to the usefulness (timeliness, amount of detail) ?

PACIOLI participants involved

- Arne Bolin (Sweden), Alison Tanton (United Kingdom)
- Nigel Williams (United Kingdom), Miguel Merino (Spain), Gert Hellevig (Finland)
- Dirk van Lierde (Belgium), Giovanni Sanna (Italy), Carla Abitabile (Italy), Inma Astroquiza (Spain)

F. Agricultural Micro Economic Information System

Summary

One of shortcomings of the current RICA is that this rich source of data is not made available to the public. This is regrettable as it does not provide feed back, nor an optimal level of research results. Therefore it is proposed to use modern information technology, like Internet and CD-Rom, to distribute know-how and data of the RICA.

Product

- * Document info system on RICA: legislation reports, general information on the network, newsletter, annual forecast report.
- * Public Aggregated results database as CD-Rom and/or on Internet.
- * Guidelines for setting up a global system to access the European RICA database and/or specification of data subsets.
- * Infrastructure for publishing RICA information and FADN data by Member States.

Objectives

The project aims at providing information out of the RICA database for external users (policy makers at EU, national or regional level, researchers, extension services, agribusiness etc.) and implementing a set of tools to distribute information and microeconomic data of European farms. Advantages:

- * Speed of distribution.
- * Getting more out of the Internet.
- * Larger audience.
- * Creating facilities for Geographic Information Systems, for instance, produce maps instead of tables.
- * Creating an infrastructure for the distribution of datasets 1).

Activity plan

- stage 1:
1. Analysis of data needs by end-users. Potentially three very different end users - academic, policy, farmers/agribusiness.
 2. Analysis of available sources of information (texts, databases etc.).
 3. Analysis of the end situation.
 4. Analysis of change.
- Reflection on the form in which we will present information and results on the Internet. It is important that results could be easily read and that a specific information could be easily found.
- stage 2:
5. Implementation of the information system (CD-ROM, Internet) 2)

-
- 1) Organizational aspects (maintenance, quality control) should be discussed.
 - 2) Internet site could be in co-operation with Ministry of Agriculture, National Farmers Union.

6. Specifying procedures and resources for maintenance and quality control
- stage 3: 6. Specification of guidelines for setting up a global system to access the European RICA database and/or specification of data subsets
7. Establishing infrastructure for publishing RICA information and data by member states
8. Integration of RICA datasets with other statistical and geographical sources of information.

Project organization

- stage 1: Participants in the project should have expertise in database definition and in distribution of information by electronic media. Stakeholders should be involved in the definitions of end users-needs. RICA should participate in specifying available data.
- stage 2: Technical expertise is needed in order to set the system up (INEA, LEI-DLO).
- stage 3: External expertise on GIS, integrating data, cooperation with EUROSTAT.

Cooperation:

INEA, LEI-DLO, RICA, Researchers? Workshop for specifying info-needs?

Step up to public source database for 12 member states from 1987, 95 -105 regions.

Standard results by type of farming, by economic size, area of the farm, range of income, at member state and regional level. Annual forecast report.

Benefits (for each stakeholder)

Manage cost effectiveness for the RICA;

Provide more rapid results;

An easier access to results for all stakeholders (policy makers, farmer unions, researchers ...).

You can know how many stakeholders (and what kind of stakeholders) are reading your results by putting a counter or something like this on your results. Moreover, it would be a good tool to know the actual needs of users.

You can use Internet to have a discussion with and even between end-users (a kind of RICA forum). The system can also be used to specify specific requests. With Internet, you also have the most recent information.

Internet could also be used as a broader information tool (to publish new regulations, some agricultural news, results of specific surveys, works from researchers ...)

Critical success factor

We have to promote it to the end users, to avoid the risk that it will not be used. Maintenance is a critical success factor. Performances of the system (in

technical terms) to get the information quick. It is very important to get feedback of the end users on the type and quality of the information provided, in order to improve the information supplied. The information providing by Internet must be continuously adapted.

Estimation costs and funding structure

Possible sources of funding for site construction:

- * EU programme INFO 2000.
- * TELEMATICS for research programme.
- * RICA.
- * National Ministry of Agriculture.
- * National Farmers Union.
- * Agribusiness.
- * Subscription from end users in public domain.

Ongoing finance to be provided by principal users and RICA?

Possible to cooperate with Ministry of Agriculture if they already have a home page and therefore reduce set-up costs?

Communication and dissemination

Data should be well indexed to allow the user to go directly to the required information. Presentation of data on different levels ie with different end users in mind, the farmer will be interested at a different level to the academic or policy maker. Essential to make potential users aware of new product. Regular users to be on 'mailing list', i.e. message sent to PC when site is updated.

Remaining remarks

It is very important that the data is of a high quality (see the data quality improvement proposals).

Background

One of the shortcomings of the current RICA is that this rich source of data is not made available to the public. In the past annual books with data and even micro fiches were distributed. At the moment, due to capacity problems, DG VI has to restrict its service to some tapes to member states, standard tables for those who are able to find the unit and a small contribution to the annual report by the Commission on the State of Agriculture. These activities are supplemented by contributions by member states: for instance in 1994 France published a report with regional results at EU level.

This situation is regrettable. In the third PACIOLI workshop it was noticed that this should be improved. There seems to be a large discrepancy in many FADNs between the amount of money spend on data gathering and that on publishing and research with the data.

One argument for more publications is based on the idea that access to (expensive) governmental information should be available for the public. More important for the RICA is self interest. More feedback to farmers and especially regions could improve the quality of the data. By providing the academic world

with data, the EC would get a lot of interesting research reports back, without having to pay for the research. The first feed back on Farm Trends, a new newsletter by one of the members of the RICA unit, is very promising. Reports and experiences are flowing in through the E-mail, making a large network available for the Commission and other RICA partners.

Currently the INEA and LEI-DLO have experience with the Internet, and especially the World Wide Web (WWW), its multi media section. The INEA has made data available at its server from the FADN, especially for the regions. LEI-DLO put its annual publication with statistics from the FADN on arable and livestock farming on the WWW.

Like several Ministries of Agriculture (London, Bonn, The Hague) the European Commission also installed a WWW-server with a lot of information. This project proposes to develop a special (home) page for the RICA and to provide aggregated RICA data. It also will provide suggestions how to run the WWW-site in the future: as new RICA data do not come available every week, the interest of the surfing users should be attracted by e.g. providing new analyses and special tables on current policy items.

For the moment there seems to be no problems to disseminate aggregated data: this leads not to privacy problems. Making individual data available (even in a form where the individual would not be recognisable as detailed geographic information is deleted) could be very problematic for some countries. It could be attractive for academic users to make queries on the individual database, where the output -to solve the privacy problem- is in tables with a minimum number of farms or a regression analysis based on a minimum number of farms. In France the RICA SAS database system provides this option to a few researchers and ministries (Agriculture, Finance) economics specialists. It is not clear if this would be acceptable for countries with a strict privacy regulation like Germany.

At the moment several programmes provide financial support to such innovations. The EU programme INFO 2000 tries to improve the 'content industry' of IT, and special attention is given to projects that promote the use of public data. The Telematics for Research programme could be a another source for support.

PACIOLI participants involved

- Guido Bonati (Italy, Diederik Spiering (The Netherlands)
- Conny Graumans (The Netherlands), Jérôme Steffe (France)
- Alison Tanton (U.K.)

G. Using micro economic data to analyse policy issues

Summary

A large scale model will be constructed, contingent upon the estimation of regional econometric production studies. The model itself will take the form of a large Computable General Equilibrium Model. Data used within this model are generated from regional production analysis of FADN data. Econometric methods are used for this phase. While much of this work is possible at present, additional information upon the allocation of inputs to outputs is required to provide for a full Multi-Output framework to exist. Supply of simply interpretable results at great speed.

Products

An annually Renewable model which can be used to analyses, at speed, the effect of policy proposals. The model must provide fast results. To this end an annual, routine regeneration of production coefficients must be carried out to provide coefficients of the CGEA model.

A model that make it possible to:

- * Simulate the effects of different policies;
- * Standardise quantitative results of policy simulation (Commission; national ministries; regional authorities, Unions);
- * Create standards for policy control.

An important function of the model is to be a standard for making different analyses according to the points above for different stakeholders like FADN unit and national ministries.

