

PD-ABT-872

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

Cooperative Agreement No: 121-A00-98-00631-00

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254071 Kiev, Ukraine

Eighth Quarter Report
July 1, 2000 ~ September 30, 2000

October 2000

Submitted by

International Programs
Louisiana State University Agricultural Center
Baton Rouge, Louisiana

In association with
Vinnitsa State Agriculture University

International Center for Scientific Culture
World Laboratory Ukraine Branch

With the participation of the
National Agricultural University of Ukraine





INTERNATIONAL PROGRAMS
Office of the Director
118 Knapp Hall-Louisiana State University
Baton Rouge, Louisiana 70803 USA
Mailing address: P.O. Box 16090
Baton Rouge, Louisiana 70893 USA
(225) 388-6963
Fax: (225) 388-6775
Website: www.agctr.lsu.edu

October 15, 2000

Dr. Oleksandr A. Muliar, Agricultural Specialist
USAID Technical Officer
Office of Private Sector Development
USAID Mission
19 Nizhniy Val Street 254071 Kiev
Ukraine

**Eighth Quarter Report for the Period July 1, 2000 to
September 30, 2000. USAID Cooperative Agreement
No: 121-A00-98-00631-00**

Dear Dr. Muliar:

Enclosed please find the Eighth Quarter Program Report for the above Cooperative Agreement executed between USAID and the LSU AgCenter. The report covers the program activities for the period July 1, 2000 to September 30, 2000 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 the World Laboratory in Kiev. The entire report will be e-mailed to your office.

A separate report on the Impact Statements is currently being prepared. This document will be submitted shortly.

Thanks you for your continued assistance and guidance.

Sincerely,

Lakshman Velupillai
Director

Cc: Dr. William B. Richardson
Dr. Leonid Sereda
Dr. Gennady Palshin
Mrs. Margaret O. Blackwell
Ms. Gloria White

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 July 1, 2000 ~ September 30, 2000

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Section I Summary

The eighth quarter was indeed a busy period for project staff and faculty at Vinnitsa as well as for the staff at the World Laboratory in Kiev. The eighth quarter period coincided with part of the growing season for the Vinnitsa farmer, requiring increased responses to farmers' requests for assistance. Further, this period was also the time for additional planning activities including the preparation of the Third Annual Workplan to be submitted to USAID; and the preparation for the Second Advisory Committee meeting to be conducted in Baton Rouge, Louisiana in October 2000.

During this quarter three LSU AgCenter specialists completed assignments at the project sites in Vinnitsa. One specialist focused on outreach/demonstration plot work; a second on formal education; and a third on reviewing the research resources available in Vinnitsa oblast. All these reports are included in this document.

Key decisions have also been taken in this quarter, particularly with respect to the sustainability of the project. Worthy of note is the decision to proceed to open a raion office in all raions in Vinnitsa oblast. Toward this aim, support from the oblast administration has been received, and agreements are currently being executed with raion administration. Another important benchmark is the creation of the Institution for Extension within which the project is housed.

The findings of the Verma report completed in May 2000 as a second internal evaluation of the project have been studied, discussed and follow up action planned. The emphasis on structure, policies and procedures is a key item discussed in this respect.

Seminars, workshops and demonstration plots were conducted according to previous plans developed for the growing season. A unique feature of this year's demonstration plot work is that a larger majority of these were conducted on farmers' fields. The positive aspect is that this was taken favorably by the

farmers. However, the proper procedures for data acquisition from these plots were not followed. A review of this is underway to adjust the procedures and training of farmers on whose fields future demonstration plot work is planned. Further, two scientists from the World Lab also demonstrated the effectiveness of materials (a folial spray for controlling the Colorado potato beetle larvae and "Klepps" - a biological material to enhance yields and control diseases) as a preliminary test to evaluate farmers' responses. Preliminary results were favorable, and farmers have indicated willingness to participate in a proper scientific evaluation for the next season.

Exhibitions and fairs conducted by the project in conjunction with VSAU have helped bolster farmer confidence in the project concept. This activity also proved very useful in strengthening the existing links between farmers and agribusinesses.

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

Section II. Project Activities

A. Introduction

The eighth quarter activities involved several important areas under all four objectives of the project. Specific details are discussed under each objective below.

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

The institution and capacity building objective was pursued on many fronts this quarter. Included were the developing of the proposed agreement with rayon administrations which establishes procedures for opening an additional 13 rayon offices. This, along with development of VSAU By-Laws for The Institute for Extension, forms a strong basis for long term sustainability of the Center's work.

Sustainability of the Center

The administrative team of the Center arranged a series of meetings with Dr. Lakshman Velupillai during his visit to Vinnitsa (September 4 - September 10) and among other issues discussed the matter of sustainability of the project beyond the initial 3-year period. The team came up with a homogeneous understanding of sustainability, which means that the concept and the models developed by the project should be supported in the future as the result of institutionalization of financial and human resources. The team determined several possible steps below to achieve the goal.

