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Support for Ukrainian Private Farming Sector and Scientific
Collaboration: A U.S./Ukrainian Partnership

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List of Acronyms

CNFA	Citizen's Network for Foreign Affairs, Inc.
HPOs	Household Plot Owners
IMBG, NAAS	Institute of Molecular Biology and Genetics, National Academy of Agrarian Science
ISS	Information Support System
LSU	Louisiana State University
LSU AgCenter	Louisiana State University Agricultural Center
MAP	Ministry of Agrarian Policy
NAAS	National Academy of Agrarian Science
NAUU	National Agricultural University of Ukraine
UBWL	World Laboratory, Ukraine Branch
USAID	United States Agency for International Development
VSAU	Vinnitsa State Agricultural University

I. Executive Summary

During the 1990s the agricultural economy in Ukraine transformed from a command-and-control model to a private, market-driven economy, creating a great need for technical assistance to individual farmers. Many citizens began farming for the first time, and others, while experienced in the agriculture of collective farming, had to learn how to farm on a smaller, market-driven scale. The economic transformation of the 1990s affected all aspects of the agricultural economy, including research and development of new technologies, formal education, and agribusiness.

Agriculture has historically played a central role in the economy of Ukraine and continues to be of great importance. The Ukrainian landscape holds some of the richest and most fertile agricultural lands in the world. During the initial phases of privatization in the early 1990s, however, agricultural production in Ukraine declined, indicating a need for post-restructuring support. In response to this need, in 1998, USAID issued a cooperative agreement to the Louisiana State University Agricultural Center (LSU AgCenter) and its Ukrainian partners, the Vinnitsa State Agricultural University (VSAU), the Ukrainian Branch of the World Laboratory (UBWL), and the National Agricultural University of Ukraine (NAUU), to implement a three-year agricultural support program in Vinnitsa Oblast (state/province), a key agricultural production area of Ukraine. Under this program, the LSU AgCenter and partners established the Ukrainian Center for Private Farmer Training and Outreach (the Vinnitsa Center) with the express goal of providing education and information to Vinnitsa private farmers. The Vinnitsa Center addressed two important areas: (1) the information needs of new farm enterprises and (2) the training and educational needs of all of those engaged in or planning to engage in privatized farming.

A major emphasis of the project was to engage the Vinnitsa farmer with the scientific and educational community so that together they would develop a shared vision of how privatized agricultural production should evolve in Vinnitsa. The project concentrated on one oblast on the premise that a grass roots approach, where individual farmers directly interact with specialists and researchers, would engender trust and best ensure that technical assistance was matched to local farmers' needs.

During the project period, October 1998 – February 2002, the Vinnitsa Center was successful in establishing the following:

- A center for private farmer and agribusiness support within the existing structure at VSAU that delivers valuable, science-based information to farmers.
- A replicable outreach and education program to support the private farming sector in the oblast.
- Trained specialists capable of designing and conducting outreach and support programs for farmers and agribusiness.
- Twenty-seven local offices at the raion (county) level, supported partly by local resources.

- A computer-based information support system (ISS).
- Strong links with the agribusiness sector for the mutual benefit of farmers and agribusiness.
- Political and economic support from raion and oblast administrations.
- Youth leadership programs.
- Accounting seminars targeted to farm wives.
- A farmers' credit union.
- A soil analysis laboratory.

Three factors stand out in the success of the Vinnitsa Center: (1) the grass roots, constituency-based approach, (2) the link to educational and research institutions, and (3) the change in the political climate and the attitudes of village, raion, and oblast administrations towards the needs of private farmers.

The success of the Vinnitsa Center generated demand for new services. Local youth expressed interest in leadership and other training, and leadership training was also needed to help make farmer organizations more effective and to assist in community development. The LSU AgCenter and VSAU faculty responded by establishing a youth development program with pilot programs at four schools. Post-restructuring assistance, including legal assistance requests, rose sharply and was fulfilled by legal specialists at the Center. The need for farmer credit was noted, so the Center facilitated the creation of a credit union and assisted in developing agreements with agribusiness firms to supply inputs to farmers on credit. The Center established a soil laboratory at VSAU so farmers could have their soil analyzed in order to properly apply fertilizer and plant protection measures. Finally, early in the project the Center recognized the special needs of a unique group of agricultural producers, the household plot owners (HPOs). During a period of decreased agricultural production in Vinnitsa, the HPO sector has contributed significantly to overall agricultural production in the oblast. Due to their small-scale operations, HPOs face different concerns and issues from other private farmers. Special outreach mechanisms were developed targeting the needs of HPOs.

While the project has had many successes, the Vinnitsa Center had much to overcome in providing services to the agricultural community in Vinnitsa. After 75 years of top-down Soviet rule, Vinnitsa farmers were distrustful of the Vinnitsa Center and its motives. In the first six months, many farmers assumed the Vinnitsa Center existed to serve the still-active collective farms rather than the private farmer. Many farmers felt they did not need information but wanted the Vinnitsa Center to provide them with inputs and credit. With time, outreach, and the opening of local raion offices, farmers began to trust the Vinnitsa Center, its staff, and the quality of information they received. Attendance at seminars, workshops, and in other forms of technical assistance rose notably. Also important was the gain in trust from all levels of government administration – village, raion, and oblast. For example, all raions pledged support of the raion offices by providing office space and other cost-sharing measures. The agreements between raion administrations and the Center include a shifting of cost burden to the raion over time, ensuring sustainability of the offices in the long term.

By the last quarter of the project, enormous advances had been realized. According to the final internal evaluation report, the Center had achieved the following:

- All registered private farmers in the oblast had been reached through workshops, seminars, field days, demonstrations, publications, radio and television programs, and personal contacts with raion and university specialists.
- Private farmer participation in the Center's programs increased substantially over the three years of the Center's operation. Eighty-five percent (85%) of participating farmers reported satisfaction with the quality and value of the information they received.
- More than 75 percent of private farmers learned new ideas and skills from the agricultural, legal, business, and organizational information presented in the Center's education programs. These included crop rotation, new potato varieties, how to apply pesticides, protein feed mixes, how to make business plans, how to develop bylaws for a private farm, benefits of fixed tax in agriculture, and calibration of ploughs.
- The Center is preferred as a source of agricultural, legal, business, and organizational information over the agrarian ministry, private companies, colleges and universities, or other farmers.
- Seventy-five percent (75%) of private farmers have used the computerized ISS developed by the World Laboratory to get answers to questions about production, marketing, and management.
- A majority of private farmers have benefited by being involved in some way in the Center's collaborative work with private agribusiness companies.
- Interaction with the Center appears to have had a positive influence on the general outlook of private farmers toward democratic and market-oriented changes in Ukrainian agriculture, society, and life.

The project achieved these outcomes through the implementation of four objectives:

1. Establish the Ukrainian Center for Private Farmer Training and Outreach,
2. Develop Outreach Services,
3. Develop Formal and Informal Education Programs, and
4. Conduct Agricultural Technology Research Programs.

Objective 1, Establish the Ukrainian Center for Private Farmer Training and Outreach, encompassed a wide range of activities including logistical set-up, formalization and legalization of the Center and its satellite offices, expansion to each raion, training and education of faculty and staff, outreach and information dissemination regarding the Center and its mission, internal evaluation, and establishment of relationships with key

players at all levels of the agricultural production community. As part of this objective, the project team aggressively used annual internal evaluation to improve project services and operations. Project expansion, reorganization, and the formalization of policies and procedures have all contributed to the success and sustainability of the Center.

Objective 2, Develop Outreach Services, encompasses many of the activities that form the heart of the project in providing information and education assistance to individual farmers. Outreach services to farmers have included:

- Conducting farm visits and individual consultations,
- Providing seminars and workshops on a variety of topics of interest to individual farmers and HPOs,
- Producing topical brochures and maintaining a farmer's library,
- Conducting demonstration projects on private farms,
- Facilitating the formation of a farmers' credit union,
- Providing legal and tax information to individual farmers,
- Forming links with agribusiness,
- Developing youth programs,
- Offering soil analysis to farmers, and
- Developing and maintaining a computerized ISS accessible to farmers, agribusiness suppliers, and agricultural researchers.

Based on the expressed needs of the farmers of Vinnitsa, educational topics presented to farmers have included:

- Business plan development,
- Farm accounting,
- Appropriate use of agricultural technologies,
- Legal and tax issues in private farming,
- Use and maintenance of farm equipment, and
- Topics relating to livestock and crop production and common problems.

While the purpose of the outreach component was to provide timely information of use to practicing farmers, the purpose of Objective 3, the formal education component, was to provide an alternative means of gaining formal agricultural knowledge. Farmers and agribusiness need to define and use appropriate strategies to solve problems in a sustainable and efficient manner, and Center personnel realized that formal education should be extended beyond the traditional agricultural college student to transmit technical abilities to a new clientele. As a result, the formal education program implemented by the Center included farm wives and novice farmers with no agricultural background whatsoever, including many trained in other professions such as law or medicine.

The formal education program developed in two parts: (a) short courses aimed at non-traditional students, and (b) a formal two-year certificate program housed at VSAU,

under the newly created Institute of Extension Education. LSU AgCenter specialists worked closely with VSAU faculty to develop a new and innovative curriculum. This team developed course outlines and materials, and VSAU faculty received training in teaching methods appropriate for the new curriculum. By the end of the project period, the first group of students had completed the two-year curriculum and a new group of recruits had begun.

The importance of linking informal and formal information with relevant research was a primary organizing principle of the Center's work. Objective 4, Conduct Agricultural Research Programs, included support of three specific applied research projects. The Center's support of this work was based on the premise that scientific research is vital to the agricultural sector. Enhancing existing Ukrainian agricultural technologies is essential for sustainable indigenous agricultural production. The farmer support and outreach activities provided by the Center cannot be sustained if the problems faced by the farmer are not addressed through a research base. Further, a strong link between the farmer and the research/academic community is needed so that the feedback loop from the farmer to the researcher is complete. Thus, this fourth objective was fundamental to and reinforced the Center's mission in Vinnitsa. The goal of the research component was to promote applied technology research conducted by Ukrainian scientists at Ukrainian institutions. Titles and brief description of each of the three research endeavors conducted under this project follows.

1. Endophytic colonization of wheat (*Triticum vulgare*) and rice (*Oryza sativa L.*) with nitrogen fixing bacterium *Klebsiella oxytoca*

Purpose:

To develop a practical, novel inoculation for enhancing plant protection from disease.

Results:

Treatment of different crops with an inoculation derived from *K. oxytoca* bacteria (Kleps) was shown to protect plants effectively from disease. A patent application entitled "Biopreparation for Plants Kleps" is currently pending in front of the Ukrainian Patent State Committee.

2. Isolation, characterization and utilization of insect resistance genes to benefit Ukrainian and U.S. agriculture

Purpose:

To investigate new *B.thuringiensis* (Bt) strains isolated in Ukraine and develop creative ways to control the Colorado potato beetle using bioinsecticide.

Results:

The characteristics of an effective Bt 949 treatment were developed. Optimal production conditions, methods, and storage conditions were determined.

3. Development of vaccines using liposomes

Purpose:

To develop a vaccine against Classical Swine Fever (CSF), a potentially devastating disease found in pigs.

Results:

A vaccine has been developed that produces an antibody response in animals. Large scale trials are now being conducted and will test for cell-mediated immunity.

The Center's support of these research projects has had benefits beyond the applied technologies being developed. Support of these projects brought researchers closer to the every day needs of private farmers and has given them a stake in supporting those farmers. Researchers on these projects have become a resource for the Center's staff and faculty when seeking current, science-based information. The use of private farmer livestock and land in trials and experiments has further strengthened the link between scientific research and private farming enterprises.

A. Conclusions

The experience of creating and implementing the Ukrainian Center for Private Farmer Training and Outreach has taught project managers many important lessons.

- It takes time to build trust with farmers.
- Extension and outreach efforts need to be widespread in an oblast.
- Many farmers and HPOs lack basic knowledge of legal and accounting issues.
- Farmer organizations in Ukraine are less effective than they could be.
- There is an ongoing need to raise farm productivity and product quality.
- Farm families benefit from education and leadership programs that address all family members.
- Household plot holders (HPOs) make a significant contribution to the agricultural sector and need targeted information and education.
- The links between research institutions, the scientist, and the practicing farmer need continued strengthening.

These lessons have influenced the project's development over its initial three years of operation and will continue to be useful in the future.