Objectives

- The problem is first defined from the point of view of the client organization.
- Define additional data requirements: Link with Projects 'New Farm Return' 'Data requirements' (Requires information on the allocation of Input x to Output y).
- Forecasting.
- Control.
- Quantification & simulation.

Organization

Create a network of Research Institutes, throughout the European Union. Each Institute is to develop National Model (Estimator + Simulator). This network to define standard approach. Thus each national model is country specific but uses identical methodology. Link with Work on a Common EU Farm return. To define data needs and definitions. Ensure feasibility of data additions. Must be recorded at farm level. May require extension services to promote the use of Gross Margin analysis of individual farm enterprises. The practical work should be carried out by one or two secretaries. A good idea could be to choose one with a research back-ground and one with experience from practical work with FADN.

The project has 3 clear stages:

- Data redefinition (inputs);
- Develop estimation methodologies (production elasticities and coefficients) for annual regeneration;
- Develop CGEA Model (the flexible question device, provider of quick answers).

The secretary should frequently report to a working group. (Design Research + Executive secretary + Stakeholders representative). An account is given of how certain hypotheses associated with the problem were formulated. New elements that would have to be considered: Environmental indicators, non farm incomes etc.

A research group could also be necessary to set up for designing of the simulation model: the technical aspects of the model building are described in detail (involving stakeholders):

- Report to policy makers + FADN committees.
- Run the provisional model.
- Redesigning the model.
- New Needs (feedback).

Results:

- Model.
- Simulation.
- Exercises are summarised and an indication given of how the models were used on an on-going basis by client organization.

Activity plan

Consult with Staff at CAS-Reading UK, regarding LUAM model (Leontief based simulation Model for UK agriculture). Search for other alternatives, other countries. This project extends this model into GEA and for all Regions of the EU.

stage 1: Defining the problems	3 months
stage 2: Defining the target population	2 months
stage 3: Model-building	6-12 months
stage 4: Modelling exercises, simulation and testing	2 months
stage 5: Conclusion and popularization	6 months

Benefits

- * To get a standardized and accepted way of making standard simulation for policy purposes and other uses. Like quantification. All kinds of stakeholders should benefit from this. No confusion would occur between for example the Commission and national authorities concerning the way of doing the calculation.
- * One objective of the model is to create figures quickly. This means for example that questions like how does a certain cut down in quotas effect the profitability for a certain group of farmers.
- * An important question that is connected to the use of the suggested model is to market it to the stakeholders. During the discussion it has been stressed out that the stakeholders today don't understand microec-

onomic statistics like FADN. One important issue is to market the use of FADN and make it more understandable for the stakeholders.

Critical Success Factors

- Ensure common adoption of additional (allocation) data collection.
- Fall back position: adopt for important agro-types and regions.
- Generate production model estimation of production coefficients.
- Develop Johanssen Model for the EU using coefficients from above as input.
- Ensure validity of model using historic data and past policy 'shocks'. Test the performance of the model to forecast changes in Output Production, Input Use and Farmer+Regional incomes. (Intersectoral Linkages in regional Economies).

Estimation of Costs

Project Development:

- Develop Pilot approach: Assess 'state of the art' 4 months *3 persons = 1 year
- Network meeting 3 days*15 persons = 45 days
Outcome: Methodology ensure commonality between countries.
- Pilot methodology and data retrieval procedures in each country.
15 countries + 2 persons * 9 months = 11 years
Outcome: Interim report and results
- Network Meeting: 15 persons *3 days = 45 days.
- Construct "Up-to-date" models: 15 countries *2 persons * 6 months = 8 years.
Network Meeting and Final Draft Report 15 countries *3 days, + 15 days = 60 days.

Funders:

1. FAIR and other EU research funds.
2. National Government Funds.
3. Commercial, Input supply Companies and output distribution networks.
4. Sale of forecast results.

Communication and dissemination

None.

Remaining remarks

None.

PACIOLI participants involved

- Carlos San Juan (Spain), Per Persson (Sweden).
- Alastair Baily (United Kingdom).
- Alastair Baily (United Kingdom), Jouko Sirén (Finland), Bo Öhlmér (Sweden), Fillipo Arfini (Italy).

H. Towards RICA for PECO countries

Summary

The project aims at creating a network of experts and institutions in order to promote microeconomic farm analysis and RICA development in PECO countries.

Products

- * established network.
- * annual report with micro economic information of PECO countries, including rapid results.
- * guidelines/expertise for PECO countries to develop FADNs (in a white paper time table with progress reports from PECO countries).
- * assessment of possibilities to establish a PECO RICA integrated with EU RICA.

Objectives

Micro-economic information on agriculture in Central and East European countries (CEEC) is scarce, both locally and in the EU. In several Central and East European countries steps have been taken to promote private farming and to introduce farm accounting, for instance as an extension tool. This introduction is not easy due to a lack of knowledge on commercial accounting, the distrust of government statistics and the attitude to be reluctant to an exchange of commercial data.

The Agricultural Strategy Paper (Fischler, 1995) explicitly recommends the support to farm accountancy and farm management (extension services) as an action for technical financial assistance to CEEC countries. Currently there is no coordination between CEEC countries and the RICA on the exchange of experiences in setting up monitoring systems. For several reasons such a coordination could be useful:

- experiences and software from EU countries could be made available more easy and cheaper than under current arrangements;
- countries could learn from each other what works and what not. In EUROSTAT this process has already started by giving CEEC countries an observer status in work group meetings. For diplomatic / political reasons this seems not yet possible in management committees like RICA, although the same coordination problem exists. A special coordination effort is therefore useful;
- harmonization of data between countries would be on the agenda. At the moment some CEEC countries probably use the data definitions of RICA, where others do not. If data definitions are used, there is no support provided on interpretation and there is no check on how RICA definitions should be adapted to typical CEEC circumstances (e.g. privatised cooperatives where indicators like family farm income are probably non-sense);
- it would fill a gap, as there is no effort to exchange micro-economic data and to compare e.g. costs of production between CEEC countries them-

selves and between CEEC countries and the EU. It is curious that some work within the Commission is carried out on macro-data, but not on micro-data where in this case micro-data (e.g. on privatised farms above a certain threshold) could be much more interesting;

- building a RICA network for these countries that provides comparable data now would support the policy analysis and the negotiations on an eventual integration of CEEC countries in the EU. In the case of Greece, Spain, Portugal, Finland, Austria and Sweden this opportunity was lost: the local monitoring systems were build or harmonised to RICA standards after the association, meaning that data became available years after the accession of these countries. Recent research in Switzerland learns that making networks comparable regarding data definitions and weighting systems, yields interesting and useful results. It would be a pity if CEEC countries build monitoring networks with incomplete (or only American) expertise with the effect that the data can not be used in policy analysis support the integration questions, and that than in a later stage CEEC networks have to be harmonised towards RICA.

In the third PACIOLI workshop, some clear suggestions for such a project were made. It should start with network development, building partly on projects already carried out in the Phare-ACE programme. By organizing two 'master classes' a year (workshops that take one week, one in a CEEC country and one in a EU country) experiences and data could be presented, discussed and published.

It would be attractive to agree on a White-book where e.g. the definitions and procedures for 2005 are defined, but giving PECO countries the possibility to use national methods as long as the White-book recommendations cannot be implemented. Progress in adaption can then yearly be reported. Another suggestion is to ask some FADNs in EU countries (especially those involved in building systems in PECO countries) to take responsibility for support on harmonization: a 'godfather'-role that was also used in some domains for Germany's neue Bundesländer.

This implies that with relatively low resources (e.g. comparable to the PACIOLI project) clear benefits could be realized.

Activity plan

stage 1: identify partners in PECO countries and their current links with western partners.

stage 2: 2 workshops a year, one in EU one in PECO. Each workshop takes a week, 50% of time is dedicated to reports from PECO on micro economic data, and 50% of time is used to discussion on methodologies. The expertise of PACIOLI is used for this purpose. Workshops are designed to facilitate the creation of links between individual PECO countries and individual EU member states (e.g. Italy takes care of Bulgaria) and between experts in EU and PECO countries as a group (e.g. NL takes care for weighting and farm selection). Workshops take three years maximum.

stage 3: report to member states and commission on the usefulness to establish a PECO-RICA integrated with the EU RICA.

