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Developing Sustainable Agricultural Extension Services: Conceptual Issues and Policy Implications for Ukraine

1 Introduction

Sustainable economic growth and development depend primarily on the effectiveness of decision making by economic agents engaged in production and consumption. In agriculture, the number of relatively independent economic agents is high and many important decisions are made at the farm level. The outcome of these decisions depends on how knowledgeable and resourceful decision-makers are, and how complete and reliable the information upon which they base their decisions is. Under these conditions, so-called agricultural extension services can play a vital role.[1]

Agricultural extension can be defined as knowledge-transfer which promotes the development of agriculture by maintaining and increasing its profitability in the face of changing socio-economic conditions. The main mission of agricultural extension services is to promote a more effective application of human, economic, and environmental resources in agriculture. Agricultural extension acts as a link and facilitator in the relations between agricultural producers, processors, research and educational organisations, agricultural market institutions, and the government.

In this chapter we consider the role and evolution of modern agricultural extension with special reference to the present situation in Ukraine. Following section 2 on the role and evolution of agricultural extension and the state of agricultural extension in Ukraine, we then analyse the nature of the services provided by extension in section 3. To this end, we discuss the differences between public and private goods and the issue of externalities in agricultural extension. This sets the stage for a discussion of the role and place of government in providing and promoting agricultural extension services and of the different organisational forms of extension institutions in section 4.

We close with conclusions and policy recommendations for the development of agricultural extension institutions in Ukraine.

2 Setting the Stage

2.1 The Role and Evolution of Agricultural Extension

What contribution can agricultural extension make to agricultural production? One of the approaches in assessing agricultural extension's impact is to measure the relationship between extension activity and changes in farmer awareness, knowledge, and farm productivity, efficiency, and profitability (WEBER, 1987). In a number of studies, the economic impact of agricultural extension is measured in this manner.

As found in a number of surveys conducted across different states in the US, on average nearly half (48%) of the clients seeking assistance from extension services on crop management indicated they made a tangible change in their operation as a result of the advice they received. In the area of livestock production, 47% of the respondents reported that provided services brought positive financial results. The economic value of this advice varies across farms of different types and across states. On average, respondents indicated that extension information and advice saved them roughly 27 US$ per hectare in crop production, around 10 US$ per head for cattle, and 1.01 US$ per head in swine production (CONGLOSE, 2000).

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[1] In English, the term 'extension' is traditionally used in the context of agriculture to describe what in other languages is referred to as 'consulting' or 'advisory services'. This use of the term extension, which is somewhat puzzling to non-agriculturalists, conveys a sense of 'outreach' from the primarily public institutions that traditionally used to provide the services in question (colleges, universities and research stations) to farmers.

The spectrum and nature of the services provided by agricultural extension offices have been constantly changing from the moment these services were introduced. Initially agricultural extension dealt primarily with a number of practical but rather constrained issues in the areas of crop and livestock production – mostly biological and veterinarian aspects. Assistance in improving farm organisation, home economics, and accountancy were also among the services provided by the first agricultural advisory agencies (AGBAMU, 2000).

As agricultural technologies and research progressed, a set of new extension services emerged in the areas of mechanisation in agriculture, the application of advanced techniques for plant protection, fertilisation, and others. In recent years, the need for adjustment to changing market conditions and environmental constraints has forced agricultural extension to re-orient its activities. The professional analysis of agricultural commodity markets, environmental limitations and the issue of the multifunctional development of rural communities have entered the agenda of many agricultural extension providers.

Therefore, agricultural extension agencies do not provide a homogeneous product. This makes it necessary to speak about different types of advisory services. Some services have the character of public goods that produce significant social spill-overs. At the same time, many advisory products represent private goods, the provision of which exclusively benefits final consumers. Clearly, the role and institutional arrangements of extension agencies will differ depending on the nature of the products they provide. This will be discussed in greater detail in section 3 below.

2.2 The International Experience in Establishing Agricultural Advisory Services

There are many different models of agricultural extension service around the world. Despite differences in their organisational forms and financing, the purpose for the establishment of such services was always rather similar. The primary purpose behind agricultural advisory service in the countries of Western Europe and North America were as follows:

- to increase agricultural production;
- to stabilise the income of the agricultural population and help adjust it to incomes in the rest of society; and
- to help solve social issues in rural areas.