Agreement with rayon administrations

With the purpose of expanding the Center's influence within the oblast, and to start building a basis for sustainability of the project, the decision was made by an administrative team of the Center to negotiate with the rayon administrations regarding their support for the Center's 13 new rayon offices. To

implement this decision, an agreement to be signed by the head of each rayon administration was developed. The agreement stipulates the obligations of the parties very clearly and obliges rayon administrations to support all expenditures associated with operating of the Office from the local budget after the project activities end, which is currently projected to end September 30, 2001 (Attachment A). Oblast Administration, with an intent to demonstrate their support to the idea, issued a letter addressed to all the heads of the rayon administrations with the request to sign this agreement at the soonest possible time. Dr. Zabolotny, Vice Governor for agriculture, signed this letter, and our regional supervisors were delegated to visit each rayon to finalize the process (Attachment B).

Amendments to the By-Laws of the Extension Institute

After opening of the Institute of Extension within VSAU the need was recognized to change the University By-Laws considering the functions of the new Institute. The following steps were undertaken to reach this goal:

- A conference of the University employees was organized at VSAU.
- An amendment was worked out by the Conference and added to the existing By-Laws of the University. The statement stipulates inclusion of the Institute of Extension into the structure of the University.
- The resolution on opening the Institute of Extension was approved by the members of the conference.

Seminar in Lviv

As mentioned above, the project team is leading serious discussions about the sustainability of the project past current USAID funding obligations. One of the ways being considered is the possible inclusion of the model created in Vinnitsa into the proposed national advisory system. For this reason Vinnitsa Project coordinator, G. Loyanych, took part in a seminar in Lviv, the subject of

which was "A Nationwide Network of Advisory Services in Ukraine". This seminar was organized by the TACIS Project "Post-privatization activity to support agriculture and advisory service FDUK 9601", and Lviv agricultural advisory service. About 80 people participated in the seminar. Among them were: representatives of the Ministry of Agrarian Policy (R. Shmidt - Deputy Minister of Agrarian Policy, Y.Kucharuk - Head of the Department of Agricultural Reforms), representatives of oblast agricultural boards from all over Ukraine (heads of the departments of reforms), employees of educational and scientific-research institutions (National Agrarian University, Vinnitsa State Agrarian University, Lviv State Agrarian University, Land Tenure and Animal Science Institute of western region of the Ukrainian Academy of Agrarian Sciences), and representatives of TACIS Project. People from other organizations, like Volyn Center for Agrarian Reforms, Lviv Center for Privatization, Lviv Agency of Agribusiness and Market Development, also turned out.

The main goal of the seminar was to get the participants acquainted with the Lviv agricultural advisory service, its mission, structure, results of its activity, and organizational management. G. Loyanych, who was delegated to the seminar to represent Vinnitsa Center for Private Farmer Training and Outreach, made a presentation about the work of a university-based advisory system. He urged people from the Ministry and other participants to consider thoroughly all the advantages of a university-based system for agricultural advisory services and to utilize our Vinnitsa experience.

At his final speech, the deputy Minister, R.Shmidt, announced that the National Agrarian University is working on the proposal of the national advisory system, which they would submit to the Ministry by August 7, 2000. The new advisory system for Ukraine will be implemented on the basis of the experience of all consulting projects, which are currently working in Ukraine, including the university-based model as well.

Faculty Training

Two LSU specialists, Dr. Jim Trott and Dr. Walter Morrison, visited the Vinnytsia Center and held several seminars with the faculty as part of their assignments. Dr. Trott delivered two presentations: "Adult Learning" and "Interactive Teaching Techniques", followed by discussion by the faculty. Dr. Trott's report can be found in Attachment C. Dr. Morrison in his presentation gave some advice on using tried and proven extension methods to influence farmer clientele on making the right decisions with regard to production and other practices. Dr. Morrison's report can be found in Attachment D. These seminars continued the process of technical assistance and interaction by LSU AgCenter Extension Specialists with their Ukrainian counterparts.

U.S. Visitors

Dr. William Brown, Associate Vice-Chancellor LSU Agricultural Center, visited the Vinnitsa Center with the overall objective to develop options for enhancing the effectiveness of the administration of agricultural research in Vinnitsa. This would lend strong support to a relevant and vibrant research infrastructure that will stimulate Ukrainian agricultural productivity. Dr. Brown studied the current agricultural production within Vinnitsa oblast, physical resources available for agricultural research, and intellectual resources for conducting scientific research. On the basis of information gathered, he developed suggestions for administrating a clearly organized, non-duplicated, relevant, and productive agricultural research program. Dr. Brown's report can be found in Attachment E.