The Vinnitsa Center has been successful on many levels. The project team has overcome many barriers including the initial lack of trust of the Center's motives and a general failure among indigenous farmer support mechanisms, such as commodity groups, to provide widespread and useful information to farmers.

The Center has identified and sought to remedy many needs in the oblast. HPOs have been identified as significant agricultural producers with unique needs. Seminars and other services were developed and targeted specifically to this group, as well as to farm wives and youth. Center staff identified the lack of favorable credit as an issue limiting farm success and addressed this by facilitating the creation of a farmers' credit union to provide loans and support to private farmers.

The Center's establishment and development of an outreach education program has made a large difference in the personal lives and professional farming practices of Vinnitsa Oblast private farmers. On all measures of educational outcomes used in the last evaluation there is evidence to suggest that private farmers have made significant changes in their farming operations. Great strides have also been made at the institutional level where reforms among the education and research communities are transforming the agricultural support system at all levels.

B. Recommendations

While the project has had great success in its mission to develop a university-based private farmer outreach and education Center, the following recommendations could enhance the future operations of the Center.

1. Increased attention should be given to the environmental aspects of land tillage and use of agricultural inputs.
2. The Center should continue to strengthen and broaden its work with HPOs. With the experience the Center has gained in reaching private farmers, HPOs should become a major target of the Center's education programs in the near future.
3. The Center should increase its efforts to assist farmers in developing markets for their products.
4. Farmer organizations are still less effective than they could be. The Center should continue to help develop leadership skills of local farmers and encourage effective organizational models for farmer groups.
5. More emphasis needs to be placed on developing the skills and commitment of advisory committee members.
6. Key stakeholders – raion and oblast administrations, concerned ministries, departments and agencies, private farmers, farmer associations and farming leaders, private agribusiness interests, and universities, colleges, and research stations – should be more involved by the Center in collaborative activities to legitimize and support the Center's outreach education program and maximize its impact.

7. Raion specialists and university specialists affiliated with the Center should be continually updated on the latest technology and people skills, and stay involved in ongoing programmatic initiatives and program evaluations.
8. The Center should provide more training for raion specialists on various teaching techniques designed to reach the diverse adult clientele present in each raion.
9. Personal and farming characteristics of private farmers should be considered in planning and conducting educational programs. Research indicates that audience characteristics influence the learning and adoption of new ideas and practices.
10. Future evaluations of the Center should, in addition to measuring educational changes in private farmers and HPOs, determine the economic return on investment in the Center's education programs as well as the social and economic impacts of the Center's work on farming communities in the oblast.
11. The project should implement a merit system of performance evaluation for project employees.

II. Introduction and Background

Ukraine became an independent nation in 1991, following the breakdown of the Soviet Union. In the years following independence, the country has attempted to transform its economic and political systems by adopting market-based reforms and democratic processes to secure for its citizens political, economic, social, and technological benefits to improve their overall welfare and prosperity.

The developmental needs of an emerging democracy in forging a market-oriented transformation are many and complex, and require time for planning, implementation, and fulfillment. Food security and access is a basic need of a country; hence the development of agriculture and agriculture support systems is of paramount importance. Agriculture has played a key role and will continue to be important in Ukraine's economy and development. The country is blessed with rich soils and a favorable environment for crop and livestock production, and was historically known as the "breadbasket" of the Soviet Union. But the transformation from a command-and-control to a free-market economy in the last decade has been slow and there has been a decline in agricultural production.

In the Soviet era, the systems of agricultural production, research, and education followed top-down decision and management strategies. Ongoing social and economic reforms require that these systems adapt to changing political, economic, and technological conditions, market forces, and entrepreneurial attitudes and actions. Prior to the privatization of Ukraine's agriculture, the country's agricultural production machine was comprised of large-scale state farms, state-sponsored collective farms, and state-sponsored cooperatives backed by research and education systems geared to the needs of that machine. Privatization resulted in the breakup of some of these entities, and the emergence and growth of private farms, limited agri-support industries and services, and limited credit opportunities. The agricultural research and education infrastructure established at state, regional, and national levels before privatization, however, continues. This infrastructure could be characterized as pluralistic and segregated, in that the established research and teaching institutions, though nationally directed and coordinated, have unique philosophies, structural arrangements, agendas, and programs based on local and regional needs.

In the changing climate of privatization, Ukraine has had its share of setbacks and improvements in its agricultural sector. The redirection of production facilities toward private ownership and market-based decision-making is still at an early stage, with some oblasts (states/provinces) leading others in terms of reforms such as the establishment of farmer-owned and directed cooperatives, credit unions, and private input supply firms. Current privatization policies in Ukraine are enabling farmers to have title to land for agricultural production use, and to eventually become self-reliant. Improved technology, a free-market system, and re-education of farmers could raise agricultural production efficiency and output. While privatization of the farming sector is anticipated to eventually have a salutary effect on agricultural production, the farming sector and

agribusiness, adverse short-term effects such as production declines and farm failures have been observed in Ukraine. Lack of adequate inputs, credit, improved technologies, education, and knowledge of the operation of a free-market system, and the absence of farmer outreach services have been cited as the main causes. It has been recognized that to remedy the situation and guard against future failures it is important that farmers learn through science-based education and extension programs.

The agricultural sector has experienced accelerated reforms, particularly following the Presidential Decree of December 1999 that changed the ownership of all collectives in the country to private status as of April 1, 2000. This makes the task of designing and implementing farmer assistance programs more critical. Further, the number of private farmers, or those who own land that could be farmed has increased rapidly. For example, by the year 2000, this number increased from about 850 to 1,090 in Vinnitsa Oblast.

A. Agriculture in Vinnitsa Oblast

Vinnitsa Oblast is located in west-central Ukraine, on the Volyn-Podilsk Upland and includes part of the basins of the Southern (Pivdenny) Buh and Dnister rivers. Geographic features include gently rolling hills crossed by river valleys and widespread erosion gullies. The north consists of forest-steppe and the south of true steppe. More than 70 percent of the land surface is used for agricultural production and 60 percent of the soils are classified as black soils. Among the world's most productive farmlands, these soils are exceptionally well suited for the cultivation of wheat, barley, and sugar beets, the oblast's major crops. In 1999, Vinnitsa had the highest grain crop yields and ranked third in sugar beet production in Ukraine. Other important crops produced in Vinnitsa include, corn, oat, rye, millet, buckwheat, potatoes, vegetables, berries, apples, nuts, and grapes. Farmers are currently testing the economic viability of soybeans. The local economy is focused on agricultural production and also contains some food processing industries.

The Vinnitsa livestock sector lags behind the crop sector, but is still significant. Cattle, pigs, and poultry are raised throughout Vinnitsa Oblast in privatized enterprises and in most household plots. Large-scale broiler and egg-laying operations are concentrated in two raions: Tulchyn and Bershad. The processing industry is comprised of six large meat processing plants, 40 small meat processing facilities, 27 milk processing factories, and 41 sugar mills.

The total area of agricultural land in Vinnitsa Oblast is 2,020,000 hectares including 1,730,000 hectares of arable land. In recent years, land reform has transformed Vinnitsa Oblast. Two hundred seventy-four thousand (274,000) hectares of reserve land were allocated to private farmers between 1991 and 2000. Forty-seven thousand (47,000) hectares of land were allocated for the expansion of household plots, and 178,000 more were leased. During this period, the number of private farmers and household plot owners (HPOs) increased to 1,090 private farms and 657,000 HPOs. In 2000, private sector agriculture produced 70 percent of all meat, 69 percent of milk, and 88 percent of all eggs. Food production by HPOs is particularly notable on the outskirts of the city and

towns. HPOs are a significant factor in local agriculture, both in number of producers and quantity of production, responsible for 60 percent of crop production and 90 percent of livestock production in the oblast.

B. Meeting the Need for Assistance

Amid the large-scale changes of the 1990s, the United States Agency for International Development (USAID) recognized the need for technical assistance to the farmers of Vinnitsa Oblast. By 1997, many factors such as the lack of available credit, inputs, legal advice, agricultural technology, and the ability to make market-based decisions had been identified as causes of private farm failures throughout Ukraine. Vinnitsa Oblast, a leader in the restructuring of the agricultural economy through privatization, had suffered a notable decline in the number of newly privatized farms. A survey conducted in 1997 of 58 Vinnitsa private farms indicated that training and outreach services were among the most critical needs of farmers.

To address these needs in accordance with Mission Strategic Objective 1.3a: *A More Market Responsive Agricultural Sector*, USAID awarded a Cooperative Agreement to the Louisiana State University Agricultural Center (LSU AgCenter) along with its Ukrainian partners, the World Laboratory, Ukraine Branch in Kiev (UBWL), and the Vinnitsa State Agricultural University (VSAU) to implement a three-year agricultural support program in Vinnitsa Oblast. To respond to the education and information needs of the Vinnitsa private farmer, this program established the Ukrainian Center for Private Farmer Training and Outreach (the Vinnitsa Center) in Vinnitsa Oblast. The project, titled Support for Ukrainian Private Farming Sector and Scientific Collaboration: A U.S./Ukrainian Partnership, addressed two important areas: (1) the information needs of new farm enterprises and (2) the training and educational needs of all of those engaged in or planning to engage in privatized farming. A major emphasis of the project was to engage the Vinnitsa farmer with the scientific and educational community so that together they would develop a shared vision of how privatized agricultural production should evolve in Vinnitsa. The project concentrated on one oblast based on the premise that a grass roots approach, one where individual farmers directly interact with specialists and researchers, would engender trust and would ensure that technical assistance was accurately matched to local farmers' needs. The project addressed the following four objectives during the project period of October 1998 – February 2002:

1. Establish the Ukrainian Center for Private Farmer Training and Outreach,
2. Develop Outreach Services,
3. Develop Formal and Informal Education Programs, and
4. Conduct Agricultural Technology Research Programs.

This final report will indicate the achievements of the project, the extent to which objectives were met, the important lessons learned during the implementation of the project, and recommendations for the future.

III. Objective #1: Establish the Ukrainian Center for Private Farmer Training and Outreach

Objective #1, Establish of the Ukrainian Center for Private Farmer Training and Outreach, encompassed a wide range of activities including logistical set-up, formalization and legalization of the Center and its satellite offices, expansion to each raion, training and education of faculty and staff, project outreach and information dissemination, internal evaluation, and establishment of relationships with key players at all levels of the agricultural community.

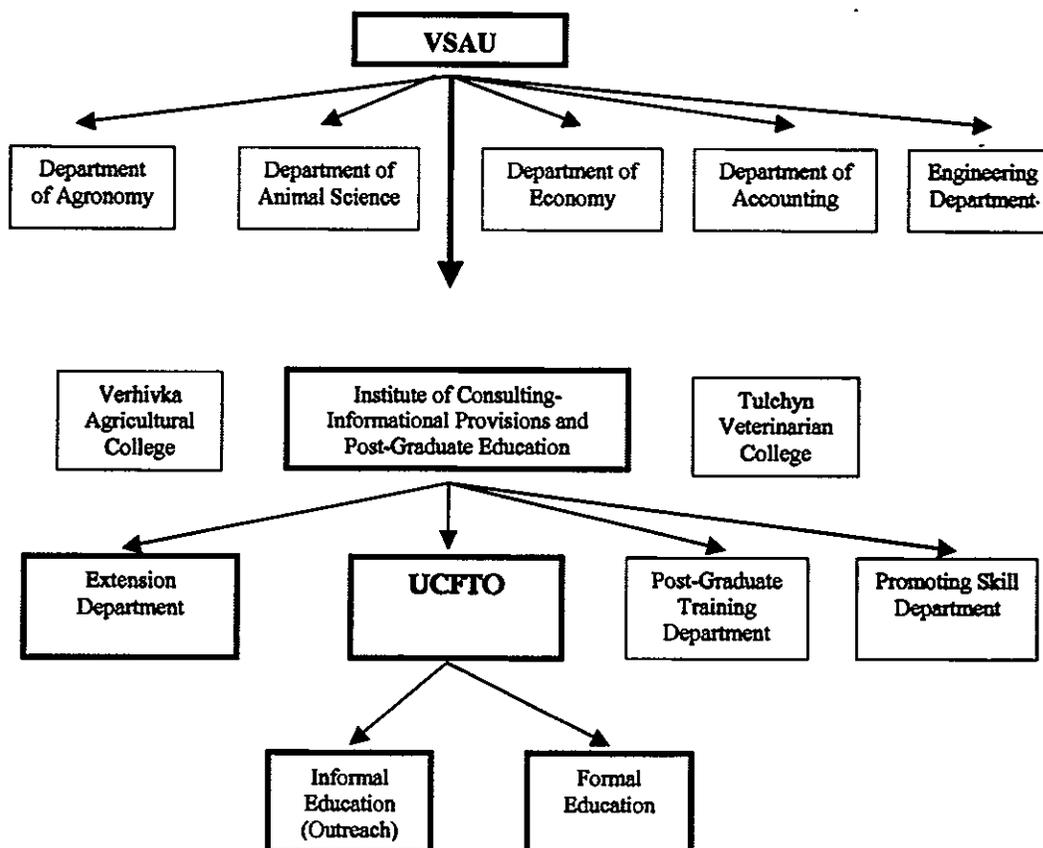
When the Center began operation, it faced an environment of instability due to change and mistrust. Farmers were not accustomed to receiving useful individual help from university or government sources. The university did not have a history of linking research with individual farm operations or providing extension services. Within the relatively short timeframe of three years, the project became a well-regarded, legally established entity with strong support both from VSAU as well as raion and oblast administrators. Demand for new and existing services necessitated the opening of 27 raion-level offices. The Center also helped VSAU create the Institute of Extension Education.