In many cases, agricultural extension programs were originally viewed as socially important activities and their provision was mostly free of charge for farmers. The main part of the financing of this agricultural extension was assumed by the state. In the majority of countries, extension was often a public institution closely connected with the national system of agricultural education. Starting in the mid-1950s, the role of government in the provision of agricultural extension and the share of state funding began to decrease in many countries. At the same time, private consulting agencies were becoming the main provider of agricultural extension. This was especially the case in many countries of Western Europe, where government involvement in agricultural extension is increasingly contrained to social and environmental programs (BLUM, 1996).

In recent years, agricultural extension in the majority of developed countries has been in transition from downstream extension, where the government takes a lead in all programs and activities, to upstream extension, where farmers determine extension programs with little or no intervention from the government. Now in many cases extension service takes the form of individual consultations (FEDER ET AL., 2000). The adjustment of extension services to changing conditions and needs occurred in two areas: in the scope and in the nature of agricultural extension as well as in its organisational and institutional forms. Despite differences in the nature and the scope of agricultural extension in specific countries, a general trend lies in the broadening of extension services into new areas, and the shifting of priorities within agriculture.

The two well-known models of agricultural extension are the university-based co-operative extension system and the system of diversified agricultural extension in Germany. In the US, the mission and tasks of extension services lie primarily in providing education training and technical assistance in four main areas: crop and livestock production, farm and consumer economics, youth programs, and community development. The service is based on applied research developed within the university system and disseminated through multiple local county offices. The funding and administration of advisory service is realised in partnerships between the national and subnational governments. The share of the federal government amounts to 20%, about 45% is provided by states, and 25% by counties. Non-public sources, primarily donations, constitute the remaining share. During the 1980s and 1990s the burden of funding was gradually shifted from the federal government to the states. The federal government remains responsible for the delivery of socially oriented programs such as rural nutrition and rural poverty reduction, water quality, pest management, environmental programs, agricultural telecommunication, and some youth related programs (BAHN, 1996). Traditionally, the principle role in providing advisory services in the US belongs to a co-operative extension agent. County extension agents provide assistance ranging from educational training to farmers to youth development opportunities. The past decades have brought major changes to the extension system in the US. Many states have re-organised the structure of their extension service, reduced staff, and introduced interdisciplinary teams and partnerships to implement programs.

Other forms of agricultural extension in the US are provided by so-called 'semi-private' and private commercial services. Semi-private extension services are provided by professional organisations such as farmer associations and co-operatives. Commercial extension is usually provided through private consultants or entrepreneurs and tends to be commodity oriented and ensures a high degree of interaction between the provider and client of a specialised assistance (MURE, 2000).

Compared to the American extension model, the organisation of agricultural extension in Germany represents a combination of different organisational forms. The advisory service network includes public institutions, local Chambers of Agriculture, and private extension agencies. Agricultural consultancy and education programs are also provided by farmer unions, free-lance extension agents, and special extension service co-operatives (RUDERT, 2000).

Germany is made up of sixteen states (Länder) that are responsible for providing agricultural extension. In the north and northwest of Germany, public extension is the responsibility of the Chambers of Agriculture. In the south, this service is provided by the state ministry responsible for agriculture, often the State Agricultural Office. In the northeast, various types of privately organised extension systems co-exist (OFENHITZER, 2000).

Chambers of Agriculture are regional organisations representing the interests of all local farmers, governed by elected farmer representatives and run by hired managers. The government pays the Chamber to carry out such functions as applied research, training programs, administration and monitoring of the agricultural sector. User fees are usually charged to farmers for the provision of special individualised services such as soil sampling, soil analysis and assistance in farm planning (HOFFMANN ET AL., 2000).

In the majority of the Eastern Länder (the so-called 'new' Länder of former East Germany), extension services are offered either by private individuals or companies. Note that a chamber system was not established in any of the new Länder! Such private providers must be officially registered with the local government: In this way the government regulates the market for extension services. Furthermore, local governments often subsidise the cost of some extension services, in some cases up to 80%. Some states set an annual ceiling on the amount of services that can be subsidised by the stated budget. One such annual ceiling is equivalent to 1,250 US$ for family farms and 3,125 US$ for company farms. About 50% of all agricultural producers take advantage of the available subsidies. In this way, the government attempts to incorporate an element of client-driven demand into extension provision (HOFFMANN ET AL., 2000).