The LSU AgCenter's Vice Chancellor for Research, Dr. R. Larry Rogers, paid a short visit to Vinnitsa to review the project's progress. Dr. Rogers last visited the project in 1998. He visited several farms and a rayon office in Kryzhopil rayon and discussed with the Center's clientele the impact of

information brought to them by the Center's faculty on the improvement of their farm operation.

Dr. Lakshman Velupillai, Director, International Programs, LSU AgCenter and the Project Leader, came to Vinnitsa to discuss several important issues with the administrative team and the faculty:

- Opening 13 new rayon offices.
- Sustainability of the Center
- Preparations for the Advisory Committee meeting of October 9, in Baton Rouge.
- The 8th Quarter Report.
- Preparations for the Third Annual Work Plan.
- Developing Center's Policy
- New proposal for the expansion of the Project.

All discussions proved to be fruitful and demonstrated considerable progress.

C. Project Objective #2: Development of Outreach Services

For the development of this objective, several activities were conducted in this quarter. These include two field days, a seminar, an agricultural exhibition, farm visits, and individual consultations given by the faculty consultants for the farmers. We also finalized registration of our Credit Union; expanded agribusiness links with the Center; strengthened cooperation and ties with the growers associations, gave assistance in organizing farm cooperative, and worked with an organization of HPOs in organizing a "Potato Festival".

Seminars and Workshops

Two field days and one seminar were held during this quarter. On July 6, the field day on "Evaluation of Popular Crop Varieties and Technology of Their Production" was held on the plot of Y. Gzhebinsky, a private farmer in

Kryzhopil rayon, and in the research fields of Verhivka Agricultural College. One hundred thirty four participants attended the field day and saw the Center's demonstration plots. The participants listened to the presentation and explanations made by project faculty, host farmers, the chief state seed inspector, S.Ivaniuk, and a representative of *Monsanto* company, Y.Melnyk.

Another field day was organized in Vinnitsa rayon based on a request from the potato growers' advisory committee. The topic of the seminar was "Evaluation of the Effectiveness of Some Technologies for Growing Potatoes and Vegetables on Private Farms and Household Plots." The program started with a visit to the private farms of V. Solsky, (Vinnytski Hutory), P. Berzhan (Gorbanivka) and I. Marchuk (Tsvizhyn). The participants then visited the household plots of A.Ivanov and L.Petrukovych. Five farmers from Vinnitsa rayon told others about their method of growing potatoes.

Dr. Jim Trott had a meeting with the farmers of Lypovets rayon and delivered a presentation "Education for farmers". Eight farmers took part at this meeting and the following discussion.

Demonstration plots

Twenty-five demonstration plots were implemented during the recent growing season. Included were 23 plots on the fields of individual farmers and 2 big plots on the field of Agricultural Colleges in Verhivka and Illintsi. Subjects were quite varied and included demonstrations on the economical and effective use of weed control products, the effects of applying Klepps growth stimulator, variety testing, and on economic applications of fertilizer regimes.

Feedback from farmers indicated positive influence toward changing farm practices. Farmers often expressed surprise at the results, especially when it was explained on the basis of increased profitability. Attendance at the field days was encouraging, farmers asked relevant questions and interaction between farmers and with research and project specialists was enthusiastic.

Feedback from farmers indicated several actions that need to be addressed in order to further improve the impact of our demonstration work. Farmers expressed a strong preference for demonstrations placed on farm production fields. Farmer interaction and questions increased when visiting farm sites and decreased when on public fields. The plots on farms were more moderate in scale and narrower in scope. Farmers perceived them as more applicable to their own situations.

Results also indicated a need to implement a more thorough training plan for rayon specialists and participating farmers. In several instances, farmers that hosted plots did not follow the initial plan and even harvested the crops before a final evaluation could be conducted. There was an inconsistent pattern of periodic evaluation during the crop cycle and a lack of understanding of the specific goals of each demonstration.

Our planning process did not include demonstrations in livestock production. Tests dealing with cattle or hogs are comparatively costly for both farmers and the project. Farmers initially showed hesitation in making the commitment. With increasingly favorable market conditions and recent commitments from feed suppliers, however, demonstrations on animal production are being formulated and will be implemented early in the year 2001.

Project staff are presently formulating specific training for raion specialists which will be conducted in November. Training for specifically identified participating farmers will be held in December. Final plans for next growing season's demonstration plots will be ready for implementation by mid January.

The reports of LSU consulting specialist, Drs. Satish Verma, James Devillier, and Walter Morrison all touched on this subject. Their reports have been evaluated by the staff and their findings regarding weaknesses in our demonstration work have been addressed.

Tables 1 through 4, show the comparison of crop yields and results of demonstrations plots where Klepps was applied as growth stimulator. These

results are preliminary, and are presented to indicate the potential of Klepps and to allay farmer skepticism. Scientifically valid data will be gathered for the next season.

Table 1. Private farm of P. Berzhan, Vinnytsia rayon.