During the first project year, start-up activities included hiring and training staff, purchasing and installing office computers and equipment, conducting an initial farmer survey and needs assessment, and reaching out through various fora to publicize the Center's mission. In order to bring the Center's services even closer to farmers, the Center began the process of opening 13 local, raion-level satellite offices each staffed by a trained extension specialist. The logistics of opening and staffing these offices proceeded during the first two years and included agreements with raion administrations regarding their contributions and support of the satellite offices. During years two and three, the Center expanded its raion level presence by opening and staffing offices in all 27 raions in Vinnitsa. Center staff tackled many issues related to legalizing and formalizing its role and the roles of its local satellite offices and ancillary projects. At the university level, the Center helped create the Institute for Extension Education at VSAU. The Center applied for and received accreditation from Kiev, developed agreements with raion administrations to set up the 27 local offices, and wrote by-laws for the Institute of Extension Education.

A. Establishment of the Institute of Extension Education

As the project expanded and reorganized in order to better meet the needs of farmers and researchers, project and university leaders decided to create an Institute of Extension Education within the existing post-graduate department of VSAU. In response to this proposal, the Ministry of Agrarian Policy (MAP) issued an order in July 2000 to legally create the Institute. The VSAU bylaws were accordingly changed to reflect the new organizational structure (see figure 1). The Institute of Extension Education is organized in the following departments: Extension, Formal and Informal Education and Outreach, Post-Graduate Training, and Promoting Skills.

Figure 1. Institute for Extension Education Organizational Chart



B. Collaboration and Coordination with Agricultural Colleges and Institutes

Collaboration and coordination with Ukrainian agricultural colleges and institutes has been integral to the success of the project. Close ties were immediately established with VSAU. The Center is located in VSAU office space and several university personnel serve key roles as consultants to the Center. Project staff and advisors from the LSU AgCenter have taught courses at VSAU and provided training in the United States to VSAU faculty. Other institutions have participated in Center activities, for example, the Institute of Molecular Biology and Genetics, National Academy of Agrarian Science (IMBG, NAAS) carried out research on demonstration plots along with the Shargorod extension raion office. When word of the Center's success circulated beyond Vinnitsa Oblast, the agricultural institutes in Uman and Kmelnitsky requested Center services be extended to those oblasts and educational institutions.

C. Collaboration and Coordination with Research Institutes

During the eighth project quarter, Dr. William Brown, Vice Chancellor and Director of the LSU AgCenter Agricultural Experiment Station, conducted a comprehensive survey of research resources in Vinnitsa. He subsequently drafted specific proposals to develop administrative options for research coordination in Vinnitsa Oblast. The full report was submitted to USAID as part of the project's eighth quarterly report. In summary, Dr. Brown recommended a reorganization of research and university resources in Vinnitsa into a system containing three elements: teaching, extension, and research. The first two components, teaching and extension, have been significantly organized during the project tenure through both the Vinnitsa Center and the Institute of Extension Education, both located at VSAU. The remaining component, research, could be addressed by the creation of a "Research Institute" to parallel the existing Institute of Extension Education. Under this plan, the different institutions that currently conduct agricultural research in Vinnitsa would come together in a coordinated effort to form the core of the new research institute at VSAU. These research entities could include: the ELITA Research Station, the Podilla Research Station, the Feed Institute, the Uladovo-Lulynetska Research Station, and the Yaltushkiv Research Station. Second, Dr. Brown recommended that the remaining technical colleges in Vinnitsa unite administratively under VSAU, in a manner similar to Verhivka and Tulchin colleges. This would help coordinate course offerings, avoid duplication, and lead to a more efficient and cost-effective management of agricultural education and research. A third recommendation was to reorganize the holdings of colleges and research stations and assign distinct missions to each. Again, this step would help avoid duplication of efforts and assist in efficient management of agricultural research lands. The final recommendation was to undertake strategic planning with a horizon of 10-20 years into the future.

Dr. Brown's report is a blueprint for creating a coordinated three-pronged university-based extension, teaching, and research system in the oblast, as well as an institution building plan for VSAU. The LSU AgCenter hopes to help implement this plan over time.

D. Faculty and Staff Training

Training of raion and university specialists associated with the Center was important throughout the project, with the bulk of training activities occurring during the first two years of the project. Ukrainian faculty and other stakeholders traveled to the U.S. to participate in study tours and trainings. Traveling in the other direction, specialists from the LSU AgCenter and other consultants taught courses, conducted trainings, and assisted in project oversight in Vinnitsa. Project staff also received training both in Ukraine and in the United States. Training activities during the project are listed below.

Year 1

- Ukrainian agricultural leaders and farmers attended a two-week study tour of the U.S. agricultural system (2nd quarter).

- Ten faculty members from VSAU completed a month-long training program in extension education at the LSU AgCenter (3rd quarter).
- LSU agricultural specialists visited the Vinnitsa Center during May and June, 1999, to advise project, evaluate project design and implementation, teach classes at VSAU, participate in conferences, oversee demonstration plots, visit with farmers, and work with local faculty (3rd quarter).
- University rectors from VSAU and NAUU along with the U.S. Technical Assistant attended a one-week study tour of the United States (4th quarter).
- Center staff and VSAU faculty trained individuals selected to serve as raion extension specialists (4th quarter).
- Five VSAU faculty members working in the Center completed a month-long training in extension education at the LSU AgCenter (4th-5th quarters).

Year 2

- Two-week study tour of the LSU AgCenter was conducted for the ISS team (5th quarter).
- The director of accounting for the LSU AgCenter traveled to Ukraine to advise project staff on internal accounting practices (5th quarter).
- Two VSAU specialists completed a ten-day training on curriculum development, adult learning, and nontraditional education techniques at the LSU AgCenter (7th quarter).
- A VSAU specialist in animal science participated in a three-week training on beef cattle production by Canadian Agency of International Development (7th quarter).
- The county agent from Louisiana's East Feliciana Parish gave seminars on farm demonstrations and evaluated the state of livestock demonstrations in Vinnitsa (7th quarter).
- LSU AgCenter specialists conducted seminars on adult learning and interactive teaching techniques for faculty and raion specialists in Vinnitsa (8th quarter).
- An LSU AgCenter agronomy specialist evaluated agronomy demonstration projects and gave seminars on evaluation methods (8th quarter).

Year 3

- Project accounting staff visited U.S. credit unions to study their operations (10th quarter).
- In agricultural chemistry specialist from the LSU AgCenter provided training to VSAU faculty in Vinnitsa regarding the development and operation of the soil analysis laboratory (10th quarter).
- Two youth program specialists traveled to Vinnitsa to conduct a survey on the feasibility of 4H-style youth programs in Vinnitsa. They developed youth program designs and provided faculty training in youth program implementation (12th quarter).

- One VSAU specialist and one Center staff member completed a ten-day training session at the LSU AgCenter on curriculum development for extension programs. (13th quarter¹).
- A series of training sessions on the theory and practice of university-based extension were conducted for faculty from Uman Agricultural Academy, Kanyanets-Podilsky Academy, and Kharkiv University (13th quarter).

E. Organization of Field Work in Raions

Early in the project, it became clear that a local presence was needed to build farmer trust and to provide accessible extension services at the local level. Some farmers were prevented from traveling to the Vinnitsa Center due to unreliable transportation, weather barriers in the winter, and a lack of time during the growing season. Initially, many farmers viewed the Vinnitsa Center as another mechanism to assist the large collectives, and distrusted its motives in approaching private farmers. The opening of local extension offices, initially in 13 raions and ultimately in all Vinnitsa raions, brought Center services closer to the individual farmer and helped to build trust between farmers and the Center. The resulting closer contact between the Center and farmers uncovered the need for education programs in health, nutrition, and youth leadership. In most cases, raion offices were located in space provided at no cost to the project by the Agro-Industrial Complex. In two cases, Tulchin and Verhivka, the offices were located at the local agricultural colleges, further building ties between the project and educational institutions. Individuals to staff the raion offices were selected by the faculty person responsible for the office with final approval of the rector of VSAU. Two main criteria were used in the selection of specialists: educational background, preferably a degree in agriculture, along with practical experience, and approval by the local farmers association. During the fifth project quarter the initial 13 local raion extension offices opened for business. The project immediately sought the support of local raion administrations, and by the eighth project quarter, the project developed an agreement with each raion administration that the local administration would support the raion office beyond the tenure of AID funding. By April 2001, the Center had opened and staffed offices in all Vinnitsa raions.

F. Partnerships, Relationships, and Collaborations with Growers Associations and Local Government Administrations

Beginning in the first project year, Center staff made contacts with representatives of all aspects of the local agricultural economy, including growers associations and raion administrators. Initially, growers associations were poorly organized at both the raion and oblast levels. The Center worked closely with them to increase their effectiveness and to develop new organizations, lending technical assistance and even office space. The Center facilitated the creation and development of the following organizations:

- The Women Farmers Association,
- Apple Growers Advisory Committee,

¹ The "13th quarter" refers to the period October 2001 – February 2002, the final five project months. All other project quarters consist of three months each.

- Vegetable Growers Advisory Committee,
- Swine Producers Advisory Committee,
- The Vinnitsa Growers Association,
- Potato Growers Association, and
- Commodity specific advisory committees in 13 raions.

The president of the Vinnitsa Oblast Private Farmers Association served as an advisory board member to the Center, keeping the Center fully apprised of the interests and concerns of private farmers in the oblast.

Oblast and raion administrators have strongly supported the Center and its activities. For example, the deputy minister of agriculture visited the Vinnitsa Center and recommended that heads of agricultural boards from all oblasts conduct at least one meeting at the Vinnitsa Center to showcase its achievements. The Center and a raion office also received visits from national agricultural leaders involved in the formation of a national advisory system, including visits from the director general of the Farmers' Support Foundation, the president of the Ukrainian Farmers Association, and the director of the Information Center of the National Growers Association. Center staff worked closely with raion administrators to develop agreements for raion administrations to assume the financial support of raion offices at the project's end, thereby assuring ongoing financial and administrative support and sustainability of the raion-level extension offices.

G. Project Evaluation

The conscientious use of evaluation data in planning and project implementation is a proven strategy in good management. A hallmark of this project has been its use of aggressive internal evaluation as a tool in improving project services and operation. Each year, evaluation specialists from the LSU AgCenter have conducted in-depth evaluations of project activities and produced reports including findings and recommendations. Project management then used these recommendations to make changes. For example, during the second year the project administrative activities were reorganized in order to be more responsive to farmers. New formal policies and procedures for Center operations were drafted during the third year in response to recommendations from the second annual evaluation report. In addition, the 27 raion offices were reorganized into three districts, with one university specialist assigned to oversee each district. This change streamlined operations and lines of communication between raion specialists and university specialists.

The second annual evaluation report revealed the impact of Center operations on private farmers and agriculture in Vinnitsa. Through its development, the project has been careful to track measurable impacts related to its services in order to know what works and which services have needed improvement. Some of the impact findings from the final internal evaluation report are presented below.