2.3 Agricultural Extension in Ukraine: Historic Overview and the Present Situation

One of the primary goals of agricultural reforms in transition economies is to increase the economic efficiency of agricultural producers. In Ukraine, this goal has not been achieved so far. In Soviet times, Ukraine had a so-called 'system of extension of agricultural knowledge and informational support'. The structure and ideology of this system corresponded to the requirements of the Soviet administrative system as a whole. Despite its operation on wide scales, this system suffered from a number of drawbacks that prevented it from functioning effectively. First, the extension of agricultural knowledge and information was realised exclusively by state structures and was focused on large collective agricultural enterprises. Second, the system was dominated by the communist ideology and unified approaches in dealing with national, regional, and local specifics. The provision of services was not demand-driven to meet farmers' real needs. And third, the state often used its strict control over the system to manipulate rather than aid agricultural producers.

Thus, for decades in the Soviet planned economy, farmers relied exclusively on the government as the main decision-maker. Now the state is no longer in a position to decide on everything and for everybody. At the same time, the private initiative and entrepreneurial skills required to capitalise on the advantages of the market economy are scarce in Ukrainian agriculture. This situation has been compounded by the accelerated reorganisation of collective agricultural enterprises that began in late 1999.[2] A large number of new participants have entered the process of agricultural production. Many of these participants have never run their own agricultural businesses and their knowledge of modern, effective agricultural management is often rudimentary.

Despite the fact that Ukraine's agricultural sector has undergone some significant changes in the last decade, agricultural market infrastructure remains underdeveloped. The character of agricultural research, education and extension in Ukraine does not correspond to the current needs of the agricultural sector. Chronic underfunding of research, the dominance of fundamental over applied research, inadequate ties between research centers, educational institutions and agricultural producers, and weak co-operation among these institutions in transferring agricultural know-how and expertise; these are some of the most evident specifics of the present situation.

Agricultural extension as a network of institutions that could provide educational and consulting services for farmers is practically absent in Ukraine. A number of promising international pilot projects in a few regions of the country and some extension-type commercial services have been established in Ukraine (see box). But their number remains very small – presently there are at most a dozen such projects in the country – compared with the spectrum of emerging needs. In addition, the overwhelming majority of projects are funded by international donor organisations. That makes the sustainability of these projects uncertain. As regards the existing commercial agricultural consulting agencies, their services remain rather fragmented. They provide mostly market commodity price and input information and cater primarly to traders' and agricultural market operators' needs. Input providers and agri-businesses provide some commercial consulting services, but their services often are rather narrow and deal with particular commodities or brands. Hence, many other agricultural producers' needs remain unmet.

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[2] See Chapter ?????, Pugachov.

Box: The experience of the Donetsk AgroConsult Extension Service Project

The Project was started in January 1999 and is financed by the British Government which provides four years of funding. By the end of the fourth year, 75% of the incurred costs should be covered by the Project's own revenue.

The Project has a central office and a network of regional offices. The Project's target clientele includes restructured agricultural enterprises of various forms. The main product of the Donetsk AgroConsult is agricultural advisory services, which are to raise the profitability of local agricultural production and diversify activities in rural areas and in this way to address the issue of rural unemployment. All the provided services can be broken down into two main categories – socially useful services and commercial services. The former are the services that do not directly affect the profitability of agricultural production, but promote the efficient operation of the rural economy. These services are:

- Assistance in restructuring collective agricultural enterprises into new private structures;
- Legal assistance to farmers in obtaining land share certificates and shares of collective property as well as representation of farmer's interests in courts of arbitration;
- Development of programs to address diversification of local labour markets and promote self-employment; and

Commercial services include those services which provide farmers with additional profits. Such services include:

- Developing business plans and providing assistance in obtaining external financing;
- Providing marketing information and assistance in finding alternative sources of agricultural inputs; and
- Developing balanced rations to feed animals.

As the international funding is scaled down, Dontesk AgroConsult intends to charge farmers the full cost of commercial services. In return for membership fees, Project members will be delivered a set of the most needed extension services for a given period. This is expected to save both the time of extension specialists and reduce farmers' expenditure for extension. Currently the Project is attempting to diversify its sources of financing and exploring different cost recovery mechanisms (see also BORODINA, 2001).