Crops	No Klepps (Control) (yield/ha)	Seedlings treated with "Klepps" (yield/ha)
Cabbage:		
Early	2.8 t	4.0 t
Medium	6.0 t	7.2 t
Tomatoes	4.3 t	6.0 t

Table 2. Private farm of I. Mudryk, Tulchyn rayon.

Crops	No "Klepps" (Control) (yield/ha)	Seedlings treated with "Klepps" (yield/ha)
Cabbage:		
early	1.8 t	2.4 t

Table 3. Private farm of V. Fil, Lypovets rayon.

Crops	No "Klepps" (Control) (yield/ha)	Seedlings treated with "Klepps" (yield/ha)
Potatoes/varieties:		
Borodianska (pink)	2.1 t	2.6 t
Zhukovska (early)	1.92 t	2.7 t
Carrots	3.0 t	4.1 t

Table 4. Summer barley on the demonstration plots of Illintsi College.

Variant of experiment	Area (ha)	Total harvest (t)	Yield (t/ha)
Summer barley (control)	3.24	10.030	3.1
Summer barley + Bashtan Universal	3.67	12.410	3.38
Summer barley + "Klepps"	3.13	10.520	3.36

Farmer's Exhibition "Podillia Expositions-2000"

This first exhibition on the site of Vinnitsa State Agrarian University the Center for Private Farmer Training and Outreach will be the first of a series of farmer's exhibitions, shows, and fairs, to be held annually. We consider this the beginning of a new activity, which, we hope, will demonstrate a new approach to the organization of such events.

The exhibition was held on August 10 and 11, 2000. Forty-three private farmers participated in the exhibition and presented their crops. Many of them brought their grains and vegetables to sell. More than 40 farm input and agribusiness companies presented their products and provided farmers with advice and consultations.

The organizational committee scheduled and conducted 20 workshops and consultations during the two days of the Exhibition.

The participants and guests of the exhibition were able to find many new products and establish critically needed contacts with agribusiness enterprises.

On August 11, the second day of the exhibition, Ukrainian Premier Minister, Mr. V.Yushchenko, Vice-Premier Minister, Mr. O. Gladiy, and Minister of the Agrarian Policy of Ukraine, Mr. Kyrylenko, with other governmental authorities visited the exhibition and got acquainted with the Center's goals and activity. They gave a commitment to support the Center in its future work (Attachment F).

Farm Visits and Consultations

According to the reports of our faculty, they conducted 755 consultations for private agricultural producers and HPOs, 706 of which were conducted by raion specialists and 49 by University consultants. Additionally, 301 farmers received information assistance in their search for seeds, markets, fuel, and agricultural equipment.

Our clients may be divided into several groups:

▪ Operating farmers	323 consultations
▪ HPOs	235 consultations
▪ People, who would like to start private farm	76 consultations
▪ Women farmers	20 consultations
▪ Farmers' wives	28 consultations
▪ Other private owners	24 consultations

The spectrum of problems, that are sent to the Center, are very diversified and include a wide scope of questions from land property rights to harvesting and storage technologies of crops. Farmers brought up questions of land inheritance to children, expanding their plots, and conditions of land leases. Those, who want to start farming ask how to begin, how to develop By-Laws for their private farm, and how to make their productin practices effective.

Technological questions referred to the problems of seed production, grain standards, application of fertilizers, plant protection (for instance, protection of fruit orchards from pests and insects, how to fight phytophthora, potato moth, etc.), harvesting canola, using manure as fertilizer, crop rotation, and many others.

Farmers' wives came with questions which referred to farm operation and to house keeping, for example, farm accounting and how to feed pot plants.

In conclusion, we estimate that the biggest consulting assistance is given to people whose lives are connected to farming and live in rural environments (farmers, their wives, new and future farmers). This audience makes up 63.3 percent of the contacts made by the Center staff. The number of HPOs, who applied for the Center's assistance has also increasing to 33.3 percent of all inquires for our faculty's advice.

Credit Union and Cooperatives

On September 18, 2000, the process of the credit union's registration was finalized. The credit union charter was reviewed and processed at the Statistic Management Office and Tax Office of Vinnitsa oblast. The tax identification code and the registration number was assigned to our credit union and sent to all controlling organizations, which review the activity of credit unions. We think that the credit union is beginning a process of expanding the loan possibilities for farmers.

Two organizational meetings were held (one in Bar rayon. and another one in the office of the Center). They were devoted to the question of starting farmers' service cooperatives. The founders of this cooperative are farmers P. Pidvalniuk, and O. Slugotsky. The lawyer of the Center, V. Dmytruk, developed the By-Laws for this cooperative, which was given to the founders to further procedures that are necessary for registration of the cooperative. We hope that the beginning of the process will have successful follow up in the near future.