- All registered private farmers in the oblast have been reached through workshops, seminars, field days, demonstrations, publications, radio and television programs, and personal contacts with raion and university specialists.
- Private farmer participation in the Center's programs has increased substantially over the three years of the Center's operation. Eighty-five percent (85%) of participating farmers reported satisfaction with the quality and value of the information they received.
- More than 75 percent of private farmers learned new ideas and skills from the agricultural, legal, business, and organizational information presented in the Center's education programs. These included crop rotation, new potato varieties, how to apply pesticides, protein feed mixes, how to make business plans, how to develop bylaws for a private farm, benefits of fixed tax in agriculture, and calibration of ploughs.
- The Center is preferred as a source of agricultural, legal, business, and organizational information over the agrarian ministry, private companies, colleges and universities, or other farmers.
- Seventy-five percent (75%) of private farmers have used the computerized ISS developed by the World Laboratory to get answers to questions about production, marketing, and management.
- A majority of private farmers have benefited by being involved in some way in the Center's collaborative work with private agribusiness companies.
- Interaction with the Center appears to have had a positive influence on the general outlook of private farmers toward democratic and market-oriented changes in Ukrainian agriculture, society, and life.

IV. Objective #2: Develop an Outreach Service

The goal of this objective was to establish and operate an outreach and extension service to actively involve and enable new and current private farmers to understand and adopt research-based agricultural technologies, apply free market decision-making skills, and become self-sustaining through maximizing productivity and profits. Staff from the Center and VSAU faculty became actively involved in assisting farmers and farm families to plan and manage their farming operations as market-driven private enterprises. The Center implemented its outreach component on several fronts by conducting, facilitating, and developing the following:

- Seminars and workshops on a wide range of topics,
- Farm visits and consultations,
- Telephone and personal consultations by VSAU faculty specialists,

- Demonstration plots,
- Brochures on topics of interest to farmers,
- A farmers' library,
- Media outreach, including newspaper articles, TV, and radio programming,
- ISS databases,
- A farmers' credit union,
- The soil analysis laboratory, and
- Youth programs.

During the implementation of this objective, several factors became clear: (1) special extension services needed to be developed to reach the large number of HPOs in the oblast, (2) local extension specialists were needed at the raion level, and (3) building trust between farmers and the Center was a crucial but slow process.

During the first year, a variety of farmer contacts, liaisons, technical assistance, workshops, seminars, and field plot trials and demonstrations were conducted. During the second year, the numbers of workshops, seminars, and field demonstrations were significantly increased. In direct response to farmers' stated needs, 13 raion offices were opened, a youth program was implemented in Lipovets Raion, information was prepared and disseminated on credit unions, a farmers market was developed jointly with the Vinnitsa Oblast Private Farmers Association, advisory committees of farmers with similar interests were convened, more HPOs were contacted, and farmer exhibitions were held. The Center facilitated the organization of a credit union known as the Credit Union of Vinnitsa Farmers. During year three, the numbers of seminars, workshops and other outreach activities again increased dramatically. The number of raion level offices was increased from 13 to 27 providing local support to farmers in each raion in Vinnitsa. The Credit Union of Vinnitsa Farmers received technical assistance in drawing up documents and a study tour of U.S. credit unions was organized and completed. The credit union raised capital and issued its first loans.

A. Private Farmer Needs Assessment Survey

At the beginning of the project, a survey of private farmers was designed and implemented to guide the design of outreach services. The survey was administered to 200 private farmers at workshops and during individual farm visits in the first year. The survey results and the Center's experience in the first year indicated the following needs of private farmers:

- Special outreach services for HPOs,
- Quick and accessible credit,
- Raion-level services,
- Technical assistance for a range of skill and knowledge levels,
- Input supply and post-harvest handling advice,
- Identification and development of markets for agricultural products, and
- Youth development programs.

B. Education Programs and Activities

Education programs and activities were then planned to meet the needs revealed in the needs assessment survey. Workshops and seminars were developed and implemented, materials were collected for the Center library to be on hand for in-person and telephone consultations, and demonstration plots were set up. Experts in law, marketing, and other areas were recruited to staff the Center in order to provide accurate technical answers in response to farmer inquiries. The following topics have been covered in educational programs and activities:

- Farm accounting and taxes,
- New technologies of feed production,
- Artificial insemination,
- Veterinary services for livestock,
- Vegetable production,
- Pesticide application,
- Legal issues of private land ownership,
- 4-H club activities,
- Growing grain, vegetable, and feeding crops,
- Potato production,
- Sugar beet production,
- Winter wheat production,
- Problems in pig production,
- Informational and consulting provision of farm activity,
- Legal issues related to privatization,
- Orchard production,
- Business plan development,
- Labor protection,
- Farm cooperatives, and
- Establishment of agricultural service cooperatives.

C. Collaboration with Agribusiness

The Center helped forge strong links with the agribusiness community for the mutual benefit of farmers and agribusiness. Facilitating links between private farmers and agribusiness companies has helped the agricultural production system work more smoothly.

During the first year, the Center focused on helping agribusiness firms see how they could benefit from Center activities, such as using ISS data, and how they could help educate farmers about their products by interfacing with farmers through seminars and participating in demonstrations. A roundtable meeting with agribusiness representatives introduced them to potential marketing, client contact, and other uses of the ISS data. Contributions were sought and obtained for seminars, field days, and demonstrations, extending the Center's resources for such outreach activities.

During year two, the Center hired an agribusiness liaison to enhance links between the Center and agribusiness and to strengthen ties between private farmers and agribusiness. An emphasis was placed on the upstream end of the agricultural sector, including input supply (e.g., seed, fertilizer, and farm machinery). The Center established ongoing collaborative activities with various businesses to plan and implement workshops and demonstration plots for farmers. This collaboration enabled the Center to present a number of new workshops and reach more farmers. The Center organized an agricultural exhibition featuring the products and services of several agribusiness companies. The Center sponsored seminars in which agribusiness companies made presentations directly to farmers. The Center also worked with different farmer associations to strengthen these groups and to help them forge useful links to agribusiness.

The following are some examples of the Center's collaboration with agribusiness during the second year of the project.

- During the fifth project quarter, the Center organized a presentation for agribusiness companies on the use of the Center's computerized information support system. Several companies pledged their support to collaborate in future demonstration programs and workshops.
- In December 1999, AGCO/Massey Ferguson organized a one-day roundtable to discuss credit for private farmers. After a subsequent discussion in February 2000, legitimate ways of making loans and designing specific loans for private farmers were discussed.
- A December 1999 meeting on the development of quality feed and oilseed crops resulted in a number of agribusiness companies engaging in workshops and field demonstrations. For example, Kiev Atlantic donated quality feed to develop feed trials on private swine production farms. Progressive Genetics and Stroom-Agro Ltd both agreed to provide interaction and field demonstrations for private farmers.
- Semco, a vegetable seed supplier with a network of shops throughout Vinnitsa Oblast, agreed to distribute Center information to its customers. This action assisted both the Center in publicity and facilitated information flow to farmers.
- Kiev Atlantic participated in the agricultural exhibition organized by the Center. The company and the Center worked together to develop demonstration trials on private farms using the company's poultry feed product. Selected farmers were given the opportunity to become regional distributors for Kiev Atlantic.
- Two German-run companies, Agrochimtehnologia and Raiffhaissen, held field days for Vinnitsa farmers on land they lease in Vinnitsa Oblast. These field days enabled farmers to observe farm operations based on economic efficiency.

- **Gigiena Bio provided the feed premix “Elita” for demonstration feed trials on pigs. Several Vinnitsa farms participated in the demonstrations.**

During the third year, the Center pursued a strong focus on pesticide and agrochemical use training. The Center held a second annual agricultural exhibition with a notable increase in participation by agribusiness companies, including: Gigiena Bio, Nutrafeed, and Kiev Atlantic. The demonstration programs continued and agribusiness companies began recruiting farmers to serve as distributors for their products. Some other examples of year three collaborative activities are listed below.

- **In March 2001, the Center reached an agreement with the Lviv Plant Protection Institute for the Institute to train raion specialists, farmers, and HPOs in plant protection. Agribusiness companies participated by giving a seminar on the use of biological agents to control Colorado potato beetles.**
- **Representatives of the Holland Ukraine Fruit Project visited the Center to discuss plans to produce soft fruit organically in a raion in Vinnitsa. They agreed to give varieties of Dutch strawberry plants to the Center for demonstration plots and to provide inputs, technologies, and markets. Several farmers and HPOs were selected for possible inclusion in the demonstration program in Mohiliv-Podilskiy, Tomashpil, and Bar Raions.**
- **Center personnel met with representatives from a processing plant in Mohiliv Podilskiy to develop supply contracts between farmers and the plant. As a result, the plant agreed to provide inputs to farmers on credit. The Mohiliv Podilskiy raion specialist worked with farmers and the Center lawyer to develop individual supply contracts.**
- **A VSAU animal scientist facilitated the expansion of the livestock demonstration program by training HPOs and farmers in demonstration methods and recruiting new agribusiness participants. Based on the successful demonstration results, the Center produced two educational videos and written handouts for use in winter seminars.**
- **During the final project quarter, Nutrafeed and Gigiena Bio were arranging partnerships with farmers to become distributors for their products at the raion level.**

D. Farmer Associations

From its inception, the Center worked to strengthen various farmer and trade association groups. Initially, these groups had been noted to lack strength, organization, and effectiveness. The Center worked to help strengthen these groups through a number of initiatives. Over time, trade and commodity associations gained in strength and provided new resources and opportunities to their members. The following are some examples of activities facilitated by the Center involving farmer associations.

- During the third year, the Center worked to strengthen the Vinnitsa Apple Growers Association by assisting in the organization of an advisory committee. Meetings were held with the Association and the director of the Uman Agricultural Academy Fruit Department. This group agreed to meet regularly to advise the Center on outreach strategies for apple growers. In September 2001, the Center sponsored a trip for members of the Apple Growers Association and faculty from the Uman Agricultural Academy Fruit Department to visit an orchard in Chernivitsi Oblast noted for its outstanding use of modern technologies in fruit production.
- The Center organized a visit by a Farmer-to-Farmer volunteer from the USAID-funded Citizen's Network for Foreign Affairs, Inc. (CNFA) project to assist fruit growers in technologies and marketing. The volunteer visited six raions and met with HPOs, farmers, and raion specialists. He also conducted a Center-sponsored seminar on organizing a marketing cooperative through the Vinnitsa Fruit Growers Association.
- Center staff met with the president of the National Union of Cooperatives to facilitate an agreement between VSAU and the Union to provide consultation to growers associations such as the Vinnitsa Growers Association.
- The Center helped the Vinnitsa Potato Growers Association organize a farmers market in July 2001. Raion specialists encouraged HPOs and other farmers to participate. Agribusiness companies such as Zeleniy Svit also agreed to participate.
- The Center provided assistance to HPOs and potato farmers in Bar Raion to register a local office of the Potato Growers Association.

Through these activities, farmers are beginning to see the benefits of effective organizing. Agreements to distribute products and receive inputs on credit from agribusiness are tangible results of farmers coming together. Farmer organizations are also beginning to improve marketing opportunities for members. Still, farmer organizations are less effective than they could be and the Center should continue to help develop leadership skills of local farmers and encourage effective organizational models for farmer groups.

E. Involvement of Household Plot Owners

Early in the project it became clear that an emergent force in privatized agriculture, the Household Plot Owner (HPO), was making a significant contribution to Vinnitsa agricultural production. By the year 2000 an estimated 650,000 HPOs produced agricultural commodities in Vinnitsa Oblast. In many cases, the needs of HPOs resemble those of other farmers: availability of credit, information on the use of new technologies, and assistance with legal and tax issues. But due to the small size of their operations, they also have unique needs. As a result, the Center developed special outreach methods for HPOs, such as seminars designed specifically for HPOs. During the third year, the Center conducted 17 seminars targeted to HPOs, and over a fourth of the farm visit consultations conducted by specialists were with HPOs. Center staff and specialists continue to encourage HPOs to attend all types of Center activities. HPO attendance rose steadily throughout the project and many HPOs participated in field days and demonstration projects. Overall, HPOs make up an estimated 25 percent of Center clients.

F. Use of Information Support System

The ISS created by the World Laboratory has served a central role in the dissemination of up-to-date information to farmers and others in the agricultural community. The ISS is a computer-based system that contains current and detailed data on geography, production technologies, farm management, marketing, and legislative issues. Each raion office is equipped with a computer, internet connection, and telephone. Raion specialists use the system to answer specific inquiries. Raion specialists also maintain information on each individual farmer in the database to track the needs of that farmer as well as farmers in general. The ISS has greatly enhanced the effectiveness and credibility of the raion specialists by providing them with accurate and timely information to respond to farmers' inquiries.