3 The Efficient Provision of Agricultural Extension Services

Extension services can be provided by a variety of public and private structures. Different types of organisational structure will be able to provide the different services that compose extension with differing degrees of efficiency. A major distinction between two broad groups of extension services is the distinction between public and private goods. This distinction and its importance for the organisation and financing of extension services are the topic of this section.

3.1 Private and Public Goods in Agricultural Extension

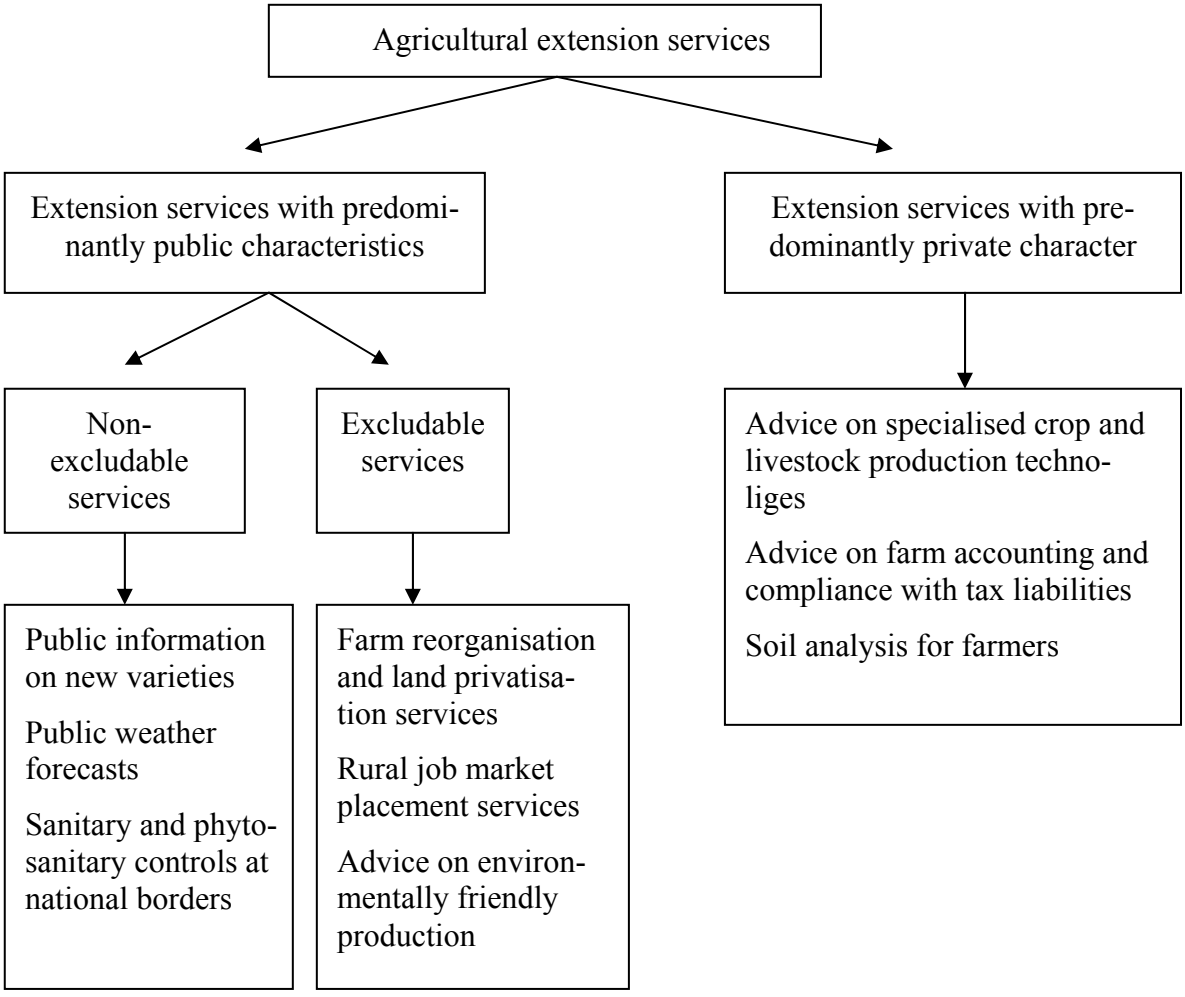
An important problem inherent in agricultural extension is that some extension products have features of public goods. Public goods provide benefits that cannot be withheld from those who do not pay. This characteristic is called non-excludability in economics. As a rule, public goods are also non-rival in cosumption: A given quantity of such a good can be consumed by more than one consumer without decreasing their benefits (HYMAN, 1996). Consider, for example, detailed regional weather forecasts that permit farmers to improve the timing of critical operations such as seeding or spraying crops. If such forecasts are broadcast on radio and television they are largely non-excludable, their benefits cannot be withheld from anyone who ownes a radio or a television, regardless of whether he or she pays for the forecast. Such forecasts are also non-rival; the fact that one