Project organization (incl. stakeholder involvement)

Like PACIOLI. PECO countries should be interested in a FADN and should do the management themselves, and also pay for the local costs of data gathering.

Benefits (for each stakeholder)

- * EU and EU Member States get micro economic data on PECO.
- * EU and PECO get basis for national FADN to be installed after accession.
- * PECO countries get methodologies for own FADN that also generates data for farm development.
- * EU and PECO get data to support association negotiations.
- * Partners benefit by getting a network to formulate new projects.

Critical success factor

Extension plays an important role there in establishing systems in PECO-countries now; this project should note that, but not take that too much into account as it is too complex with too much competition for funds.

Estimation costs and funding structure

- * concerted action like PACIOLI: cost for travelling, workshops, annual report are to be financed by the EU: DG 1A (mr Braakenburg) or DG6/01 (mr Ahner).
- * costs for data collection and establishing FADNs in PECO are paid by PECO countries (unless EU or Phare would like to pay).

Communication and dissemination

Annual report, workshops, guidelines, brochure.

Remaining remarks

Invite EUROSTAT, Working group East-West Agriculture of EU and OECD, World Bank and USDA/ERS in workshops. Look out for competition with existing projects (e.g. in extension), make this clear and look for possibilities for integration. Take care of Germany as they are not in PACIOLI but heavily investing in PECO countries; the same holds for Danes and Baltic states. Contact in DG VIA / 3: Thierry Vard.

Background

None.

PACIOLI participants involved

- Gunnar Larsson (Sweden), Simo Tiainen (Finland), Guido Bonati (Italy).
- Lars-Erik Gustavson (Sweden), Krijn Poppe (The Netherlands).

I. Simplification and development of farm accounting

Summary

The Agricultural Strategy Paper has simplification as one of its themes. This also refers to the paperwork in agriculture. On the other hand it promotes farm accounting in Central and East European countries; also in western Europe farmers are more and more. Confronted with accounting for tax and environmental purposes. This project proposes to use the know-how of farm accounting specialists to develop recommendation on the simplification of accounting without losing its benefits.

Products

Identification of potential improvements in farm accounting for policy makers (agricultural and environmental), advisory services, software suppliers, accountants and farmers (by creation/facilitating of a network of method).

Objectives

Objectives of the improvement are:

- * simplification of paperwork;
- * integration of financial data with environment/good farming practice data to support control (extension, compliance, tax) (and) by multi use of data based on single entry in the systems;
- * promotion of accounting (in CEC and EU) to support farmers in competitive responses.

Activity plan

stage 1: Workshop with accountants/farm management advisors, software makers, some farmers and policy makers and the research team.

The workshop is held to:

- * Identify issues.
- * Follow-up: definition of 3 questionnaires:
 1. for accountants/farm management advisors (like the Canadian study on methods, clients, IASC issues),
 2. software makers (on needs, EDI, developments in integration accounting and management software),
 3. farmers (use of accountants, demands for simplification, are accounts understandable, correlation with learning style, farm size etc.).

First two surveys in all 15 member states (with one questionnaire, to give a representative view - taking stock)

Farmers: 'case studies' in 3 countries.

stage 2: Survey of accountants, software makers and farmers on accounting issues.

This project proposes to take a first step to improve the situation by carrying out a survey of accounting methods (including current and future issues) and to discuss this with professional organizations, e.g. in a joint conference with policy makers. Such a survey could be

more or less comparable with the work carried out in Canada and could also support the EU input in the work of the IASC.

Research with the survey data could provide clues on why and how farmers use accounting and how farmers value current accounting practices and software. Such positive theories (taking farm systems and learning styles into account) would be a welcome addition to the normative engineering research that dominates IT development.

stage 3: Workshop to develop recommendations for software makers and accountants.

Looking to policy goals like higher competitiveness and simplification, it makes sense to promote farm accounting for farms and to make it as simple as possible, integrated with other parts of the management system. Such an integration leads to less data entry and better use: the farmer has to integrate technical, environmental and financial data in his decisions, so his management information system should support this integrated decision making.

The small and medium sized businesses that currently provide software for farm management information systems do not have many know how in farm accounting and have not much experiences in integrating it in new software development. On the other hand accounting software is in many countries becoming more and more dominated by a few large suppliers. They lack know how of the agricultural sector and often overlook the fact that farm accounting has some special characteristics (e.g. no accounts payable/receivable but nevertheless information on trade partners, complicated partnerships).

To overcome this situation, this project develops guidelines for software developers on how to include accounting functions in future management information systems for IT advanced farms. These guidelines are pre-competitive.

stage 4: Workshop to develop recommendations for policy makers on the suitability of accounting data.

Applications of accounting (simplification and promoting adoption) in policy measures require a good understanding of agricultural accounting. This workshop proposes to look into the (im)possibilities of farm accounting as a policy tool for different kind of policies (e.g. income policy, environmental policy, structural policy, compliance) and to make suggestions for simplification.

stage 5: Integration of results.

Writing and publishing final report.

Project organization

Research: Partners: LEI-DLO, Wye College, ENITA de Bordeaux, Swedish University of Agriculture, Finnish MTTL, FAT (Switzerland).

EU Association for Accounting organizations in Brussels.

Two or three software providers (through EUNITA).

Two or three commercial management accounting organization/
advisory centres.

Management Board: Partners.

Project leader: From one the research institutes.

Stakeholder involvement: Partners and in the workshops.

Timing:

stage 1: 6 months

stage 2: 12 months

stage 3: 4 months

stage 4: 4 months

stage 5: 4 months

Total : 30 months

(perhaps stage 2 should be longer and stage 3, 4, and 5 smaller, but then stage 2 should be split in 2a, 2b, 2c).

Benefits

- * develop visions of future data management at farm level; check these visions in the context of
 - farmers needs (internal);
 - external needs (business partners, research, governmental bodies, consumers...);
 - technological development.
- * provide a blueprint for future development of software for management and accounting to promote:
 - simplification;
 - integration of uses;
 - information for competition.

Critical success factor

Industry has to adopt recommendations.

Estimation costs and funding structure

Concerted action in FAIR.

Co-funding from banks (Rabobank/Credit Agricole) or accounting organizations.

Communication and dissemination

A network like PACIOLI seems to be a good way.

Remaining remarks

Develop project proposal by making contacts with (EU) organizations in accounting and some accounting software makers. The proposers to FAIR would have to be some research institutes (e.g. Wye College, LEI-DLO, ENITA de Bordeaux) with the EU Accounting Organization and some software makers.

Background

Agricultural accounting is not a very well-known activity. This is strange: in many EU member states farmers are obliged to keep books, some EU Regulations on farm modernization prescribe accounting and policy measures like the current CAP reform have a large influence on the content of accounting. Thus policy makers influence agricultural accounting, farmers pay their accountants large sums of money and between these two sides is a black box: the rather unknown profession of farm accountants.

There is not much awareness, even in the profession itself, on the current academic and political issues. There is no equivalent in the EU nor (as far as PACIOLI partners know) in one of the member states of the Canadian study on the issues in farm accounting. Although a European Accounting Organization exists, there seems to be no active forum on agricultural accounting. Discussions between professionals of different member states on e.g. environmental accounting, simplification, auditing and the effects of General Accepted Accounting Principles (GAAP) are limited to PACIOLI, RICA or occasional visits of individual professionals. There is not much cross border cooperation (e.g. professional discussions on standards or environmental accounting) between commercial accounting organizations.

As a result of this situation research and innovation are low. The involvement of European agricultural accountants in international activities as those of the IASC (International Accounting Standard Committee) is not too high and mainly based on the (sometimes not very close) contacts of organizations of certified public accountants with the agricultural sector. This low involvement is not unique for agriculture: it is striking that in November 1995 (COM 95(508)) the European Commission decided to increase the support of the international harmonization process of the IASC.

European policy makers do not have a clear platform to discuss their policy proposals that effect farm accounting with professionals and thus they are also not able to make use of the expertise of the profession. The fact that national tax laws heavily influence farmer behaviour and influence international trade often goes unnoticed by policy makers. Also not much is known on the use of accounting by farmers and their attitude towards it.

This project proposes to take a first step to improve this situation by carrying out a survey of accounting methods (including current and future issues) and to discuss this with professional organizations, e.g. in a joint conference with policy makers. Such a survey could be more or less comparable with the work carried out in Canada and could also support the EU-input in the work of the IASC.