Over the three years, the ISS has been greatly developed and expanded. During the first year the ISS team designed and began implementing the system, using data gathered from the survey of Vinnitsa farmers. During the second year, the database modules on various topics were designed and implemented. By year three, the team had expanded the system to all 27 raions and focused on completing the modules and adding new topics. The system currently contains the following modules and stand-alone programs:

Geographical Information Systems (GIS) including Vinnitsa Oblast Atlas
Beekeeping
Animal Husbandry
Agricultural Technologies
Animal Diseases
Economic and Financial Analysis
Pest Identification and Plant Protection
Grain Crop Diseases
Marketing Information
Agribusiness Directory

Several programs are interactive and assist farmers in a variety of activities including how to calculate fertilizer amounts, create crop rotation flow charts, analyze farming costs, and perform basic accounting. A website was launched giving the Center a presence in cyberspace and allowing remote online access to the ISS.

While the raion specialists and individual farmers are the primary users of the ISS, the Center has aggressively sought to link others in the agricultural community to the system. In the first year, the ISS team conducted a roundtable discussion with agribusiness to raise awareness of the ISS and to encourage agribusiness to contribute data to the system. As a result, agribusiness has been willing to share data for inclusion in the system and has found its own uses for system data. The most frequently used data in the ISS are the data on marketing and agribusiness companies.

In the third year, the team sought to identify and reach a wider spectrum of potential users of the ISS. Presentations and meetings have been conducted for: the National Academy of Agrarian Science (NAAS), MAP, the State Commission for Pesticide Registration, university rectors, and the international conference, "Agrarian Education at the Beginning of the Third Millennium."

G. Soil Laboratory

During the first two years of the project, the Center identified as a problem farmers' lack of knowledge regarding their soil content. Knowledge of soil content is necessary to appropriately apply organic and mineral fertilizers and to maximize production of agricultural crops. Many farmers, lacking this knowledge, incurred unjustified costs by applying inappropriate amounts of fertilizers resulting in diminished crop yields. To address this problem, the Center, in cooperation with VSAU, set up a soil laboratory to test soil samples and to advise farmers on the test results. Planning proceeded and by the third year, a laboratory had been selected, renovated, and furnished with equipment purchased with project and VSAU funds, and donated by LSU. An LSU expert trained local raion specialists in sample collection techniques. Soil laboratory operations began during the 11th project quarter and received accreditation by the Committee of State Standards of Ukraine during the final project quarter. The laboratory is equipped to process samples of soil, water, and grain. In its first few months of operation the soil lab processed 545 soil samples for 115 farmers. In each case, a university faculty specialist made recommendations to the farmer based on the analysis results. Soil probes were distributed to raion specialists to aid in collecting samples on behalf of farmers.

H. Youth and Family Programs

Early in the project farmers indicated an interest in activities involving the whole family. Research indicates the importance of the interplay among family, school, and community in the socialization of children and youth. Family-centered activities also tend to build trust in institutions among parents. To meet this need, Center staff organized and implemented accounting seminars targeted to farm wives. Several sessions of this popular

short course have been offered. In addition, the Center began developing a youth leadership program. In the spring of 2001, two LSU AgCenter specialists visited the Center and helped launch the new youth program. They conducted focus groups with local youth, school directors, and the Center's youth development team. This group developed a strategic plan for youth development and began implementing the first facet of the youth development program. Known as the "Pig Chain" program, six children between the ages of 9-17 were selected by raion specialists and regional supervisors to participate. Each child received a piglet to raise. Each child's family agreed to bear the cost of raising the piglet, including insemination. In return, the family should donate two female piglets from the original pig's litter back to the Center. These piglets, in turn, would be given to other children, creating a "Pig Chain."

The youth development team initiated and conducted many different activities in the village schools throughout the oblast. In Bershad Raion, the youth development team helped children form a youth club titled "Young Master Farmers." One of the club members received a piglet from the Pig Chain program. The Young Master Farmers toured the Center and university and established email contacts with members of American 4-H programs.

I. Farmer Participation in Education Activities

As expected, farmer participation in education and outreach activities increased each year. Table 1 below shows the percentage of farmers surveyed in the second annual evaluation reporting involvement in educational activities.

Table 1. Participation of Private Farmers in Education Programs of the Center

Education Program	Number and % of responding farmers		
	1998-99	1999-2000	2000-2001 (a)
Workshops attended	86 35.4%	205 79.8%	215 84.0%
Visits by specialists to farmers	118 46.6%	209 79.5%	257 97.0%
Visits by farmers to Center Office	92 36.5%	208 78.5%	249 93.3%

(a) For the period October 1, 2000 - April 30, 2001, not a complete year

The increase in farmer participation is a testament to the increased level of trust in Center services and in the quality of information received by farmers and others in the agricultural community. In the final project year the Center received 3,200 requests for information, recorded 2,700 seminar attendees, and recorded 6,400 visits between farmers and Center specialists at either farms or Center offices.

V. Objective #3: Develop Formal and Informal Education Programs

The focus of the Center's formal and informal education objective has been to give alternative means of gaining agricultural knowledge, particularly at a time of vast change in the agricultural economy of the oblast. The long-term objective is to transmit technical abilities to enable farmers and agribusiness to define and use appropriate strategies to solve problems in a sustainable and efficient manner. In order to do so, Center personnel realized that both formal and informal education needed to be extended to a new clientele, beyond the traditional agricultural college student. As a result, a two-year certificate course was developed and implemented through a newly created entity, the Institute of Extension Education at VSAU. The informal education program consisted of short courses aimed at targeted groups such as novice farmers and farm wives.

A. Formal Education Program

During the first two years of setting up the formal education component, the education specialists engaged in planning, curriculum development, faculty training, and the creation of a new legal entity, the Institute of Extension Education which is housed at VSAU. By year two, a new, two-year certificate program in agriculture was in place. During the second and third years, the first group of formal education participants completed the coursework for the new two-year study program. In year three, the second group of participants began the course of study.

During the first year of planning for the formal education program, an LSU senior specialist conducted two workshops in Vinnitsa to identify target participant groups, and the best content, format, and duration of the course. Later in the year, two VSAU faculty representatives received curriculum training at the LSU AgCenter.

During year two, planning and preparation activities continued. Decisions were reached regarding target clientele and the type of education to offer. Two client groups were identified:

- a. Experienced farmers who would receive primarily informal education targeted to specific needs and/or problems, and
- b. Inexperienced farmers who would receive formal education and were further divided into two groups: (1) those with education levels below or equivalent to high school completion, and (2) those with at least some college education or above.

The first priority of the formal education component was determined to be a course of study offered to inexperienced farmers. The complete course of study would consist of four sessions over two years. Each course would consist of between 10 and 30 hours of study, with work divided evenly between class work and individual assignments. Upon completion of the course, students would receive a certificate.

With the framework in place, VSAU faculty continued training, curriculum development, and course preparation. They attended a seminar entitled "Nontraditional Teaching Methods in a Formal Education Setting." VSAU decided to include extension education as part of the regular undergraduate and graduate curricula and a new course entitled "Informational and Consulting Provision of Farm Activity" was developed and included in undergraduate and graduate curricula for the 2000-2001 school year.

VSAU representatives recruited and selected 19 participants from 41 applications for the new two-year certificate program. The initial group of participants ranged in age from 19 to 52 years and all were inexperienced farmers with little previous education. In October, 2000, the formal training program officially began with 19 students. In February 2002, 17 members of the initial class graduated and received certificates of completion. The curriculum topics for the first two sessions are listed below.

Session 1

- Extension theory and practice
- Agricultural economics
- Accounting
- Finance and tax legislation
- Farm management
- Technologies in plant and livestock production

Session 2

- Microeconomics
- Organization of farm operations
- Planning and forecasting farm operations
- Analysis of agricultural and commercial activity
- Accounting and taxes
- Farm management
- Marketing of agricultural products
- Civil and cooperative laws
- Computer technologies
- Soil cultivation and agro-chemistry
- Plant physiology and plant protection
- Animal physiology and livestock keeping
- Mechanics and servicing of agricultural equipment

During the third project year, materials and teaching aids for sessions three and four were prepared and utilized. In October 2001, a second group of farmers began the two-year course.

Finally, the VSAU Economics Department introduced a new specialization, "Information and Advice for Farm Operation Support," to train specialists for the advisory service. Center staff prepared organizational documents, methodology, a work plan, and curricula for this new specialty, and submitted them for approval.

B. Short Courses

In addition to the two-year certificate program, many short-course training sessions were held on a variety of topics for different clientele groups, ranging from raion specialists to farm wives. In year two, a popular farm accounting course for farm wives was developed. Seventeen farm wives attended the first one-week farm accounting course. New raion specialists attended a ten-day seminar on extension theory and practice. All raion specialists attended another ten-day seminar on technological aspects of agricultural production.

In the third year, the short courses continued. The second and final stage of the farm wives accounting course was completed and a new group began the course. At the request of USAID and Kharkiv University, a training program was developed and conducted by the Center's formal education team to train Kharkiv agricultural specialists.

The programs developed under the informal and formal education objective are offering alternatives to non-traditional students needing to assimilate agricultural information in a rapidly changing economy. The university has been a strong partner in developing new educational alternatives for the newly privatized farmers of Vinnitsa Oblast through the creation of the Institute of Extension Education and the broadening of its curriculum to include extension courses.

VI. Objective 4: Conduct Agricultural Technology Research

This objective was designed to further agricultural research in Ukraine through joint projects and the sharing of information. This activity preceded the project activities, and continues to serve as a strong link between the Ukrainian and U.S. partners. This work is based on the premise that scientific research and investments in trained manpower are vital to the agricultural sector. The enhancement of existing Ukrainian agricultural technologies is therefore essential for sustainable indigenous agricultural production. The support activities and outreach service that the Center provides the private farmer in Vinnitsa cannot be sustained if the problems faced by the farmer are not addressed through a research base. Further, a strong link between the farmer and the research/academic community is needed so that the feedback loop from the farmer to the researcher is complete. Thus, this fourth objective is fundamental to and reinforces the Center's mission in Vinnitsa. The ultimate goal is to promote applied technology research conducted by Ukrainian scientists at Ukrainian institutions.

An additional benefit of research scientist involvement in the Center has been the willingness and interest on the part of the scientists to respond to the individual farmer's need for current, research-based information. The scientific and professional credibility of project leaders and extension specialists located in the raion offices is based on the ability to contact research scientists to address new and unexpected problems as they arise and to deliver that information to farmers.

Several research projects have been pursued under this contract. Each project is described below.

A. Endophytic Colonization of Wheat (*Triticum vulgare*) and Rice (*Oryza sativa* L.) with Nitrogen Fixing Bacterium *Klebsiella oxytoca*

The objective of this study was to test selected *K. oxytoca* (Kleps) mutant strains with improved plant colonization characteristics for microplot experiments on wheat. Increasing concerns regarding the health hazards of agrochemicals, especially in the radioactively polluted areas of Ukraine, along with economic concerns have promoted fundamental research in alternative agriculture and the search for new, inexpensive, and practical inoculants. The ultimate purpose of this project has been to develop a practical, novel inoculation for enhancing crop production by protecting plants from disease. Specifically, researchers are designing an inexpensive carrier of the endophytic bacteria as a potential alternative to agrochemicals. In the spring of 2000, experiments were carried out both on research plots and in volunteer farmers' fields. In the experiments, fields of barley received one of three treatments: Kleps inoculation, Baitan (pesticide) inoculation, and a control group with no inoculation. The growth yields were later analyzed to reveal:

- a. Plant protection results of Kleps were similar to those of Baitan (both were superior to the non-inoculated control group), and
- b. Quantity and weight of seeds produced from the plants treated with Kleps were higher than in either of the other two groups.

Encouraged by the positive result from the initial trials, work proceeded on two fronts during the third project year: improving the manufacturing design of the inoculation, and testing the new inoculation on potato and soybean crops.