Potato Festival

On September 17, 2000 the first "Potato Festival" was held in Vinnitsa. It was organized by the association of potato growers in close cooperation with the specialists of the Center for Private Farmers Training and Outreach. More than 20 of the best domestic and foreign varieties of potatoes were presented by local farmers and HPOs. These local farmers and HPO owners had started producing potato seeds that were shown at different displays at the festival. People could buy potato seeds, and see how different varieties tasted. The Center's specialist and growers gave advice and consultations for customers and buyers. We think that this event was a good demonstration of the benefits, which may be gained by cooperation between growers, their associations, and the Center

Agribusiness Links

This quarter project staff were involved in several activities to link farms with agribusiness. Designs on new demonstration activities are being implemented and previous demonstrations are being evaluated to start the process of reporting on the results. The Center also continues assisting in creating opportunities for partnerships to be established between farms and agribusiness.

The Center in collaboration with agribusiness companies has set up demonstrations on two farms interested in improving pig production. Kyiv Atlantic and Gigiena Bio are producers of high quality feed and have made feed available to project animal scientists to implement feed trials. Flora farm in Krizhopil rayon and Matiziouk farm in Orativ rayon will have rayon specialists assisting in the evaluation of feeding complete rations compared to the farmer's or conventional ration.

Project staff responsible for demonstrations have received requests from regional specialists that farmers are interested in testing different blends of fertilizers from the agribusiness company, Cargill. The staff has submitted proposed designs and plans to implement these demonstrations in the autumn. The plans include how to determine the economic impact that these fertilizer blends will have in the demonstration plots and on the farms.

Progressive Genetics, an agribusiness company growing U.S. varieties of soybean and sweet corn in Ukraine, visited the Center to evaluate demonstration plots with project staff. Farmers interested in soybean and previously linked to Progressive Genetics through the Center had an opportunity to learn from the demonstration plots that early varieties should be selected for many of the regions of Ukraine. Results of Progressive Genetics' soybean were also observed on the fields of Agrochimtehnologia, a company with German investment that is leasing land for production and applying modern technologies. Progressive Genetics has agreed to organize with the Center a seminar on soybean production. They are also investigating if several Vinnitsa oblast farmers that have consulted with the agribusiness company may receive seed and herbicide on credit terms.

Agribusiness companies, that have participated in the agricultural exhibition organized by the Center, were provided with the opportunity to create beneficial partnerships. An example of creating partnerships took place when farmers had a real interest in the poultry feed produced by Kyiv Atlantic displayed at the exhibition in small packaging. Several farmers, already aware of the benefits of this feed, have begun discussions to become regional distributors for Kyiv Atlantic. Three farms that are aiming to be distributors have contacted the Center to acquire assistance in designing and implementing demonstrations to show the positive effects this feed can have in poultry production.

Farmers and Growers Associations

The Center had cooperated with numerous local growers associations this quarter and has focused on assisting in their development. The two commodity specific associations that have strengthened and attribute much of this to cooperating with the Center are the Vinnitsa Potato and Apple Growers Associations.

Potato Growers Association

Activities with the potato growers association included participation in the agricultural exhibition organized by the Center on August 10-11, 2000. At the exhibition, the association displayed many different varieties of potatoes their members have had success in growing. Members of the association that have been certified to grow and sell seed potatoes received requests from farmers attending the exhibition to purchase seeds. The exhibition allowed an opportunity for the association to recruit new members and distribute literature such as a monthly newsletter the Center helps to produce.

On August 17, 2000 the Center joined the potato growers association in organizing a potato festival during Vinnitsa City Day Celebration. The potato festival was a new addition to the celebration and recognized by the mayor as an important event that will be supported in the future. A display at the festival highlighted the cooperation the association has had with the Center, for example, information on new technologies and varieties in potato production by means of workshops, demonstration plots, educational literature and videos.

This quarter the Center has been assigning project staff to continue work on developing cooperatives within the association. Project staff plan to organize trips to cooperatives in other oblasts in order to learn from their experiences.

Apple Growers Association

The apple growers association had participated in the agricultural exhibition and increased membership since the event. A second newsletter has been produced with the Center's support and provides information from a Vinnitsa orchard farmer who was identified and participated in a recent study tour sponsored by the Holland Ukraine Fruit 2000 Project to Hungary to learn about intensive orchard technologies.

During this quarter, an advisory committee, that the Center had assisted in establishing, met to decide on future activities. During the advisory committee meeting, it was concluded that the association will continue to take steps in forming a marketing cooperative. The association has consulted with the project lawyer on the formation and rights of marketing cooperatives.

Agricultural Organizations and Donor Programs

Ukrainian German Agricultural Development and Investment Project (DUAP)

Cooperation with DUAP has led to three project staff (university faculty economists and one regional specialist) attending from September 18-23 2000 the first part of a six-week training course on farm management and economics. DUAP has designed a six-week course to train agricultural leaders from Cherkassy and Vinnitsa oblasts. Twenty-five participants in all were selected from different institutions and organizations to learn how to apply these methods in the field and will be expected to train others when the course is completed.