Research with the survey data could provide clues on why and how farmers use accounting and how farmers value current accounting practices and software. Such positive theories (taking farm systems and learning styles into account) would be a welcome addition to the normative engineering research that dominates IT development.

Policy instrument

As noted above: in many EU member states farmers are obliged to keep books, some EU Regulations on farm modernization prescribes accounting and policy measures like the current CAP reform have a large influence on the content of accounting. Especially the CAP reform has increased the amount of paperwork for farmers. Simplification is now thought necessary.

Nevertheless: as farmers grow bigger they will more and more be subject to normal in stead of special agriculture tax systems (e.g. VAT). In situations with a radically reformed CAP this could more often lead to income support based on real incomes of the family, in stead of production related payments. In an analysis of the Spanish FADN data it was conclude that the current Spanish tax system already contains several incentives for farmers to use a normal income tax and VAT system in stead of a simplified agricultural regime. To promote accounting these incentives could be made larger, but fiscal fraud and psychological factors are thought to be the main obstacles.

In structural policies (see EEC Regulation 73/..), a forced adoption of farm accounting is thought to be useful. Environmental policy also could lead to new forms of accounting and paperwork: the Netherlands is making mineral accounting obligatory. These examples show that the promotion of farm accounting as well as its simplification is an important policy issue. The Fischler paper takes the same point of view towards CEC countries (promotion) and the EU (simplification). The use of accounting as a policy instrument in environmental issues is still underdeveloped, but could be an interesting instrument in Good Farming Practice as well as in cross compliance obligations. The same is true for its use in product traceability systems and production chains.

Such applications of accounting (simplification and promoting adoption) in policy measures require a good understanding of agricultural accounting. This project indication proposes to look into the (im)possibilities of farm accounting as a policy tool for different kind of policies (e.g. income policy, environmental policy, structural policy, compliance) and to make suggestions for simplification.

Modernization

More and more farms have an on-farm computer for management purposes, sometimes including accounting. These management information systems are also being connected to process computers (e.g. on tractors or in the milking parlour) and to off-farm databases and EDI-systems. New developments in agriculture will increase the use of farm management information systems: precision farming, accountability of farmers (environment, product liability, paperwork for subsidies and set aside) and tracibility of products in the product chain are some examples of this trend. Developments in IT (e.g. EDI, Internet, Geographical Information Systems, expert systems and robotics) could have the same effect.

In the third PACIOLI workshop it was argued that farm accounting has to change, as farmers are more and more an explicit part of the agro-ecological production chain. As part of the Effective Consumer Response (ECR) tracing and tracking of products is an important issue. That involves registration activities

by farmers, that need to be auditable. In addition the agri-business needs information (a.o. for brand management) on the environmental impact of all the stages in the production, including at farm level. Life Cycle Assessment (LCA) is an attractive tool for this. Farm accountancy data is an attractive data base for LCA. However data can only be interpreted in relation to a monitoring system that provides authoritative information on e.g. regional averages and the best 20% of the production. Cooperatives, as leading agri-business firms that translate market information towards farm management decisions, also need to monitor the evolution of competitiveness in their agro-ecological production chain. In conclusion: farmers face demands for data that should be solved by integrated farm information systems, in order to keep it simple and auditable.

It is not very clear how farm accounting will and should develop in this environment. Looking to policy goals like higher competitiveness and simplification, it makes sense to promote farm accounting for these farms and to make it as simple as possible, integrated with other parts of the management system. Such an integration leads to less data entry and better use: the farmer has to integrate technical, environmental and financial data in his decisions, so his management information system should support this integrated decision making.

The small and medium sized businesses that currently provide software for farm management information systems do not have much know-how in farm accounting and have not much experiences in integrating it in new software development. On the other hand accounting software is in many countries becoming more and more dominated by a few large suppliers. They lack know how of the agricultural sector and often overlook the fact that farm accounting has some special characteristics (e.g. no accounts payable/receivable but nevertheless information on trade partners, complicated partnerships).

To overcome this situation, this project indications proposes to develop guidelines and prototypes for software developers on how to include accounting functions in future management information systems for IT-advanced farms. These guidelines and prototypes are pre-competitive.

PACIOLI participants involved

- Krijn Poppe (The Netherlands), Bernard Del'Homme (France), Nigel Williams (United Kingdom).
- Bo Öhlmér (Sweden), Alison Tanton (United Kingdom), Jouko Sirén (Finland).
- Beat Meier (Switzerland), Gert Hellevig (Finland).

J. M.A.C.E.: Managing Cost Effectiveness of the FADNs in the RICA Network 1)

Summary

Compared to the total costs of the agricultural budget, the costs of the RICA and its FADNs are very low. But it is striking that costs are not clearly reported. A few years ago there has been an estimation by the RICA team, but results were hard to interpret. Most of the costs are paid by member states, and in some cases the costs (especially of computers and staff) are part of the total government budget. This means that the introduction of a so called Balanced Scorecard-BSC (Gouillart and Kelly, 1995) with indicators for FADNs on costs and returns, user satisfaction, process control and innovation could be useful.

Due to the budget problems of many governments, cost effectiveness is an issue. Cost effectiveness can be improved in two ways. First by reducing costs, second by increasing the value of the product. At this stage it is easier to identify added value than areas for cost saving. Some aspects of this issue that could be studied in this project are proposals to outsource some of the activities, to use a tender system in buying the data, more commercial exploitation of the data and lowering costs by using information technology.

Product

An annual internal report, to be presented to the RICA committee and to CSA, with results and benefits of FADNs, a benchmarking between 15 FADNs and proposals for projects that improve cost effectiveness (methodology: BSC).

The report also includes an estimation of actual RICA costs, a cost management plan and marketing plans.

Objectives

Objectives are focused on inputs and on outputs:

- inputs:
- improvement of actual RICA system.
 - recommendation on the ways of saving money.
 - study how new ideas (e.g. ideas from the other projects) could integrate (or have integrated) the cost effectiveness.
- outputs:
- try to get more marketable RICA products (both actual results and new results or new studies).
 - higher value product (e.g. more timely data) for policy makers etc.

Activity plan

stage 1: workgroup session to build BSC.

stage 2: gather data to calculate baseline in BSC.

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- 1) A mace is a mediaeval hand weapon consisting of a large iron ball with spikes on, that is suspended on the end of a short chain. It is a very effective instrument for getting agreement with the PACIOLI viewpoint.

stage 3: workgroup session to use data for benchmarking, develop suggestions for improvement cost effectiveness. In the workgroup experts from other member states make suggestions for the national member state (review report) or for common actions.

stage 4: write report and make it available. At the moment of publishing the MACE award will be granted (the decision on the granting will be taken by the CSA).

Stages 3 and 4 are repeated annually.

Project organization (incl. stakeholder involvement)

Informal Workgroup that meets in Leuven, one day after a RICA meeting. If needed an external consultant is engaged. Persons that review another country could perhaps be invited to a national meeting.

Benefits (for each stakeholder)

It seems obvious that benefits will be realized! These will include policy makers placing more value on the RICA.

Critical success factor

inputs: * Involvement of member states (FADN administrators).

outputs: * Identified new products (quicker, more accurate, new data).

Estimation costs and funding structure

2 days preparations by the national FADN manager per year per country
2 days for a meeting in LEUVEN (one for RICA, one for national ministry)
= 7 * 15 = 105 days. Some costs for the award, the external consultant.

Funding structure: Since the RICA network will gain from this project the funding should come from individual FADNs.

Communication and dissemination

Internal: RICA will be aware of any cost savings/income generation from their own financial accounts.

External: marketing of data needed - possibly on a commission basis by an agent.

Remaining remarks

Unless RICA is seen to make cost savings, add value and produce new products, it will cease to exist. Project could be integrated in PACIOLI and in projects on quality management.

Background

Compared to the total costs of the agricultural budget, the costs of the RICA are very low. But it is striking that costs are not clearly reported. A few years ago there has been an estimation by the RICA team, but results were hard to interpret. Most of the costs are paid by member states, and in some cases the costs (especially of computers and staff) are part of the total govern-

ment budget. This means that the introduction of a so called Balanced Scorecard with indicators for RICA on costs and returns, user satisfaction, process control and innovation could be useful.