The technology explored to improve the inoculation manufacturing design exploited the capability of some bacteria to stimulate the EPS production of *Paenibacillus sp.* Results of experiments on co-cultivating *Paenibacillus sp.* with klebsiella, agrobacteria, pseudomonades, and erwinia showed the possibility of a two-step method for inoculation manufacture. The critical factors in inoculation manufacture were the population size of the active strain which determines a sort of inoculation, and the concentration of EPS productions by *Paenibacillus sp.* Five variants of preparation were recommended for field trials: Kleps-Z, and variants of novel preparations based on *Paenibacillus sp.*, *Pseudomonas sp. 7*, *Pantoea agglomerans*, and *Bradyrhizobium japonicum* IMBG 293. Table 2, below, indicates the crops on which each variant was tested.

Table 2. Institutions, Crops, and Variants used in Field Tests

Institution	Crops	Variants Tested
IMBG, NAAS	Buckwheat, Potato, Soybean,	Pseps7, Rhizopae
NAAS	Potato	Pseps54, Pseps7
NAAS	Wheat	Pantopae
Kiev Vegetable Factory (private greenhouse company)	Cucumber	Kleps-Z, Pseps5, Pseps7

Crop development data showed that the plants treated with the new inoculants P5 and P7 increased potato yields by nine to ten percent over non-targeted plants. Formulations based on the nodule-forming bacterium, *B. Japonicum*, IMBG 293 were compared in trials with the Kleps treatment. Analysis of soybean yields showed a low efficacy of the new inoculants. In contrast, Kleps increased soybean yields by nearly 22 percent. The Ukrainian Patent State Committee is considering awarding UBWL and the Institute of Molecular Biology and Genetics of NAAS with the Ukrainian patent “Biopreparation for plants KLEPS.” A successful patent is anticipated to promote commercialization of KLEPS[®]™ if start-up financing can be established.

B. Isolation, Characterization, and Utilization of Insect Resistance Genes

The loss of world food production due to pest insects has been estimated at 28 percent. Private farmers and householders use chemical insecticides spontaneously and often incorrectly (e.g., against resistant pests). Others do not use chemical insecticides with proper frequency due to the high cost of the insecticides, contributing to the problem of resistant pests. The Colorado potato beetle is a particular problem for Vinnitsa farmers. Research data have indicated that a few new *B.thuringiensis* (Bt) strains could be a useful biological control for the devastating Colorado potato beetle. These strains were tested in volunteer farmers’ fields.

In order for this project to work, the participating farmers needed training in modern agricultural technologies based on the use of these genetically engineered bio-insecticides. Many farmers held prejudices against genetically modified organisms and lacked a clear understanding of what these organisms were. A key step, therefore, was to educate farmers about effective pest control practices, including the maintenance of the general environment.

The scientific aim of the project was to investigate new *B.thuringiensis* (Bt) strains isolated in Ukraine and develop novel bioinsecticides against the Colorado potato beetle. Early in the investigation, the scientists identified insecticidal crystal proteins that are produced by these strains, assessed their toxicity, and determined the genes that coded for these proteins. The Bt 949 strain was chosen for developing an insecticide spray formulation against the Colorado potato beetle larvae. The main crystal protein of Bt 949 belongs to Cry 1Ba group and has dual specificity – to *Lepidoptera* (*D. sacharalis*, for

example) and *Coleoptera*. Methods were developed to increase the specific toxicity for Colorado potato beetle larvae by decreasing the protein's molecular weight. The methods used are reproducible and could be replicated in large-scale production of a Bt 949 insecticide.

Laboratory versions of a Bt spray formulation were produced in enough quantity to treat one hectare of potato crop in restricted field tests. The proper conditions necessary for storage of the spray formulation were determined. These field tests indicated that crystal protein fragments with molecular weights 85 kD and 67 kD had the highest toxicity for Colorado potato beetle larvae. As a direct result of the field tests and laboratory experiments, the main characteristics of Bt 949 spray formulation were developed, including bacterial growth conditions, the method of effective crystal protein modification, and storage conditions.

C. Development of Vaccines using Liposomes

Classical Swine Fever (CSF) is a particularly dangerous infection. In the past decade, CSF has been responsible for high economic losses in pig farming all over Europe. Ukraine experienced numerous cases of CSF in 1995, wild boar infection in 1998 and 1999 and two cases, including a domestic pig, in 2001. Ukrainian concerns about CSF are increased by an even higher incidence of the disease in neighboring countries such as Moldova. Because of the high potential for loss during a CSF outbreak, CSF was chosen as a model for the development of a sub-unit vaccine.

During the first year, literature and computer database reviews were conducted, leading to the selection of the RNA virus control sequence strain Shi-Min/12283nt/ for laboratory use. The recombinant protein of CSF virus was propagated in *Escherichia coli*. It was shown to be antigenically active. This method is a cheaper alternative to propagation of the virus in cell cultures *in vitro*, an important factor in manufacturing an affordable vaccine. During years one and two, a vaccine was produced, and during year three its effectiveness in antibody production was tested in mice, rabbits, and pigs. A variation in injection site and type (e.g., subcutaneous vs. intramuscular) was determined to have no effect on the experiments. All subsequent experiments used intramuscular vaccination techniques.

During the third year, an experiment was conducted using ten pigs. Two formulations of vaccine were tested using different adjuvant formulations. A non-immunized group and a group immunized with *E.coli* lysate served as controls. A significant antibody response was obtained with three immunizations, while two immunizations were insufficient to produce a response. Tests are now being conducted on a large scale (200 pigs) and will test the cell-mediated immunity. The success of this work will have great impact in the control of the devastating CSF virus.

VII. Summary of Accomplishments

Given the huge changes in Ukraine during the 1990s and the resulting decline in agricultural production, this project has made tremendous progress in supporting farmers and helping to shape a new order in terms of the structure and linkages within the agricultural sector. Specifically, the following accomplishments can be attributed to the work of the Vinnitsa Center.

1. The Center created an effective system for the delivery of relevant agricultural research results and information about up-to-date agricultural technology to individual farmers and HPOs.
2. The Center established offices staffed by knowledgeable, trained local specialists in all 27 raions in Vinnitsa Oblast.
3. The Center developed and implemented the ISS, a comprehensive, computerized information system.
4. Through workshops, expositions, conferences, and the ISS, the Center strengthened the ties between farmers and agribusiness.
5. The Center instituted a system of dialogue among all constituents with agricultural interests.
6. Essential links were created among stakeholders in the agricultural economy, i.e., farmers, agribusiness, researchers, and educators.
7. The Center effectively mobilized local resources to develop a sustainable agricultural education and outreach program.
8. The Center had measurable positive impacts on a significant number of clientele.
9. The Center provided staff development for faculty resulting in the implementation of new teaching techniques.
10. The Center helped shape and change research and teaching priorities at the agricultural university level.
11. The Center implemented programs to engage whole family units by introducing accounting classes and youth programs.
12. Work with credit union and various growers associations encouraged self-reliance and promoted effective leadership development.

13. Raion and oblast administrators began to view the university and its mission more positively.
14. Local government administrations began to better understand and support farmers and their needs.
15. Center management institutionalized systems for effective planning, implementation, and internal evaluation.
16. A vaccine against Classical Swine Fever that produces an antibody response in animals was developed.
17. The characteristics of an effective bioinsecticide using *B.thuringiensis* (Bt) were determined for use against the Colorado potato beetle.
18. Treatment of different crops with an inoculation derived from *K. oxytoca* bacteria (Kleps) was shown to protect plants effectively from disease.

VIII. Conclusions and Recommendations

The Vinnitsa Center has been successful on many levels. The project team has overcome many barriers including the initial lack of trust of the Center's motives and a general failure among indigenous farmer support mechanisms, such as commodity groups, to provide widespread and useful information which had been affecting farming operations throughout the oblast.

The Center has identified and sought to remedy many needs in the oblast. HPOs have been identified as significant agricultural producers with unique needs. Seminars and other services were developed and targeted specifically to this group, as well as to farm wives and youth. Center staff identified the lack of favorable credit as an issue limiting farm success and addressed this by facilitating the creation of a farmers' credit union to provide loans and support to private farmers. Formal and informal agricultural education programs have been developed and successfully implemented. The Center has supported the growth and enhancement of indigenous farmer support mechanisms as well as supporting local scientific research efforts.

The Center's establishment and development of an outreach education program has made a large difference in the personal lives and professional farming practices of Vinnitsa Oblast private farmers. On all measures of educational outcomes used in the last internal evaluation there is evidence to suggest that private farmers have made significant changes in their farming operations. Great strides have also been made at the institutional level where reforms among the education and research communities are transforming the agricultural support system at all levels.

While the project has had great success in its mission to develop a university-based private farmer outreach and education Center, the following recommendations could enhance the services of the Center.

1. Increased attention should be given to the environmental aspects of land tillage and use of agricultural inputs.
2. The Center should continue to strengthen and broaden its work with HPOs. With the experience the Center has gained in reaching private farmers, HPOs should become a major target of the Center's education programs in the near future.
3. The Center should increase its efforts to assist farmers in developing markets for their products.
4. Farmer organizations are still less effective than they could be. The Center should continue to help develop leadership skills of local farmers and encourage effective organizational models for farmer groups.
5. More emphasis needs to be placed on developing the skills and commitment of advisory committee members.
6. Key stakeholders – raion and oblast administrations, concerned ministries, departments and agencies, private farmers, farmers associations and farming leaders, private agribusiness interests, and universities, colleges and research stations – should be more involved by the Center in collaborative activities to legitimize and support the Center's outreach education program and maximize its impact.
7. University faculty based at the Center and in the raions should be continually updated to learn the latest technology and people skills, and stay involved in ongoing programmatic initiatives and program evaluations.
8. Personal and farming characteristics of private farmers should be considered in planning and conducting educational programs. Research indicates that audience characteristics influence the learning and adoption of new ideas and practices.
9. The Center should provide more training for raion specialists on various teaching techniques designed to reach the diverse adult clientele present in each raion.
10. Future evaluations of the Center should, in addition to measuring educational changes in private farmers and HPOs, determine the economic return on investment in the Center's education programs as well as the social and economic impacts of the Center's work on farming communities in the oblast.

11. The project should implement a merit system of performance evaluation for project employees.

**Support for Ukrainian Private Farming Sector and Scientific
Collaboration: A U.S./Ukrainian Partnership**

Cooperative Agreement No: 522-G-00-01-00202-00

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**Thirteenth Quarter Report
October 1, 2001 ~ February 28, 2002**

March 2002

Submitted by

International Programs

Louisiana State University Agricultural Center

Baton Rouge, Louisiana

In association with

Vinnitsa State Agriculture University

International Center for Scientific Culture

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April 15, 2002

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Thirteenth Quarter Report for Period October 1, 2001 to February 28, 2002
USAID Cooperative Agreement No: 121-A00-98-00631-00

Dear Dr. Muliar:

Enclosed please find the Thirteenth Quarter Report for the above Cooperative Agreement executed between USAID and the LSU AgCenter. The report covers the project activities for the period October 1, 2001 to February 28, 2002, of the project entitled "Support for Ukrainian Private Farming Sector and Scientific Collaboration: A U.S./Ukrainian Partnership."

One hard copy of this report, as required in Section 1.5.2 of the Cooperative Agreement, "Monitoring and Reporting Program Performance," will be delivered to you by Federal Express.

Thank you for your continued assistance and guidance.

Sincerely,

JVL
Lakshman Velupillai
Director

LV:bwc

f/muliar.thirteenth quarter report.041502

cc: Dr. William B. Richardson
Dr. Leonid Sereda
Dr. Gennady Palshin
Mr. Larry Brock
Mrs. Margaret O. Blackwell

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October 1, 2001 – February 28, 2002

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Section I. Summary

The thirteenth quarter starting October 1, 2001 and ending February, 28 2001 completes the activity reporting for the project, "Support for Ukrainian Private Farming Sector and Scientific Collaboration: A U.S./Ukrainian Partnership, Cooperative Agreement No: 522-G-00-01-00202-00. During these months, the Center and raion offices have been active in providing advice and workshops/seminars to private farmers throughout the oblast. This report elaborates on the activities and demonstrates some successes by the Center performed during this quarter.

During this quarter, the Center continued to address the responses to the two evaluations done in the eleventh quarter. In addition, the Center continued to address issue regarding the establishment of the "National Advisory System."

In our outreach activities under Objective #2, seminars, visits, and consultations increased as reported in this document. Further, farmer and HPOs inquiries and farm visits have seen an increase. In addition, the "Farmers Library" has had a number of brochures added to its series. Planning for this season's demonstration and field days and the evaluation of the previous season's demonstrations have provided the opportunities for the agricultural sector to interact and learn new technologies and methods.