ACDI/VOCA

ACDI/VOCA, a USAID contractor in agricultural technical assistance, collaborated with the Center and sponsored a group of potato farmers from Lviv

to attend the agricultural exhibition organized by the Center on August 11, 2000. A roundtable discussion was set up with potato farmers from Lviv and Vinnitsa exchanging information and sharing experiences. As one of the results, the Lviv farmers group made arrangements with the Vinnitsa potato growers association to provide contacts that were established with Polish companies involved in the potato sector.

ACDI/VOCA, upon receiving an invitation from the Polish-Ukrainian Chamber of Commerce to attend an agro-exhibition in Poland, sponsored a faculty person working with the Center to establish contacts with Polish producers and processors and provide this information for Vinnitsa growers associations.

Information Support Systems

The ISS team activities in the reported period were primarily focused on further development of the databank components and additions to the decision support module. The Project web page has been placed on the internet at the address: <www.project.vsau.org>. Not only information on the Project can be found there in "HTML" format, but also, on-line access to the ISS databases through ASP technology.

Crop production

1. Development of the software enabling the economic analysis of technological flow-charts for different crops on the "plot" and "farm" scale has begun.
2. The program package, which has been worked out earlier for the purpose of identifying which scheme of crop rotation is suitable for the specific crop combination, building acceptable crop rotation schemes and choosing the rational ones, has been further adjusted.

3. An on-screen representation form has been designed in order to visualize the timing of recommended application of various plant protection chemicals, depending on the phase of crop vegetation and period of the technological cycle as well as providing the choice of operations required to do this.
4. The program package enabling construction of fertilizer system, including special programs allowing calculation of possible yields for each specific crop and computing dosage of nutrition materials needed, as well as fertilizers, both organic and mineral, required to get desirable yields.
5. Pictures for 100 apple varieties and 59 pear varieties have been loaded into the Electronic Fruit Crop Atlas for the reported period.
6. The electronic atlases of fruit and cereal crops have been updated by adding information on weeds and new varieties.

Livestock production

A new component dealing with animal breeding has been included in the ISS for the first time in this reported period and the following parts of this component have been completed as of this date:

1. Program interface for users have been constructed, as well as, modules dealing with "Animal breakdown by groups following their production features," "Animal breeds," "Livestock breeding," and "Animal feeding."
2. The following directories - "Species and groups of animals", "Kinds and groups of feeds and nutrition materials," and other auxiliary directories have been filled.
3. The following directories of the Swine Breeding section - "Breeds," "Breeding," "Reproduction," "Feeding," and "General references" have been completed.
4. The Feed Production module, which is under development, will serve as a link between the Livestock and Crop production components.

4. The module of the program, gearing all directories available, which would allow adapting the whole complex to the changes in the subject matter area is being connected to the system.

Economics:

Automation of the private farm budget calculator has been a focus of the ISS work on the economic component. Particularly, work completed in the reported period covers:

1. The structure of the program software has been designed, and a format of interaction with the user (farmer) has been developed, which allows generating the private farm budget on-line, i.e. private farmer may introduce specific data about his farm and get the required budget done on this basis.
2. Several subprograms have been generated as well, in order to calculate:
 - performance rates per shift for whatever combination of units and implements suspension used in the soil tillage;
 - fuel expenditure rates per 1 hectare;
 - direct costs for each operation of the soil tillage - direct costs comprise the cost of fuel, cost of labor of the staff involved, cost of the repair and maintenance of the machines and implements. (Besides, direct costs usually comprise the cost of inputs, which is not however applicable in the soil tillage case).
 - fiscal charges on the machinery, used for the specific operation. They usually comprise depreciation costs, interest on capital, storage, insurance and taxes.

As of this date, the program package design allows the choice of the suitable system of farming for any of 14 field crops, available in the database.

Depending on a farming system, which has been chosen by a farmer, a list of technological operations is recommended for each stage and each kind of work - starting with soil tillage, fertilizer application, plant protection chemical application, sowing etc., up to harvesting. Also provided is the complete list of types of agricultural machines and implements, which can be used for each operation, including the specific brands for the farmer to make his choice based on what he uses at his farm. When the farmer has made his choice of the implement, he is given a list of power machines (tractors) matching the selected implement by their draft capacity. Afterwards, calculation of all direct costs and fiscal charges is completed for each technological operation, based on that power and agricultural machinery characteristics, for each specific operation.

Calculations also take into account the specific features of the land plot, chosen for the given crop cultivation.