farmer makes use of a weather forecast does not diminish the utility of this forecast for other farmers.

As an example of a private extension service, on the other hand, consider a detailed soil analysis that can be used to make decisions on fertilisation. As a rule, such an analysis is excludable; if a farmer does not pay he or she will not receive the results of the soil analysis. It is also rival to the extent that such analyses are highly location-specific and of little use to other farmers.

Many extension services are likely to lie somewhere on a continuum between pure public and pure private goods. Public good services are sometimes called "policy-driven services" (BEYNON ET AL., 1998). An important category of intermediate goods and services are those that have the public characteristic of non-rivality, but are nonetheless at least partially excludable. Such goods and services bring benefits not only to a narrow circle of paying consumers, but also to society as a whole (economists often speak in this connection of goods or services that generate positive externalities). Examples of such extension services are educational programs on environmentally friendly production, assistance in restructuring agricultural enterprises, rural community development programs, and others. Figure 1 presents this classification of extension services according to degree of publicness along with several examples.

Figure 1: Private and Public Good Character of Certain Extension Services



Note that the distinction between excludable and non-excludable public goods is sometimes somewhat arbitrary. For example, information on new varieties can be packaged in a way that is

excludable (for example exclusively to paying subscribers) or that is non-excludable (for example as part of a regular radio broadcast or at public agricultural shows).

Goods and services with public characteristics cause problems for resource allocation in a market system. If these goods and services are non-excludable, than market participants have an incentive to 'free-ride', i.e. to consume the good in question without paying for it. As a result, no private entrepreneur can be expected to produce such goods and services. Even if they are (partly) excludable, the market mechanism without state intervention will tend to produce a sub-optimal amount of the goods and services in question, as buyers and sellers fail to take account of the associated positive externalities. Hence, the presence of goods and services with public characteristics can justify state intervention. In the case of extension services, state provision (or private provision coupled with state subsidies) can, in theory, be superior to pure market provision.

The caveat 'in theory' is, however, important. First, not all aspects of agricultural extension are public. A service that is of value only to a certain farmer (e.g. a soil analysis) is a private good. Such services are perfectly excludable and rival in consumption. Second, even if an extension service has public characteristics, it is not automatically guaranteed that state provision or subsidies will lead to a situation that is superior to pure market provision. State provision is costly (information, personnel and resources) so that the costs of 'correcting' the sub-optimal market outcome may exceed the resulting benefits. The theoretical justification for state intervention in the presence of extension services with public characteristics is general and conditional; the onus is on the state to prove in each specific case that intervention will lead to a net improvement.

3.2 The Financing and the Provision of Agricultural Extension Services

Once it has been determined that an extension service has public good characteristics and, therefore, will not be optimally provided by the market mechanism, the question arises as to what form of state intervention is most appropriate. Most generally, the state can respond in two ways. First, the state in the form of some public institution such as a ministry, agency, or state enterprise, can provide the extension service in question itself. Second, the state can provide subsidies to a private producer of the extension service in question or to its consumers, thus influencing the market outcome in such a way that more of this service is produced and consumed than would otherwise be the case. What the second of these two options makes clear is that state intervention in agricultural extension must by no means always take the form of direct state provision of extension services. This point is often missed in transition economies, where policy makers often jump to the conclusion that the need for extension automatically implies the creation of a large state bureaucracy to create and disseminate extension services. In fact, direct state provision is often likely to be one of the least efficient means of providing extension services. For example, rather than the state hiring instructors to provide farmers with training on the use of environmentally friendly farming practices, it might be much less expensive to allow farmers to deduct the costs of taking such courses from private instructors from their income tax. Whether or not this is so will vary from case to case depending on the characteristics of the extension service in question. But note that it was the system chosen for Germany's new Länder, where farm structures are quite similar to Ukraine.