The Credit Union has continued to do well during this quarter. The membership has continued to increase providing the opportunity for more loans to be administered.

The marketing department and the law office have received requests from a number of farmers.

The Information Systems Support team continues to update and add information to the ISS databases. The raion offices have been successfully utilizing this information to assist farmers on a daily basis.

Section II describes in detail all activities and results achieved in this reporting period.

Section II. Project Activities

A. Introduction

The thirteenth quarter which includes the period October 1, 2001 to December 31, 2001 plus the two additional months (January 1, 2002 to February 28, 2002) of project were filled with many events and activities that covered all areas of the project's scope of work. They will be described in this report under each project component in detail.

B. Project objective #1: Establishment of the Center for Private Farmer Training and Outreach

Work under this objective was directed toward several goals, these included the raion office updates, work on creating the National Ukrainian Advisory System, faculty training, and development of policy documents.

Modification of the Center

To finalize the process of institutionalization of the Center and following the recommendations given in Dr. S.Verma's evaluation report, the policy development team continued its work on developing a policy document. The project leaders were fully aware of the necessity to have and implement transparent policies for personnel evaluation. Two new documents were developed regarding evaluation of the university and field faculty. The process of personnel evaluation started during the final stages of the project.

National Advisory System

As it is known, the development of the draft of the Presidential Order on the creation of the Agricultural Advisory System for Ukraine, as well as, the Law of Ukraine on the Rural Advisory System were continued. For this reason the project leaders and staff organized two meetings during which the draft of the law was discussed and a list of suggestions were developed and sent to the Ministry of Agrarian Policy. On the request of the Deputy Minister of Agrarian Policy, Mr. R. Schmidt, Dr. G. Loyanych and V. Yamkovenko wrote an article on the peculiarities of a university-based advisory system and the experience of Vinnitsa Center for Private Farmer Training and Outreach for the Ministry's Annual Collection of Articles. All these efforts intended to contribute to the substantial principles on which Ukrainian National Advisory System can be organized.

Training Program at LSU AgCenter

In order to provide training for extension specialists and raion agents from the Centers for Private Farmers Training and Outreach in Vinnitsa, Cherkasy, and Khmelnytsky oblasts in the subject areas of how to plan and conduct effective extension education for private farmers, the Vinnitsa Center's staff has been working on the development of special training programs and curricula in extension education. As the need for trained extension personnel is growing, Vinnitsa State Agriculture University has also included extension courses in its syllabus in all five of the undergraduate departments. Two employees from the Center, N. Fishchuk and V. Yamkovenko,

traveled to the LSU AgCenter to work with specialists from the LSU AgCenter to collect and prepare all necessary materials for these plans.

The objectives of this visit were to:

1) Prepare educational materials for the following courses:

Extension Philosophy:

- History of Extension development in the U.S. and other countries of the world.
- Basic tenets of extension education in the Ukrainian context.

Program Planning:

- Organizing and working with advisory committees
- Situational analysis
- Identification of the needs of clientele
- Establishing program priorities
- Establishing program objectives
- Designing programs and plans of work

Program Implementation:

- Extension teaching methods, techniques, and devices
- Developing teaching plans
- Selecting and organizing appropriate learning experiences
- Monitoring progress and reporting on educational programs conducted

Program Evaluation:

- Evaluation Process
- Evaluation objectives
- Types of evaluation
- Evaluation steps – data collection, analysis, interpretation, reporting and using results

Group Dynamics:

- Organizing groups
- Cultural and sociological considerations in working with groups
- Managing and leading groups

Volunteer Management:

- Volunteerism
- The ISOTURE volunteer development and management model

Leadership Development:

- Leadership as a process
- Leader skills
- Identifying and developing leaders

Adult Teaching-Learning:

- Adult learning basics
- An andragogical model of learning
- Designing and managing adult learning

Youth Development:

- Youth developmental needs
- Organizing and managing youth serving organizations (clubs)

Administrative management.

Policy documents development.

2) Develop curricula for teaching these courses for undergraduate students at the University.

- Identify topics for lectures and practical classes.
- Determine the number of hours necessary for teaching each class
- Develop work plan, with topics for each lecture identified and brief synopsis written for such courses
- Leadership development
- Program planning
- Administrative management

Vinnitsa Center employees successfully implemented the following activities

Objective 1

1. Met with Dr. S. Verma and Dr. R. Richard
2. Met with Ms. B. White and Ms. M. Abbington-Cooper
3. Worked in the LSU Middleton Library
4. Translated some of the necessary materials

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Objective 2

1. Met with Dr. S. Mullen on leadership development.
2. Worked in the LSU Middleton Library

The Vinnitsa team collected and brought back materials to be used in the development of training extension personnel and began the process of organizing an extension library.

C. Project Objective #2: Development of Outreach Services

For the development of this objective, the project staff conducted a number of seminars, farm visits, and individual consultations. Credit Union activity continued; contacts with agribusiness and other projects on development of livestock production were continued; there was an increase in project publications; the soil lab productivity has increased and it has expanded its scope of work; contacts with other projects have continued providing additional benefits to the farmers; and the ISS component was seen expanded and improved.

Seminars/workshops, farm visits and consultations

The number of seminars and workshops for farmers increased during this period with the conclusion of the production season. In addition to seminars with farmers, HPOs, and raion specialists, a series of training sessions (40 hours) on extension theory and practice was conducted for the university faculty from Kharkiv Universities, Uman and Kanyanets-Podilsky Academies. The purpose of the latter was to assist the other universities in understanding the concept of the university-based model for advisory systems and to consider the possibility of organizing centers in their oblasts similar to the one in Vinnitsa.

The number of seminars totaled 54, including:

- o 34 for farmers
- o 6 for HPOs
- o 4 for raion specialists
- o 6 for other university faculty
- o 4 seminars by farmers' association with the Center's assistance

The number of individual consultations with farmers, HPOs, and farm visits increased during this quarter. Many farmers came to the raion and central offices of the Center seeking advice and information. The raion specialists provided ninety-one and a half percent of the total number of consultations (2,151). This number does not include the consultations given by the lawyer and marketing specialists. The report on this activity will be given later in this section.

If we categorize all the clients who received consultations from the raion specialists, we have the following groups and their percentage of the contacts:

- Farmers - 42.5 percent
- HPOs - 22 percent
- New farmers - 7.4 percent
- Women-farmers - 3.5 percent
- Farmers' wives - 4.3 percent
- Other clients - 11.8 percent

The remaining 8.5 percent of clients received consultations from the university faculty. Consultations covered a wide variety of issues from production to marketing, land titling to business plan development and farm management.

The data on these outreach activities are given in Table 1:

Table 1. Outreach Activities and number of Participants

#	ACTIVITY	TOTAL NUMBER
1.	Informational assistance	1271
2.	Consultations provided by VSAU specialists	182
3.	Consultations provided by raion agents to: <ul style="list-style-type: none"> • Farmers • HPOs • New farmers • Women farmers • Farmers' wives • Other categories of clients 	1,969 915 473 160 75 92 254
4.	Visits to farmers and visits of farmers to the office	2621
5.	Seminars	54
6.	Participants in the seminars	1491
7.	Brochures of "Farmer's Library series"	12
8.	Fact sheets	13
9.	Radio programs	10
10.	Newspaper articles	19
11.	TV programs	4

If we compare this table with the previous quarter data, a substantial increase in the project activities can be seen. It can be explained by the continuous growth of the farmers' trust in the quality and value of the information provided by the Center.

Publications

Twelve new issues of the "Farmers Library" brochures were published during this quarter to address specific requests made by the clientele. These brochures covered such topics as "Accounting for the Private Farm," "Raising Cows by HPOs," "Recommendations for Rodent Control," "Colorado Beetle and Transgenic Potatoes," "Recommendations for the Protection of Peas," "Recommendations for Noctuid (Owlet Moth) Control," "Main Pest Problems in Cabbage," "Pests and Diseases in Corn," as well as a number of others. Many discussions with the publishing committee have helped to improve the quality of the Center's published materials.

In addition, thirteen fact sheets were issued, that contained information requested by the farmers about different aspects of agricultural production and labor relations.

Demonstrations

During this quarter, the demonstration committee for the Center finalized the collection and processing of data that were collected from the raion specialists on agronomic and livestock demonstrations during the year 2001. On the basis of the material collected, the final annual report from the demonstration committee was written. This report contains 40 tables, schematics and diagrams illustrating the results from this project activity. The data were collected to develop handouts and visual aids to be used during the winter seminars and workshops for the farmers and HPOs. The results of the demonstrations show the efficiency of new varieties and hybrids, plant protection chemicals and growth stimulators. The list of names and addresses of the private farmers and HPOs who participated in the demonstrations is also included in the report.

Livestock demonstrations deserve some special attention because a lot of work has been done to improve livestock production on the private farm in Vinnitsa oblast. The university faculty and animal scientist, Y. Vanzhula, provided the farmers and HPOs with the necessary assistance in organizing, conducting and tracking the animal demonstrations. He assisted the Center in establishing contacts and starting cooperation between different agribusinesses, that provided their products for farm demonstrations. Several successful demonstrations on feeding systems and rations were developed with his assistance. The results of these demonstrations were used to produce two educational videos, handouts in the form of tables and other visual materials to be used at winter seminars for farmers and raion specialists. Active work is being done to develop a community pasture in the village of Maidan, Vinnitsa raion. The negotiations with the Heifer Project have been conducted regarding the possibility to receive their assistance in the improvement of local dairy cattle genetics.

On the 20th of December, the demonstration committee held a meeting led by Dr. Petrychenko and the representatives of the commercial companies that are accredited to

operate in Vinnitsa oblast, (*Dupont Nemur International, Monsanto, Aventis, Strum-Ágro*). The presentation of the annual report on demonstration activities was made and the companies received the materials on the efficiency of their products. The participants at the meeting also discussed a tentative plan for future cooperation during the next season.

Marketing Department Activity

During this quarter the marketing department continued its efforts in responding to farmers' requests and providing them with necessary information. There were 59 consultations that covered issues from marketing products to production technology. This area continued to be the most critical for the farmers. Nine consultations concerning the terms of credit provided by the Farmers' Credit Union and membership opportunities were also provided. It served as evidence that the farmers are increasingly interested in our efforts. The areas of farming activities responded to by the Marketing Department are shown in the following table:

Table 2. Areas of Farming Activities Responded to by the Marketing Department

Area of activity	Number of requests	Percentage
Product marketing	19	25
Purchasing machinery	15	19.7
Purchasing seeds	2	2.6
Purchasing mineral fertilizer	11	14.5
Purchasing chemicals	-	-
Consultations on the terms of credit provided by "Farmers of Vinnychyna" Credit Union	9	11.8
Purchasing fuel- lubricating materials	12	15.8
Other (including the location of firms and plants, discussion of cooperation, texts of Ukrainian Laws)	8	10.6
Total:	76	100

Much effort has been made to organize a seminar under the title "Practical Experience in Establishing Agricultural Service Cooperatives." The seminar was attended by representatives from various cooperatives and Agricultural Service Centers

from different regions throughout Ukraine. V. Zinovchuk, President of the National Association of Cooperatives of Ukraine, also took an active part in the seminar.

In January-February, 2002, the marketing specialist from the Center took part in five seminars that were conducted in the raion offices. Useful information was delivered and many questions were answered for the farmers.

Credit Union

The activities of the Center's Credit Union are being continued. Its membership has increased by 7 new members during the period from January to February. The new members represent different raions in Vinnitsa oblast. In January, the Credit Union provided a loan in the amount of 3,500 hryvnas with a 25 percent interest rate to a farmer from Tulchyn raion. By February 18, 2002, six members of the Credit Union had applied for loans. On the 5th of February 2002, Svitlana Vlasyuk was employed for the position of an accountant for our Credit Union. The Credit Union Management Board conducted a meeting on February 25, 2002. The most important and critical issue that was discussed at this meeting, alongside with vital problems of daily operations, was how to improve our Credit Union activities and gaining more members.

Legal Services

During this quarter, the Center's Legal Services focused on providing agricultural producers (farmers and HPOs) with the necessary legal assistance for them to be able to make decisions regarding their production, corporative and personal issues, and other legal issues associated with farming activities. In addition, the legal services unit assisted the Center with any activities that required their support.