Agro-climatic component:

The 1st stage of collection of data on "Principal agro-climatic resources of Vinnitsa Oblast" has been completed. In order to provide the proper spatial representation of meteorological and climatic data along the Oblast boundaries, the data on neighboring Khmelnytsky, Zhytomir, Kyiv, Cherkassy, and Odessa Oblasts have been added to the collection of data. Data are stored in the Excel format (in order to provide calculation of intermediate values and other meteorological indicators) and adapted for their transfer to the dBase format enabling their compatibility with the GIS ArcView.

GIS of Private Farm plots:

1. Cartographic data on 30 private farm plots of Lipovetsky Raion has been gathered, including the maps of private farm boundaries and soil cover made in real geographical co-ordinates on scales: 1:2000 and 1:5000.

2. The above maps of private farm plots have been referenced to the topographic map of Vinnitsa Oblast and digitized.
3. The database on the above private farm plots and structure of the soil cover at those farm plots has been generated.
4. A set of digital maps of a private farm plot has been developed in order to enable the following agrochemical service of private farmers, that set includes the plot boundaries, soil maps, soil acidity map, as well as the maps displaying the humus, N, P, and K content.

D. Project Objective #3. The Development of a Formal Education Program

The following steps have been taken to further develop the Formal Education component.

- 1) The curriculum for the course "Informational and Consulting Provision of Farm Activity", which included several topics in Extension, has been developed with 20-26 academic hours. This course was included into the curricula for undergraduate and master's programs of all 5 departments at VSAU for the year 2000 - 2001.
- 2) New curriculum on accounting for farmers' wives was partially developed and put into action. The first one-week session was held for a group of 17 women. The main goal of this program is to help farmers' wives learn new standards in farm accounting. The program is going to be continued during the winter season.
- 3) The first group of 16 students for Formal Education was recruited for a two year training program. The faculty who will be involved in teaching had a special meeting with a Formal Education Committee and discussed all possible approaches and methods of teaching (nontraditional techniques) for this new category of students. The first session of the program is scheduled to start on October 10, 2000.

E. Project Objective #4: Agricultural Technology Research Programs

Isolation, characterization and utilization of insect resistance genes that will benefit Ukrainian and US agriculture -- Dr. Rymar

The intensive investigation of *Bacillus thuringiensis* (BT) led to the discovery of numerous crystal proteins with insecticidal activity toward many species of pest insects of important agricultural crops. However, the study of new BT strains doesn't lose its actuality because it leads to the discovery of new species both individual toxins and their combinations which provide new spectrum of insecticidal activities. Owing to these reasons, the range of BT strains studied was extended by adding four more strains from the Ukrainian collection. These strains were chosen by two marks: the absence of beta-exotoxin production and a wide specificity (toxicity both to Lepidoptera and Coleoptera). Investigations on new BT strains characteristics study were proceeded, in particular, some efforts of specificity definition were attempted. In addition amplified by PCR DNA fragments of some BT strains - BT 014, BT 021, BT 787 and BT 942 were cloned. The definition of nucleotide sequence of DNA clone which contains amplified DNA BT 787 fragment and its alignment with sequences of known genes of BT crystal proteins showed that this strain, main crystal proteins of which are two high molecular proteins (137 KD and 146 KD) contains the gene of Cry1Ab group in its genome. This strain insecticidal activity is studied on the basis of the research at the LSU AgCenter.

In experiments on hybridization analysis of additional BT strains genome, it was shown that if using as a probe a fragment of the gene, responsible for the crystal protein synthesis in BT 949, positive signals in DNA of two strains - BT 10-H and BT 787 were determined. These data allow us to make a conclusion that BT 10-H and BT 787 genomes except the gene from Cry 1A group contain the one from Cry 1B. In investigations on cloning the gene of crystal protein from the BT 949 genome some steps were done. The size of summary plasmid DNA BT 949 fragments (collected after the treatment by endonuclease restriction BamH1 and separation in 0.7% agarose gel by the electrophoresis method),

which contain Cry gene is adjusted. The gene of interest to us is localized in the BT 949 BamHI fragment group, which size is 10 - 19 kb. The size of the fragments of interest has a very important meaning at the choice of acceptable lambda phage vector. A replacement vector EMBL3 was chosen as a cloning vector. It is used for cloning of up to 20 kb DNA fragments. Nowadays, plasmid DNA 949 fragments BamHI, which we are interested, are separated by 0.7% agarose gel electrophoresis and washed out in the quantity essential for the future cloning, a vector DNA is prepared. Our work on the demonstration activities for the farmers of our preparation insecticidal activities (as a foliar spray) on the basis of BT 949 against the larvae of Colorado potato beetle is summarized. According to the farmer's report (Shargorod, Vinnitsa) while using our preparation on larvae of juvenile age (first instar and second instar) practically 100% death was observed. The results of application of BT caused a great interest among other farmers. They did trust in the efficiency of the preparation and showed that they wished to use this preparation next year, but the farmers made mistakes in the technology of using BT preparation and these mistakes will be taken into account in the next year training for farmers.