In general, public funding of agricultural extension raises a number of issues:

- Accountability: The spending of extension funding should be accountable to both the beneficiary and the provider and scrutinised by a third party such as a supervisory board;
- Transparency: Information about the appropriated funds should be freely available and published in detail;
- Measurability: Public intervention in agricultural extension should produce results that can be measured. These results should be clearly defined ex ante; and

- Service provision: The distance between the provider and the recipient of extension should be short and state funds should move through no more departments and organisations than necessary, to reduce waste and the scope for embezzlement.

A mixed funding approach to extension based on cost sharing between the government and private institutions is increasingly applied. These private institutions can be farmer professional association or agricultural businesses, which apply user-fees and direct charges for their customers. The share of the government subsidy can cover public and/or collective services, such as applied research or training of farmers and extension agents. At the same time, costs of the services that have a privat good character are recovered by the private provider.

The experience of many countries shows that agricultural extension has evolved from being fully financed by the state to various commercial forms with a growing participation of agricultural producers in cost sharing. Indeed, the history of agricultural extension in North America and Western Europe shows that government usually takes a lead at the initial stages of the development of agricultural advisory institutions. Over the time, however, its role and involvement scaled down whereas market mechanisms were gaining more importance (AGBAMU, 2000). Today, in the majority of developed countries, government performs functions of regulation and oversight on the market for agricultural extension services rather than being directly involved in their provision (BLUM, 1996). The most important government functions are:

- Licensing the main providers of agricultural services to ensure the provision of high quality services nation-wide;
- Providing professional training for extension agents so that extension agents have the needed knowledge and skills; and,
- Providing government support for those services that bring clear social benefits or those that have high priorities on the national agenda.

This trend towards reduced direct government involvement in the provision of extension services has important implications for the current situation in Ukraine. If private provision, sometimes combined with government assistance is proving superior to government provision then perhaps Ukraine would be well advised to begin with a predominantly private system from the outset, rather than establishing a system of government provision that could quickly prove to be inefficient and obsolete. More generally, one advantage of economic transformation – besides the many costs and burdens it implies – is that it provides countries such as Ukraine with the opportunity to learn from experience that has been gathered elsewhere, and perhaps avoid mistakes or at least leap-frog over stages of development that may have appeared unavoidable in the past but have been rendered unnecessary in the light of experience and changing technological and socio-economic circumstances. In the area of agricultural extension, for example, improved infrastructure in the form of telephones, fax and increasingly the internet are completely changing the modes, speed and cost of providing farmers with information.

What are some of the disadvantages of government provision or a heavy dependence on government funding for agricultural extension? First, strong dependency on government funding can threaten the impartiality of the services provided. Under same conditions, agricultural extension can be used as an instrument for the enforcement of government policies. When the government acts as the main agenda-setter, resource allocation is largely guided by political concerns rather than by market-driven demand. Furthermore, in the 'top-down', supply-driven public sector environment, the extension agent may feel more accountable to his ministry supervisors than to his customers, the farmers. These dangers are especially present in the current Ukrainian context in which both policy-makers and farmers have been conditioned by decades of central planning. In this context, the very important distinction between providing extension advice on the one hand and 'binding recommendations' on the other, may be lost on many. A government monopoly on extension services would be

exceedingly dangerous in the context. Competition from private providers would help to ensure that government services do not become dirigistic and heavy-handed.

Centralised, national and government funded extension services can also tend to prescribe centralised and national solutions. In a country as varied as Ukraine, agricultural extension must be very differentiated at the regional level. State-run extension services also often fail to take sufficient advantage of the huge laboratory represented by the existing network of commercial farms in a country. The knowledge and advice that is passed on to farmers by private consultance has its origins mainly in the experience of actual farms, in other words in the successes and failures of their customers and not in textbooks or experimental farms. This point will be of special relevance in Ukraine. Over the last ten years, farms in Ukraine have had to experiment and improvise a great deal. Ukrainian agriculture has been exposed to a wide palette of new technologies and management techniques. It is highly unlikely that state-trained extension specialists will have much knowledge of or experience with these new technologies and techniques. However, some farms will have gathered considerable experience with their implementation in recent years. Tapping this reservoir of experience represents an important challenge to any future Ukrainian extension service. In essence, the flow of information from farmers to extension specialists will, at least initially, be at least as important as the flow from specialists to farms.