Due to the budget problems of many governments, cost effectiveness is an issue. Some aspects of this issue that could be studied in such a project are proposals to outsource some of the activities, to use a tender system in buying the data, more commercial exploitation of the data and lowering costs by using information technology.

On some of these aspects, the PACIOLI workshops offered ideas and suggestions. It was proposed to link the (Finnish) FADN system not only with on-farm computers (as information and communication technology is highly developed in Finland) but also with the CAP's IACS (integrated administration and control system). It was also reported that the current tender system in Spain has clear negative influence on quality.

Opportunities and constraints for the commercial exploitation of the English FADN was identified. The authors note that companies purchase market research data from specialist firms that carry out syndicated omnibus surveys. Such data are accurate (+/- 2% would be extreme) and have a quick turn around: the lead time between and event happening and being recorded should be short. The FADN is in general not a suitable vehicle for such data: the turn around time is too long and it threatens the relationship with the farmers. However a market for data on opinions of farmers in matters like agricultural and rural policy for government, commodity organizations and lobby groups has been mentioned. Farmers might have an interest in such surveys and the quality by the FADN might be better than in a 'cold' telephone survey. In conclusion was identified only a small market for a more commercial exploitation.

To reform the agricultural statistics, EUROSTAT designed a technical action plan for agricultural statistics (TAPAS). This has been turned into a Council Decision. A comparable process could be useful to reform the RICA. In other words: could it be an improvement to reorganize the role and tasks of the community committee for the FADN ? Reform of the organization and content of the FADN will however not be easy. Based on an institutional analysis for Spain, it was concludes that a reform that offers no immediate patronage possibilities but can increase budgetary costs or the workload will not be popular.

PACIOLI participants involved

- Krijn Poppe (NL).
- Bernard Del'Homme (France), Diederik Spiering (The Netherlands).
- Nigel Williams (United Kingdom).

K. Typology 2000+ (Typo2000+)

Summary

This study propose to create a revised typology of agricultural holdings, as the current one is too complex, doesn't guarantee comparability (especially over time) and does take into account new developments like environmental issues, rural development, etc.

Product

A new farm typology that is more stable, less complex and less expensive, and provides:

- * Better methodology for classification, weighting FADN results etc.
- * Simplified SGM classification system.
- * Adapt present typology to the new Countries (Sweden, Finland etc.).
- * Proposal for (non-)inclusion of new aspects (environment, regional diversity) in typology.
- * Lower costs for classification.

Objectives

- * **Stability:** typology with more stability over time compared to the present system with big fluctuations in standard gross margins SGM (price influence); no radical reform of present system.
stability a: prevent the turn-over of farms from one type to another caused by applying new SGM.
stability b: field of survey of FADN more constant.
- * **Simplification:** fewer categories (crops, livestock) with separate SGM (keep precision in mind).
- * **New aspects:** including information on environment, socio-economic status, ... if useful and necessary.
- * **Results that are more transparent for the stakeholders.**

Activity plan

stage 1: Estimation of needs and set up of the new typology.

- definition of the role of typologies in different activities (FADN: selection, weighting, analysis, publication; EUROSTAT; member states; etc.).
- study the typology situation and needs in each country or in its representative sample.

stage 2: Implementation on sub-samples to see if the new typology is relevant.

- create new set of SGMs (fewer categories, longer periods for averages, etc.) tests with EUROSTAT (subsamples) and FADN data.
- develop and test alternative definitions of fields of surveys.
- new aspects: * define goals: why include new aspects (environment, socio-economic status) in typology?
* if inclusion needed: how?

stage 3: Final implementation at a large scale (census 2000!?)
project start 1997; finished within two years.

Project organization (incl. stakeholder involvement)

Common start on definitions and problems; (prepare national reports on the typology situation according to a standard scheme).

sub-project 1: stability of SGM system (time needed: 2 persons one year)

sub-project 2: new aspects in typology (time needed: pre-study of one person-year)

sub-projects 1 and 2 can be carried out independently to a certain extent.

Study in line with the Jan Dijk et. al-paper 1995 on weighting; technical basis to be used supplied by DG VI/A-3 and EUROSTAT. Organize workshops with Eurostat, RICA, Member States and so on.

Benefits (for each stakeholder)

- * improved quality of FADN results (DG VI and member states);
- * easier management of typology (EUROSTAT, member states);
- * transparency of FADN results.

Critical success factor

- Agreement between Eurostat and RICA Divisions.
- Find a consensus between all countries on changes.
- New typology must be simpler.
- It should be easily comparable with the older one.
- We must be sure the new typology will be suitable to new countries.

Estimation costs and funding structure

DG VI and EUROSTAT; study contract:

- costs for defining the new typology (researchers studies and estimation of data needs).
- implementation costs in all national FADNs.
- communication costs to explain the new typology.

Communication and dissemination

It is necessary to write a booklet to explain in details the new farm typology (how to use it and how to implement it) and to explain why it has changed. There are here two target groups: the end users and people of national FADNs.

Remaining remarks

None.

Background

This project indication proposes to revise the current farm typology, as managed by Eurostat together with DG VI A/3 and the member states. There

are a number of problems with the current typology, which is a fine example of a European compromise between different national systems. With the exception of Germany, all 12 'old' member states now use the European farm typology in their national statistics, so a revision should be a common project.

The problems with the current typology can be grouped under the headings 'comparability' and 'complex'. Several member states think the two-year update of the standard gross margins and the ESU does not improve the quality of statistics and the FADN sample. Therefore they use national variants of the common typology (e.g. Dutch size units, 1980-*sgm*'s in Belgium etcetera). Some argue that the application of the complex typology system not automatically leads to comparable statistics in Europe, as farm systems differ. In addition changes in agriculture (set aside, subsidies, forestry, more non-farm income etcetera) aggravate this point of view.

The complexity of the current system is already high and taking these points on board could make it even more complex. Simplification could perhaps be found in reducing the number of updates and regions. A suggestion is to improve international comparability (and understanding by politicians and other non-economists) by classifying on the basis of standard output (like the USDA-ERS does) in stead of standard gross margins.

It is thought unlikely that the current working group on Typology (a co-operation between EUROSTAT and RICA) will be able to come to a decision without a large multi-memberstate study on alternatives.

PACIOLI participants involved

- Simo Tiainen (Finland), Dirk van Lierde (Belgium), Beat Meier (Switzerland).
- Nicole Taragola (Belgium), Giovanni Sanna (Italy), Carla Abitabile (Italy).
- Jérôme Steffe (France), Diederik Spiering (The Netherlands).

L. The issue of quality in harmonization of FADN data

Summary

Harmonization is a key success factor in the RICA, as data between regions and farm types have to be comparable. This project proposes to install an up to date quality programme in the total network.

Product

Global quality programme for FADN: the quality programme involves every step of the FADN system, from the sample design to utilization of data, according to the users needs in terms of completeness, liability, validity and rapidity.

The main products are:

- quality guidelines for quality declarations;
- standard set of metadata;
- documentation;
- quality softwares (is there software to be developed).

Objectives

- Create preconditions for control of cost efficiency when developing a FADN statistical system.
- Create an infrastructure that links the quality programme to other PACIOLI projects (e.g. Peco RICA, environmental indicators and so on).
- Present quality guidelines including the current best statistical methods, in order to be able to do a quality declaration.
- Present guidelines for implementable quality controls.
- Present guidelines for how to classify data according to standard set of metadata.
- Decentralize controls (e.g. process controls on farm return at regional level).
- First doing controls at farm level and national level before sending the data to DG V.
- Produce modular quality software that works at different level of data aggregation.
- Permit more rapid and easy access.
- Quality declaration.
- Are there possibilities in introducing a system of certification of the institutes/accounting offices involved in data collection (ISO-like).

Activity plan

stage 1: Quality guidelines

As a base for a quality programme *Quality guidelines* are needed. A broad quality concept ought to be defined for FADN based on actual user validation. In principle all aspects/components of quality are to be valued by the user.

Contents: Statistical Quantities:

- Universe and field of observation.
- Sample design (definition of representativeness).
- Variables and their definitions.
- Type of Statistical Measures (estimation).
- Level of Detail.
- Comparability with other statistics (e.g. Eurostat).