During this reporting period, the questions that were most frequently asked by private agricultural producers, were those connected with land and asset shares acquisition. After the New Land Code was adopted by Parliament, farmers asked many questions regarding how the new code affected cooperative members of private farm enterprises; transition of part of a farm into private ownership; competence of executive bodies and local institutions of self-government to command the use of land; how the demarcation of land into community and state property would be achieved, etc.

Great attention was given to the clarification of the New Land Code of Ukraine for our raion specialists to assist explaining the different disputable points of the new code. Table 3 shows the activities provided by the legal service unit during this quarter.

In addition, the legal service unit of the Center developed a draft of the proposals for the Law for establishing the National Advisory System of Ukraine. A draft of the changes to the Vinnitsa State Agriculture University By-Laws was written. The lawyer took active part and conducted six classes for Center's formal education program for new farmers and farmers' children.

Table 3. Legal Service provided by the Center

	Activity	Total
1	Oral consultations and advice	117
2.	Written consultations and advice	7
3.	Visiting farmers to provide them with consultations and practical help	1
4.	Seminars on legal issues conducted in raions	1
5.	Practical aid in developing legal papers	5
6.	Number of legal documents already developed	5
7.	Samples of the farm and cooperative By Laws and of other basic documents, prepared and spread among farmers and raion agents	4
8.	Samples of agreements and contracts	8
9.	Information-consultative sheets developed on the basis of farmers' requests and given to raion specialists	36
10.	Texts of laws, decrees, orders, declarations and other legislative acts distributed among raion agents	41
11.	Brochures of "Farmer's Library" series revealing official documents	-

Links to Agribusiness, Associations, and Agricultural Organizations

During this quarter, the Center collaborated in several areas with different groups. First, agribusiness companies presented information on modern inputs and technologies at seminars for the project raion specialists, farmers, and household plot owners (HPOs). Second, work with growers associations focused mainly on marketing issues. Finally, the Center continued to link with other organizations and projects in the agricultural sector to strengthen programs.

Beginning in November 2001, representatives of agribusiness companies Nutrafeed and Gigiena Bio have actively participated in the Center's seminars addressing animal production. Along with Center specialists, agribusiness representatives have discussed with farmers and HPOs, the results of the 2001 demonstration feed trials implemented on farms. During seminars, farmers and HPOs viewed a film created by the Center to show the results of the demonstrations. The results of the feed trials demonstrated increased production and profitability while raising the awareness of many farmers and HPOs on

the use of quality inputs. Currently, both companies are arranging partnerships with interested farmers to become representative dealers and distributors at the raion level. With emphasis on marketing issues and regional links, the Center hosted a Vinnitsa Apple Growers Association Conference for Private Fruit Growers on November 22, 2001. Participants included fruit specialists from Germany and Uman Agricultural Academy, a Polish agribusiness company specializing in fruit storage, and small private fruit growers from eleven oblasts of Ukraine. In concluding the conference, the Vinnitsa Apple Growers Association addressed the importance of organizing a National Small Fruit Growers Association.

Meanwhile, members of the Vinnitsa Potato Growers Association met on November 27, 2001 at the Center for a seminar with topics on technologies related to storage, value-added, and marketing. An agricultural economist from the Center discussed the advantages of a marketing cooperative for the association members. In addition to the seminar, an opportunity to visit a vegetable cold storage facility in Vinnitsa was organized that allowed members to determine the benefits of renting storage space at these facilities.

Also on January 15, 2002, the Vinnitsa Potato Growers Association was able to form an advisory committee. At a meeting with Center and ACDI/VOCA representatives, association members decided on the establishment and role of the advisory committee. This group aims to meet regularly and to advise the Center on outreach programs targeted for potato growers. On the same date, the advisory committee of the Apple Growers Association met at the Center to review its accomplishments over the past six months and to address issues for year 2002.

On November 30, 2001 representatives from Heifer Project International, a private voluntary organization that provides livestock and sustainable agriculture to resource-poor farmers around the world, arrived in Vinnitsa to identify villages for project development.

Based on recommendations from the Center's Vinnitsa Raion Specialist, Heifer Project Country Director, Nadia Zolinska, met with a group of families in Maidon Village. Heifer Project also learned the steps the Center had taken in the development of a community pasture in Maidon Village.

In January 2002, Heifer Project had informed us of its intent to work in Maidon and a neighboring village by donating 40 heifers to young families. In correlation with this effort, the Center has linked with the Canadian funded Beef and Forage Project in order to advise Center specialists on community pasture development and to allow the Center specialists to participate in a seminar "Lessons, Constraints, and Perspectives in Pasture Development" that was presented on December 7, 2001.

Soil laboratory

During the reporting period, the following activities have been completed by the soils lab staff:

- Checking all of the equipment necessary for soil laboratory accreditation was completed.
- Laboratory was accredited by the Committee of State Standards of Ukraine for conducting tests on soil, water, and grain.
- Compilation of the package of regulatory documents was completed.
- Recommendations on the method of soil sampling were issued and spread among the raion specialists, farmers, and HPOs.
- Soil lab personnel took part in four raion seminars for farmers and HPOs to give the clients information about the service which the soil lab can provide.
- Burner head for atomic spectrophotometer was purchased and the use of this piece of equipment began.
- Raion specialists collected 170 new samples of soil from farmers, 25 samples of well and pond water, and 2 samples of grain.
- Fifty samples of soil were analyzed for organic matter content, 170 – for Nitrogen, 510 – phosphorus, potassium and pH, 120 samples were tested for hydraulic acidity and 170 for moisture content.
- Alongside with sample tests, 50 special forms with recommendations for fertilizer application were filled in.
- New glassware was purchased for further tests.

Information Support System

During this quarter the ISS team was active in a number of areas including participation in a number of conference, the presentation of a number of papers, as well as the continued updating of the ISS databases. Below is a list of the activities:

Papers, Conferences, Presentations

1. Two papers were presented at the conference "Issues of Computer Technology Application for Agrarian Education Purposes" at Vinnitsa State Agriculture University on December 12, 2001 dealing with Computer-aided Weed Control System and Computer-aided Atlases of Crops in the Agrarian Education by Chaplinsky, Subbotina and Kossolap.
2. Materials for presentation at the Annual Advisory Committee Meeting in Vinnitsa on January 30 - February 1, 2002 were prepared.
3. A series of demonstrations of the ISS Products was held for representatives of the Ministry of Industrial Policy and Technology of Ukraine and another one for representatives of the Ministry of Agrarian Policy of Ukraine (on February 2002) and JSC "Agropromsystem" with the purpose of preparing the presentation of the ISS to the Board of the Ministry of Agrarian Policy for Informatization of the Ukrainian Agrarian Sector.
4. Demonstration of the ISS to the TACIS National Coordinating and Training Center of Extension took place at the WLUB Office.
5. A paper on the ISS potential in plant protection activities was presented at the Meeting of Heads of Oblast plant protection stations of the Ministry of Agrarian Policy of Ukraine in Kiev.

Report to the USAID

6. The ISS products developed within the framework of the Project were compiled and delivered to an Ad Hoc Acceptance Commission along with necessary documents, including :
 - ISS User Manual
 - Tabulated description of the developed database
 - Program texts
 - Database including 561 tables

Work with Vinnitsa Center

7. Updated software and database for the ISS was delivered to the Vinnitsa Center.
8. Information obtained from the Project Soil Testing Laboratory in Vinnitsa was analyzed in terms of possibility of calculation of mineral fertilizer dosage.
9. Issues and plans on the development of software for economic assessment of flowcharts and bookkeeping for farmers were discussed with Vinnitsa Agrarian University faculty members.
10. Meeting with raion agents on software application, shortcomings and directions for further development was held. The Meeting identified a necessity to add to the database descriptions of herbs, major crops cultivation flowcharts (except for cereals), and pesticide toxicity accordingly.

Further development of the ISS

11. Analysis and structuring of information for simplified accounting at farms was initiated. The analysis was conducted using "Methodical Recommendations for Organization and Maintenance of Accounting at Farms." Simple and simplified schemes of accounting were analyzed. Data for development of database to describe farmer's property (fixed and current assets), define data for inventory and fund record-keeping and calculate accounting report forms execution were analyzed.
12. Upon requests from the raion agents, the acquisition and systematization of information on herbs that can be cultivated in Vinnitsa oblast was initiated. Twelve varieties of phytocidic herbs promising in terms of cultivation by farmers were selected and their color pictures were submitted. Biological classification, commercial application, utilization in official and folk medicine, standardization and control of quality of raw materials, storing schedules, physical and chemical properties of effective agents and cultivation engineering were analyzed.
13. Upon requests from the raion agents, the acquisition and systematization of information on hygienic indices, toxicity and peculiarities of pesticide application was initiated. Information on pesticide impact on warm-blooded, fish and bees was analyzed and structured.
14. Morphological characters of about 160 species of phytophagous insects (imago, eggs, larvae, pupae) were described.
15. Sensitivity to damage of plants by 160 species of phytophagous insects was described, with specifications regarding damaging stage of species and particularities of damaged crops.

16. Definitions for more than 30 biological and phytopathological terms that can be found in Atlas of Plant Diseases were provided.
17. Indices to develop a fungicide catalogue were determined (including indices for general description of chemicals, application, toxicological characteristics, effective agents, storage and recovery).
18. Initial graphic information regarding the most harmful varieties of weeds, such as *Amaranthaceae*, *Chemopodiaceae*, *Convolvulaceae*, *Cyperaceae*, *Brassicaceae* and *Poaceae*, was found, scanned and processed, using the following sources:
 - a) "Mauvaises herbes des cultures" (in French) – 367 MB, that allowed partially correcting and supplementing available information by 413 files.
 - b) "Atlas of Weed-carps and Seeds" – 44.2 MB - 120 files.
 To add this information into the database Adobe Photoshop processing is required.
19. Data regarding diseases of cereals (wheat, barley) were scanned using "Atlas of Field Crop Diseases" and information provided by expert - 73 MB – 110 files.
20. New promising corn varieties were added to the database. Pictures and description of major characteristics of the varieties were scanned from "Hibridi Kukurusa (Hybrids of Corn) (Novi Sad. Institute of Field and Vegetable Crops) (in Slovak) – 22.2 MB – 26 files.

ISS Editing

21. A feature of visualization of selected company was added to the forms View of Plant Protectants and Selection of Plant Protection chemicals.
22. Dicotyledonous Weeds Key form was corrected.
23. Visualization of Company Information form by oblasts and raions of Ukraine was corrected.
24. Harmful Objects on Crops View form was redesigned.
25. Optimum Herbicide Selection form was redesigned to show information from the point of view of weed sensitivity to a herbicide and availability of the required information.
26. Three pests were added to the database.
27. Descriptions of 117 pests were introduced.
28. According to the remarks of experts, descriptions of adult weeds, seedling, weed-carps and seeds were corrected.
 - Annual monocotyledons – 21
 - Perennial monocotyledons – 16
 - Annual dicotyledons – 135
 - Perennial dicotyledons – 43
29. Forty pictures of varieties were added and 10 were upgraded and an additional 15 pictures of pests were added.
30. Herbicide applicability information was corrected.
31. Pest descriptions were corrected according to remarks of experts.
32. Synonymous names of diseases were corrected and correlated with expert's information. Software data from the Atlas of Diseases of wheat, rye, barley, corn, beet-root, sunflower, potato, cabbage, tomato, carrot, onion, cucumber and grape were tested (test results were documented).

33. Atlases of chemically prevented diseases of rye, barley and oat were edited, including disease aeriels in Ukraine, causative agents, diagnostic symptoms, morphologic and environmental features of pathogens, sources of information and way of its storage, harmfulness of diseases and protection measures. Total of 300 indices were used.

D. Objective #3: Formal Education Component

The Center's staff and formal education team pursued the goal to help farmers, their wives and children, future farmers and future employees for the Advisory/Extension System to receive a quality education during this quarter. Part of the goal was reached by providing clients with practical educational programs, and another part - extension employees training - was implemented on a regular basis, as one of the training activities of the project.

During the last five months of the project the following training programs were organized and conducted:

1. December 10th through December 14th - one week training program for raion specialists for development of their practical skills as extension employees.
2. November 29th through December 23rd - third session of the first group of new farmers. December 11th through December 28th - first session of the second group of new farmers.
3. February 4th trough February 22nd - the fourth and the final session of the first group of new farmers. The certificates of graduation were designed and issued.

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