A constant pressure to reduce budget deficits and the resulting program underfunding can negatively affect staff recruitment and retention and the quality of the provided services. Channelling resources to public advisory also restricts the ability of policy makers to allocate revenues to other agricultural programs that may yield higher social rates of return. Since budget discipline is of paramount importance in Ukraine today, the state is not in a position to provide generous funding to develop agricultural extension services. Of course, through its network of oblast and rayon offices, the agricultural ministry does have access to a very extensive network of personnel. It is understandable that some policy makers believe that this network could form the basis of a new extension service in Ukraine. Since the employees in question are on the state pay-roll anyhow, this would also represent a relatively low cost option. However, several words of warning are in order. The personnel in question is probably, on average, fairly advanced in age and received its training under the completely different non-market conditions that prevailed prior to Independence. Without very extensive and expensive retraining, it is doubtful that this personnel would be able to provide the sort of up-to-date advice in the areas of production technology, and most importantly, economic farm management principles, that Ukrainian farmers need to become internationally competitive. Furthermore, as mentioned above, many members of this personnel may have a difficult time surpressing the urge to dictate plans as a pose to providing advice.

Experience form a German funded extension project in the Russian oblasts Vladimir and Voronesh may be instructive in this regard.[3] In these two oblasts, donor funding has helped to establish private consulting firms that provide advice to farmers in return for commercial fees. After three years of work in Vladimir the donor contribution has been reduced, and roughly fifteen former collective agricultural enterprises are paying approximately 3,000 rubel per month for the extension advice they receive. In interviews, the managers of several farms involved in this project stated very clearly that they would much rather pay 3,000 rubel per month for the extension provided by the young and western trained commercial consultants than receive advice for free from the government agricultural representatives at the rayon and oblast level. The latter, it was stated, still tended to act not as providers of advice but rather as agents of the rayon and oblast authorities who's primary interest was in ensuring that the farm continue to deliver to the local rayon processing enterprises (for example dairies) rather than better paying competitors in neighbouring rayons or oblasts. Further-

[3] See VON CRAMON-TAUBADEL, S.: Restrukturierung landwirtschaftlicher Großbetriebe in Rußland. Consultancy for the Gesellschaft für Agrarprojekte mbH, Hamburg, and the German Ministry for Agriculture, Bonn. Göttingen, October 2000.

more, the older government employees of the rayon and oblast agricultural offices were not in a position to provide advice for example on modern gross margin based book-keeping methods in agriculture, which are required to make decisions on the relative profitability of the different operations that take place on large former collective farms (different grain and oilseed crops, forged production milk and meat).

In many countries and certainly in Ukraine, many agricultural production units are large and potentially profitable enough to be able to pay for the service provided by private extension agencies (BLOOME, 1993, HEALY, 1997). Private extension is more clientele-driven, deriving its agenda directly from the demands of the people it serves. Through payments users exercise direct influence on the system and can clearly judge about the value of the advice provided, switching to alternate suppliers if one proves to be less effective. Private extension also tends to be quicker in responding to new opportunities and challenges, and is less subject to the political intrigues and lobbying which can handicap government services.

At the same, an exclusive reliance on private extension services can be counterproductive. Private extension services tend to focus primarily on larger-scale, more commercially-oriented producers who are able to pay for advice and to whom advice can be provided in larger "bundles", thus reducing the fixed costs of provision (i.e. the number of farm visits, the number of relationships that have to be maintained, etc.). As a result, small-scale producers may tend to be overlooked by private extension providers. In the Ukrainian context, this means that the many small private farms could receive less extension than is warranted by economic and social considerations. A possible solution to this problem would be for the state to provide subsidies to such farms to cover the costs of extension; for example in the form of vouchers that could be redeemed with private extension providers or by making extension expenses tax deductible. An open question is also the extent to which private institutions are willing to address environmental and social issues – important preconditions for sustainable rural development.