Accuracy

Overall Accuracy of Results

Sources of Uncertainty

- Coverage.
- Farms Selection.
- Measurement.
- Non-response.
- Compilation.
- Aggregation.

Quality Declarations (presentation of uncertainty measures).

'Timeliness'

- Reference Period.
- Production Time.
- Punctuality.
- Measurement and Publication Frequency.
- Comparability over Time.

Availability

- Forms of Dissemination.
- Formats of Presentation.
- Documentation and Meta-data.
- Access to Data Base.
- Information Services.

Stage 2: quality control

Guidelines for quality controls

Documentation

All the stages of the guidelines must be adequately documented according to standard format on informatic support (connection with the PACIOLI project on reference information models).

Stage 3: Classification of data according to standard set of metadata

(this item is strongly related to the project on standardization of datahandling)

Produce:

- univariate control software (at farm level);
- multivariate control software (at aggregate level).

Project organization (incl. stakeholder involvement)

Steering committee (financers). Management board (methodological issues, project progress, activity planning). Working group (experts on quality issues, experts on metadata definitions).

Benefits (for each stakeholder)

Harmonization and improvement of the quality of the collected data means transparency in interpreting data for all stakeholders including the commission). High quality data are the basic instrument for research and consequently for better policy making.

Critical succes factor

Agreements and acceptance in member countries (FADNs, accounting offices, other ministries involved in data collecting e.g. agricultural census, ...).

Estimation costs and funding structure

Funding could partly be done by the European Commission and partly by member countries.

Communication and dissemination

Project report, quality guidelines and other guidelines delivered to member countries quality 'helpdesk' installed.

Remaining remarks

This project must be limited to the delivering of the specifications of quality improvement. Software should be developed in a follow-up project. Also attention should be payed to the controlling-mechanism of the quality improvement.

Background: Control programme

Data in the RICA need checking. Currently this is mainly done at the EU-level by DG VI A/3, and at memberstate level as the EU distributes its control programme. This checking at the end of the pipeline is a main reason for the delay in the delivery of final data. If a mistake (or a question) arises at member state level or in Brussels, the remark has to travel back from Brussels, to the member state, to the regional level and to the accounting office.

Distributing the current control programme further down to the regional level and the accounting offices is not possible, as these work mainly with PC's and in national code schemes. The current control programme works only on the RICA's Farm Return and is written in Fortran for a mainframe computer.

Several member states develop there own software control programmes, without sharing expertise and costs. This project indication aims to improve this situation by developing software or reference information models to audit the data at the point of entry. This implies that the project has several aspects in common with the project indications discussed below and with the project on the new farm return.

Quality management

One would expect that for an authoritative monitoring system like RICA, quality management would be an important issue. However, RICA does not have a clear total quality programme, and mainly restricts its activities to checking data and looking to representativity.

Quality is not a very clearly defined concept. In relation to accounting systems, Hartog et al. (1992) conclude that the concept of quality is associated with aspects like reliability, client-friendliness, continuity, flexibility, image, delivery times, costs, controllability, certification, and liability. These aspects partly overlap and the list is certainly not intended to be complete. Statistics Sweden defines quality as 'all aspects of the statistics service which influence the use of statistics and to which users pay attention'. This seems to be a useful definition that could apply to the RICA too, and can be operationalized with some of the aspects mentioned above.

As the RICA is a sample from the Farm Structure Survey, some additional attention should be paid to representativeness and estimation errors, in relation to the farm selection process. The research suggests that preciseness of estimates could be improved quite easily by making better use of up-to-date expertise on sampling statistics and paneldata econometrics. If users would be happy with the current statistical standard errors, this implies that in some regions and farm types the sample could be reduced, leading to lower costs. Harmonization of the data also seems to be a quality issue.

In the end it is the consumer that defines quality, in relation to (or: including) the price of the product. This means that a quality programme for the RICA should take user requirements and cost effectiveness into account. This also implies that this project indication has strong relations with other proposals.

There are a number of experiences that could be useful in this project. For Spain it was noticed that the systems of the Northern Spanish regions (management extension services that gather RECAN data) should be extended to other regions in order to improve the quality.

Another experience is the study mentioned above on representativeness and preciseness of estimates. In the Dutch FADN probably work will be started on the application of the ISO-9000 methodology. Clients of the Agricultural Economics Research Institute, that runs the Dutch FADN, demand such procedures for the research reports and data that they buy.

An interesting methodology to be used in defining quality with stakeholders that finance the FADN is the 'Balanced Score Card' approach. This method, originally developed by David Norton and Robert Kaplan for strategy implementation, splits the strategy of a business (in this case the RICA) into four types of goals: financial goals (e.g. costs, societal value), customer goals (e.g. client satisfaction, number of complaints, number of academic users, number of sold publications), operational & process goals (e.g. delivery time, standard error of estimate, preciseness of forecasts) and learning & innovation goals (e.g. number of new variables in last 5 years, number of successful responses to new policy areas). The goals can be related to each other and then show how realising targets on the innovation area can lead to improved cus-

tomor goals and to better financial results. Goals should, like projects, be defined as 'SMART': Specific, Measurable, Attractive, Realistic and Time-specified.

PACIOLI participants involved

- Gunnar Larsson (Sweden), Carla Abitabile (Italy), Giovanni Sanna (Italy).
- Lars-Erik Gustavson (Sweden).
- Arne Bolin (Sweden, Nicole Taragola (Belgium), Conny Graumans (The Netherlands).

M. Standardization of datahandling in FADNs and RICA

Summary

A major conclusion of the concerted action PACIOLI is that there is a need for improving the information infrastructure of the FADN/RICA administration.

Important conclusions of the PACIOLI meetings, referring to the current situation of FADNs/RICA, are:

- current software used for FADNs is outdated and needs to be revised;
- the current farm return is outdated and insufficient;
- there is an increase in the use of on-farm computers for management purposes, sometimes including accounting. Management information systems contain useful and very detailed well structured data for future use by FADN/RICA;
- there is a demand of expanding FADNs towards more environmental issues like mineral balances, the use of pesticides and the use of energy;
- the European Union is expanding, new Member States are welcomed. There is an urgent need for establishing standards for data-collection and processing within FADNs and RICA. Also for other member countries who are planning for major revisions of their existing systems, standards are needed concerning technical aspects as well as the contents of FADNs;
- there is a need to standardize data-exchange, especially between FADNs of different Member States;
- there is a need to clearly define the different levels of detail of the information. Highly detailed data is used for example for gross margin calculations per product. More aggregated data is needed to exchange between member states and to report towards RICA;
- for setting up datastores there is a need for a clear understanding of data requirements and informationflows;
- FADN information needs to be made more accessible to a wider users-group. Some FADN data will be public, some will be confidential. There is a need for an overview of available data;
- to make the FADNs more open systems, users outside DG VI should get access to it. For data-interchange, standard EDI-messages/ -files will be needed;
- data collection at farm-level is for many member states quite a problem.
- there is a need for standardization and harmonization of data-collection, data-processing and reporting throughout the member states;
- there is a need for harmonization of bookkeeping throughout the member states.

Conclusion:

There is a need for a well defined information-infrastructure as a bases for an efficient and effective FADN/RICA administration.

Products

The project will result in the following products:

Reference information model:

A reference information model describes processes, information flows and data used in the FADNs/RICA system. The model consists of a detailed process model, describing the processes and a detailed data model describing the data.

Final part of the information model is a data dictionary containing all definitions of all elementary data.

Standardized farm return:

Parts of the reference information model are worked out in further detail. One of the most important parts is to define the new farm return, taking into consideration new indicators on environment, energy, etc.

Standards for data exchange:

Based on the reference information model standards for data exchange are being defined to exchange data between Member States and between Member States and RICA.

Specifications for a modular flexible information system:

Based on clusters of coherent processes of the reference information model a modular system is defined.

Guide to implement the information model:

A handbook is provided to support the implementation of the information model.

Objectives

The information infrastructure of FADNs/RICA has to be revised. Standardization and harmonization between member states is very important for an efficient and effective information handling that will lead to rapid results. A certain degree of standardization and harmonization is very important to make results of Member States comparable and to guarantee the integrity of information. A reference information model is an aid to guard consistency of the information systems to be developed.

Therefore, the main objective of this project is to:

Define the basis for the information-infrastructure for the future FADN/RICA administration by focusing on standardization and harmonization. A reference information model is used for the overview, for standardization of data-elements and processes and to guard consistency between the defined standards.

The result is a set of coherent and consistent reports containing standardized elements as buildingstones for the FADN/RICA information infrastructure.

Activity plan

The proposed project will be carried out according to the following workplan.

Stage 1: Estimation of data-needs and the setup of the global information model.

Description: The first step in defining a information-infrastructure is to get a complete overview of all relevant activities (e.g. distributing, col-

lecting, processing farm returns), the role of the different types of organizations involved (e.g. farmers, accountants, FADN administrations, RICA administration) and the use of data and information.

Once the overview is available, the next step is to set priorities in what parts (sub-domains) first have to be worked out in further detail (e.g. all that has to do with the farm return, mineral balance, energy use, financial accounting, etc.).

Working out a global information model, focusing on the process decomposition diagram, ordering all relevant actors and the main processes involved.

The most important aspect in this stage is to determine the domain of the model, to set the borders, and to get the general overview.

The global model needs to be sufficiently detailed, so it is possible to split it up in smaller portions (clusters) that can be worked out separately in more detail.

Approach: the model has to be worked out by a small taskforce (maximum of 4 people), working closely together. Relevant knowledge will be obtained by interviewing experts and users concerning FADN/RICA and by studying existing material like the process decomposition diagrams already made up by each Member State in PACIOLI. For working out a consistent information model a case-tool will be used.

Result: global information model (booklet, approximately 50 pages).

Time-schedule: approximately 6 months.

Stage 2: Selection of information areas.

Description: once there is an overview of all relevant items (processes, information flows, actors), priorities are set the items that have to be worked out first in further detail. Examples of relevant information areas are: the information flow between farmer and accountant (farm return), information flow between FADNs, information flow between accountants and FADN.

Approach: the same taskforce that carried out the global information analyses prepares an overview of all relevant items. The overview is discussed in working group meeting with participants of all member states. Priorities are set tot each item. For the areas with the highest priority, working groups are established to work out these items in further detail. The objectives for each of the working groups is formulated.

Result:

- priority-setting of most important working items to be standardized.
- Formation of working group.

Time-schedule: 2 months.

Stage 3: Working out in detail.

Description: working out the selected information areas in detail. Examples of areas to be attended to are: a standard farm return, a standard mineral balance, standard ratios for environmental productivity, special reports for quality management, standard tables, standard classifications, standard interfaces for exchanging data.

Approach: each item is attended to by a separate working group or expert. Each working group consists of up to a maximum of 5 experts. One of them is an experienced information analyst. Several working groups are working parallel on different items. The information analysts guard the consistency of the items being worked out and standardized.

Result:

- one consistent Reference Information Model as the glue that keeps it all together, as the roadmap to get the overview and to find specific items, as the dictionary for standardized terms, data-elements and procedures.
- a number of reports. Each working item results in a separate report describing the standard. Each report refers to a specific part of the Reference Information Model.

Time-schedule: 2 years.

Stage 4: Organizing maintenance.

Description: after the Reference Information Model and all related reports are delivered in their first versions, maintenance is required. In this stage of the project maintenance is organized. Possibly a maintenance agency is formed and maintenance procedures are defined. Also the problem of financing the maintenance is solved.

Approach: a special taskforce (to a maximum of 5 members) works out a maintenance proposal that is discussed with all member states.

Result:

- maintenance structure and maintenance procedures.

Time-schedule: 6 months.

Stage 5: Dissemination of results.

Description: for realizing the goals of harmonization and standardization it is important that the results of the project are available for all organizations concerned. Therefore research will be done to the best ways of dissemination of the results. In this context Internet seems a useful medium.

Approach: a special workforce (to a maximum of 5 members) works out a proposal that attends to the way to publish the results of the project.

Result:

- structure for publishing and distributing the results of the project.

Time-schedule: 6 months.

Project organization

Steering committee:

Each stakeholder (financer) is a member of the steering committee.

They have to take care of financial issues and the progress of the project.

They have to agree on the results delivered by the expert groups.

Management group:

The management group is responsible for carrying out the project.

The management group organizes the expert groups, depending of the type of work to be carried out. The management group is responsible for the methodology used.

Expert group:

The first task for the expert group(s) is to work out the estimation of data needs and to delimitate the sub-domains. After that the expert groups start modelling the sub-domains. For the task of modelization, each expert group should include a specialist in modelization. The expert group is responsible for guarding the consistency of the overall information model. The expert groups are in charge of the modellization of a specific subdomain. So there will be separate expert groups to attend to items like the introduction of new indicators on environment, etc.

Benefits

General benefits:

- more uniformed data;
- new domains will be covered;
- a reference information model can be used as a tool to manage revisions of the FADNs/RICA information system.

The benefits for RICA are:

- more rapid results by getting more standardized data.

The benefits at FADN level:

- the reference information model can be used at a national level to develop or revise the FADN and make it compatible tot FADNs of other memberstates and to the RICA;
- the reference information model can be of good use for new memberstates that have to develop there own FADN.

The benefits for the users are:

- the datamodel of the reference information model is a basis for defining standards for data-exchange and also is a solid basis for developing software and/or databases;
- the information model provides an overview which makes it possible to work out sub-domains in further detail and to guard consistency with other sub-domains.

The benefits for the farmers, accounting offices and farmer unions:

- the reference information model can be used to specify standards for data exchange between farmers and accountants, farmer unions, etc.

Critical succes factor

For implementing the project financial funds should be secured at an early stage. The complexity of the project is very high and the coordination must function in order to get a success. This risk can be reduced by breaking up the project in several sub-domains, and work them out sequently according tot highest priority. So, by starting of with the most important sub-domain (e.g. the accounting data) quick results can be obtained. Working step by step makes it possible to spread funding over a longer period of time.

Estimation costs and funding structure

The cost of such a project seems to be high. The project is spread over 4 years. But it is necessary if RICA really wants to improve its relevance. However, it seems possible to carry out only a part of this project. So before proposing a more detailed budget, it is important to feel the real dimension of such a project.

Funding structure could be found at a European level (Commission, International organizations on standardization (EDI,ISO,...), but also at a national level (governments, suppliers of results, ...). A global estimation seems to indicate that the time needed is four men/year.

Communication and dissemination

An implementation guide.

Remaining remarks

The project is very extensive and covers a huge area of investigation and maybe can be seen as a political 'hot potato'. An alternative approach that maybe could be easy accepted by the commission is an analysis of the existing Farm return 'fiche' making a datamodel out of this.

Anyway, we should link this project to the project on quality issues, since that project deals with data harmonization and contains parts about integrating data with metadata.

Background

The current farm return, the punch form oriented document used by RICA to define the required data, is more than 20 years old. In those 20 years information technology, farm accounting, agriculture and agricultural policy changed heavily. In addition the EU has been enlarged several times. Although some of the recent changes in policy (especially CAP Reform) have lead to modifications in the farm return, there is much room for improvement.

Such a project should start with defining a number of objectives of a new farm return. These include:

- improvement of harmonized data gathering, in stead of conversion from national data. If a new farm return would be used also by the member states themselves, risks of unharmonized data would be smaller. Exchanging 'meta-data' on interpretations could also help, as well as focusing on basic data in stead of abstract concepts: a tractor is a tractor, where 'fixed

- assets' is a less harmonised concept. Implementing General Accepted Accounting Principles (GAAP) as defined by the IASC might also be useful;
 - rapidity: a new farm return should pay attention to the possibilities to speed up data delivery;
 - flexibility: in the current system there all data are gathered on all 60,000 farms, from the Algarve to Lapland. In a new farm return it could be attractive to exchange available data (like mineral balances, non-farm income, gross margins on crops) on a subset of the sample, without making this obligatory for all the farms. The French delegation at the PACIOLI workshop provided the instrument of the 'Sonde': detailed surveys on a special topic (e.g. non-farm income, marketing of products) for a smaller number of farms. If these 'Sondes' are carried out at RICA farms, additional information could become available relatively cheap, and the current resistance to innovation might disappear. A similar proposal was made with respect to the Swiss FADN: split the sample in a representative random sample with simple accounts, using tax accounts, and a (probably less representative) sample with detailed data of special interest;
 - new data: it should be made clear on which area's the data collection should be expanded. Examples are environmental data, cost of production, forestry, pluri-activity etcetera. It was argued that data on allocations of inputs, input quantities and more details on the beef/dairy complex are necessary for a large kind of research purposes;
 - simplification: for a number of farms (e.g. to produce rapid results, or to reduce costs) the current farm return could perhaps be reduced;
 - clarity and consistency: the current farm return does not include derived statistics (like farm family income) and quality check points. These are defined elsewhere, but it could be attractive to include them in a new farm return;
 - support of IT: a new farm return should be formatted in such a way that it supports not only discussions in the RICA management committee, but that it is also easy to use in the development of software.
- This project proposal clearly has relations with many other project proposals.