Beside public and private extension providers other forms of agricultural extension have emerged in several countries. For example, agricultural extension is also provided by farmer organisations, agri-business firms, marketing boards, local research and development corporations, cooperative research centers, and university departments. In recent years, especially agri-business firms have been playing an increasing role in the provision of extension services. These firms, for example, agro-chemical suppliers, often employ specialists or have special consulting divisions on providing advice to individual producers, often linked to merchandise sales. This extension approach is rather specialised and relatively cost-effective: Through levies on product sales or by factoring cost-recovery into product or input prices, fiscal sustainability is achieved. On the other hand, commodity-specific extension tends to deal with a limited number of agricultural commodities and, being tied to the commercial interests of the agri-business firm in question, may not be entirely objective.

4 Conclusions

There is little question that farmers in Ukraine are in great need of extension services. They are confronted by new tax systems, new land relationships and the need to modernise their production considerably. A simple example of the latter is provided by seeding densities in Ukrainian grain production. Western experts continue to be perplexed by the very high seeding densities that are employed by Ukrainian farm managers, densities that infleet costs and depress yields. Extension services that carry out field trials in different regions of Ukraine either on experimental farms or on commercial farms could provide farmers with evidence on the costs and benefits of current seeding practices. The potential cost savings could be very significant.

As they consider options for the development of agricultural extension in Ukraine, policy-makers can take the following observations and recommendations into account:

- Some extension services have public good characteristics and will tend to be underprovided by the market. In such cases, government intervention can be justified.
- Many other extension services are either private or very close to being private goods. There is very extensive evidence that public institutions tend to be relatively inefficient and inflexible in the provision of such goods.
- Even if government interference on the market for extension services is justified, direct government provision is not necessarily the most efficient course of action. It will often be far more efficient to either subsidise private firms to provide these services or to provide subsidies to farmers who purchase these services from private firms.
- These points are confirmed by experience in the countries of Western Europe and North America, where extension services that used to be predominantly publicly organised and funded are increasingly being transferred into the private domaine. This transfer is being driven by the changing needs of increasingly larger commercial farms and changing technologies (for example the internet) that can dramatically reduce the costs of communication and information transfer, thus eliminating the argument that without government provision too many farms will not have sufficient access to extension services.
- Ukraine should avoid the trap of simply duplicating extension structures that it observes in other countries. These structures were largely established many decades ago when the needs of agriculture and the available technologies were radically different from today. Indeed, throughout the industrialised world these structures are currently undergoing major changes. Ukraine should aim to create the sorts of structures that are emerging in other countries today instead of duplicating the remains of structures that were created in the 1950s or earlier elsewhere.
- An extension system in Ukraine based on the structure and personnel of the ministry of agriculture's local oblast and rayon offices would have the advantage of making use of ressources that are currently available. But it would have the very serious disadvantage that the structure as well as the training and experience of most of the personnel in question is heavily conditioned by the central-planning that prevailed prior to Independence. Agricultural extension is too important for to be mis-used as a new excuse to provide employment and justification for out-dated structures. Where appropriate private extension providers have been established, farm managers in the former Soviet Union have demonstrated that they would much rather pay for such services than receive services from the old government structures for free.
- Extension is not simply a flow of information from specialists to farms. Especially in the Ukrainian context where most government specialists expertise is out of date, and some farms had been quite successful in restructuring, modernising and adopting new technologies, farmers will have a great deal more to tell the so-called specialists than vice versa. The most valuable advice that could be provided to Ukrainian farms is not in the heads of specialists or in textbooks but rather is waiting to be tapped in the experience of farms that have had to find their own way through the turbulent last ten years.
- The backbone of any extension service is people. The providers of extension services must be willing and able to engage in an almost continuous process of retraining so that they are able to provide farmers with the most up-to-date information. Instead of a dogmatic attitude (for example, dairy cows must be milked three times per day) extension providers must be open to change and willing to question received wisdom (i.e., may be it makes sense to milk only two times a day). One of the most important contributions that the government of Ukraine could make to the development of agricultural extension would be to invest in the education of young, flexible potential extension providers. This investment can take the form of spending on Ukraine's agricultural universities and research stations, which has been very neglected in recent years, as well as scholarships for young Ukrainians to study and learn about agriculture abroad and subsidies for farms and agri-business firms that invest in the training of their employees. Ukraine would

probably find that donors would be willing to provide significant support in the area of scholarships and assistance to Ukrainian agricultural universities and colleges.

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