The project proposal also echoes the suggestions in the first PACIOLI Reflection Paper to renew the farm return and make it more flexible (figure 3.4) by using information engineering. As a name for the project the acronym RICASTINGS was suggested: RICA's Study To Install a New Generation of Statistics.

The current software as well as the current Farm Return of the RICA are outdated. The implementation of new software (and a new farm return) should be based on up-to-date methodologies for software development. Such methodologies (that are available under different names with often -slightly-different contents) often start with *Information Strategy Planning*. This activity links the objectives of the information system under development with those of the organization(s) themselves. Such an activity would investigate the demands of stakeholders, problems with the old system and a first lay-out for the new systems. Secondly the activity of *Information Modelling* is carried out: this

leads to a description of all the data and activities that the new system contains/supports. On the basis of this model (comparable to a plan drawn by an architect when you build a new house) is the basis of writing software and choosing the technology/hardware.

A large part of the software in the RICA network runs at several locations and platforms (e.g. IBM, VAX, PC). This is even more true for databases. Especially in accounting, part of the data and data definitions are implemented in commercial accounting packages used by farmers and farm accounting offices. Taking this fragmented situation into account, it does not make sense to develop software and data definitions at one place (Brussels) and to distribute it through the network. On the other hand it also makes no sense (and leads to confusion on data definitions) if software is written 15 or more times without sharing costs and expertise.

The development of a Reference Information Model that could be used by member states and commercial software companies as a reference for their own software development is an attractive solution to this problem. It could start by providing an information model for the current and the new farm return (including meta data and data checks). It then could move on to model the total accounting process (for farm accounting and those liaison agencies that carry out the accounting themselves) and to define EDI-messages between the different organizations in the RICA Network. In this way the project would support a new farm return, more rapid results, quality (harmonization), and cost effectiveness (by sharing costs between member states). It could also help to make data available to users that are at the moment only available at the level of the local accountant.

Currently the IDA programme supports the development of IT-networks between governments of the EU. Perhaps such a project would partly fit in the objectives of IDA.

One step further than the development of a reference information system and EDI-messages is the introduction of modular information technology. In this project idea, software would be developed to access the data in the RICA at different levels of aggregation. Currently data are transferred physically from the accounting office to the regional level and then up to the national and the EU level.

With the current technology on distributed databases this is probably not necessary anymore. By creating access to e.g. regional databases for all the partners in the RICA network, one could save the need to physically transfer the data and maintain a database in e.g. Brussels. A query on the EU-database would then imply a message to the regional databases. It should be checked if this is feasible, and what it means for checking procedures that are carried out by the RICA unit of DG VI.

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6. EPILOGUE

In its two years existence the PACIOLI concerted action has been quite successful in bringing together scientists and administrators from different countries (United Kingdom, Italy, France, Spain, Netherlands, Sweden, Finland, Belgium, Germany, Switzerland) and organizations (European Commission, OECD, IASC, Eurostat).

It is too early and not up to us to judge the cost/benefit ratio of this concerted action. However the management board of PACIOLI concluded that the concerted action created a lot of energy for innovation in FADNs and farm accounting with a relatively low input from the participants. This energy provides hope that the new management of the RICA unit of the European Commission will find collaborating partners for their plans to revitalize the RICA and secure its future. Of course decision making on the development of RICA should be done in the RICA management board.

With the publication of this final reflection paper and bringing the project proposals in the public domain, the official concerted action, based on support from the EU's AIR programme comes to an end. It is a sign of the success of PACIOLI that the contributing participants have decided to keep the network in tact at their own expense. The fifth PACIOLI workshop will therefore be organised in June 1997 in Sweden. All scientists and administrators, and explicitly those from countries not yet present, with an interest in innovation in farm accounting and farm accounting data networks are invited to join this workshop and its follow-up activities.

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Appendix 2 List of papers presented in PACIOLI workshops

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INTRODUCTION PACIOLI
(George Beers)

RICA'S FARM RETURN: INTRODUCTION AND COMMENTS
(Krijn Poppe)

INFORMATION DISPARITIES IN THE FADN/RICA - CAUSES AND CONSEQUENCES
(Nigel Williams, Alastair Bailey, Sandra Dedman)

INFORMATION ENGINEERING: A SHORT INTRODUCTION
(Conny Graumans)

INFORMATION ENGINEERING: DUTCH EXPERIENCES
(Conny Graumans)

ECONOMIC PLANNING AND MONITORING ON FINISH FARMS
(Ari Enroth)

DEFINING INFORMATION REQUIREMENTS
(Per persson)

LEI-ACCOUNTING 2000
(Tim Verwaart, Diederik Spiering)

CONTENTS WORKSHOP REPORT PACIOLI 2

PROCESS-MODEL AND STAKEHOLDER-ANALYSIS RICA
(Krijn J. Poppe)

DESCRIPTION OF THE FADN IN FINLAND
(Simo Tiainen)

GLOBAL DESCRIPTION FRENCH FADN
(France)

GLOBAL DESCRIPTION DUTCH FADN
(Krijn Poppe)

THE MAIN CHARACTERISTICS AND PROJECTS OF THE SPANISH FADN
(Carlos San Juan)

REGIONAL DIFFERENCES/SIMILARITIES IN THE SPANISH FADN (RECAN):
GLOBAL DESCRIPTION BASQUE FADN (RICAIV)
(Inmaculada Astorquiza)

ACCOUNTING AND INNOVATION
(Arne Bølin, Lars-Erik Gustavsson)

GLOBAL DESCRIPTION UK FADN
(United Kingdom)

PROCESS-MODEL AND STAKEHOLDER-ANALYSIS BELGIAN FADN
(Dirk van Lierde & Nicole Taragola)

CURRENT COST ACCOUNTING PROCEDURES IN THE FBS WITH PARTICULAR REFERENCE TO ESTIMATING HERD VALUATION AND DEPRECIATION
(Nigel Williams)

INNOVATION AT FARM LEVEL: THE ADOPTION OF FARM ACCOUNTING SOFTWARE
(K.J. Poppe)

REFERENCES AND RICA
(France)

THE USE OF STATISTICS FROM BOOKKEEPING SURVEYS FROM A SWEDISH ANGLE: PAST AND FUTURE
(Per Persson)

ACCOUNTING AND THE ENVIRONMENT
(Carlos San Juan)

THE FARM ACCOUNTING DATA NETWORK AND POLICY MAKING
(Nigal Robson)

POLICY-MAKING AND FARM ACCOUNTANCY DATA-NETWORK
(G. van Leeuwen)

USE OF THE BOOKKEEPING SYSTEM IN FINNISH AGRICULTURAL POLICY
(Jouko Sirén)

FADN/RICA AND THE REQUIREMENTS OF FINANCIAL INSTITUTIONS
(Sandra Dedman)

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Appendix 3 Determining farmers' financial information requirements

Krijn J. Poppe

Agricultural Economics Research Institute LEI-DLO

The paper that is reprinted on the next pages describes a large research project carried out in the Netherlands between 1985 and 1990. It created an information model of all the financial decisions that farmers make. The paper is still an adequate description of the methodology of Information Engineering, applied to farm accounting.

The paper can be used in the first workshop as an application to farm accounting of the paper presented on the Information Engineering approach in general, and as a starting point for the paper on the LEI-DLO-project 'Accounting 2000'.

Originally the paper was presented in a workshop at the Department of Agricultural and Applied Economics of the University of Minnesota, St. Paul, in 1990 and published afterwards as chapter 2 in: K.J. Poppe: Information needs and accounting in agriculture, The Hague, LEI, March 1991, Mededeling 444.