Endophytic Colonization of Wheat (Triticum vulgare) and Rice (Oryza sativa L.) with Nitrogen Fixing Bacterium Klebsiella oxytoca -- Dr. N. Kozyrovskaia

Microplot tests of novel formulation of inoculant Characterizing mutants on pectinase activity.

During this period the inspection of experimental plots has been done in Vinnitsa region, namely, in Horbanivka (Berzhan P. H.) and Illinzi. General conclusion was that the plants (cabbage, tomatoes, barley, potatoes, and carrots) inoculated with Duzeol were more developed and suffered less from diseases than did the control plants. Final report of experiments conducted in Vinnitsa region will be done in October. The Klebsiella oxytoca Peh -- mutants (defective in synthesis of the polygalacturonase) have been tested on the wheat seedlings in microcosm experiments according to a standard procedure, and results showed

that no statistically proven difference in the dry weight of plants inoculated with the wild of mutated types. It can be concluded that polygalacturonase appeared to have a small or no effect on the plant colonization and plant development, and cannot be used as a characteristic, promising for increasing the plant yield.

Development of the way for gene vaccines creation on the basis of the system assembling in liposomes -- Dr. O. Deryabin

The immunization of the laboratory animals (mice) with the prototype of DNA vaccine against CSF is being continued. Some animals remained unvaccinated as the control to watch the time of the immunity decrease during 6 months after the last injection of the preparation. Search for piglets aged 3-4 months that have not been immunized and have no maternal antibodies against CSFV are being performed. This is necessary for the examination of the variants of DNA and protein vaccines against CSF. When such animals are revealed, at once the immunization of them with the recombinant protein (and then with DNA vaccine) will be performed. It will be followed by the direct challenge with the virulent strain of the CSFV. This method is currently the only reliable way to create the vaccine. The consent of the veterinary managers of Ukraine for the experiment performance has been received. The material for the immunization of swine has been prepared and frozen. For these diagnostic measures the variant of diagnostic system on the base of the CSFV recombinant protein obtained in e. coli is being developed. Now the work directed for the achievement of the necessary purity of the protein preparation, that ensures high quality.

Section III. Attachments

Attachment A. The Agreement

AGREEMENT

On

**Opening and Supporting in _____
The Center's for the Private Farmer Training and
Outreach Office**

_____ " " _____ 2000

The Raion State Administration (hereafter referred to as Administration) represented by the Head of _____ that acts on the basis of the Ukrainian Law "On Local State Administrations" on one side, and Vinnytsia State Agrarian University (hereafter referred to as University) represented by Rector Sereda Leonid Pavlovych acting on the basis of the University By Laws on the other side, have reached the following agreement with the purpose of improving extension services for private farmers and organizing the Administration's consultative service on private farming, signed this agreement on the following:

1. The Subject of the Agreement

1.1. The Parties are responsible for taking necessary actions with the purpose of reaching the common goal - opening and supporting _____ the VSAU Center's office for private farmer training and outreach, which is (additionally) to act as the Administration's consultative service for raion's private farmers in regards to agricultural production.

2. The Parties' Responsibilities

2.1. University is responsible:

2.1.1. For establishing and maintaining _____ office of the Center for private farmer training and outreach (hereafter referred to as Office), which is (additionally) to act as the Administration's consultative service for _____ raion private farmers in regards to agricultural production, not later than ____ days after signing of this agreement.

2.1.2. For conducting competitive interviews between the applicants recommended by the Administration and, judging by its results, appointing the rayon specialist not later than ____ days after the recommendations have been received.

2.1.3. For providing the Office with necessary program material, technical literature and database on farm input supply, new technologies, and economic and legal issues on private farming.

2.1.4. For providing rayon specialists with professional training.

2.1.5. For paying salaries to raion specialists determined by the American-Ukrainian Project for Private Farmer Training and Outreach.

2.1.6. For organizing field visits for the Center's specialists with the purpose of providing consultations and practical help to private farmers.

2.2. Administration is responsible:

2.2.1. For providing an Office with an appropriate office space, having proper sanitary and telephone communication facilities not later than ___ days after the signing of this agreement.

2.2.2. For providing the office utility expense for the valid term of this agreement.

2.2.3. For providing the Office with necessary computer equipment according to the University's recommendations.

2.2.4. For offering the University at least three applicants from agricultural specialists for the position of the rayon specialist.

2.2.5. For supporting all expenditures (salaries for the specialists, utility payment, office space, transportation, and telephone) associated with the operation of the Office from the local budget after the Project activity, which is currently projected to end September 30, 2001.

3. This Agreement is valid from the day of its signing and up to December 31, 2003.

4. In case the terms of the Agreement are still carried out after the expiration date mentioned in a.3, the Agreement is considered extended to December 31, 2006.

5. Any changes or amendments to the Agreement, as well as its elimination are valid only when written and signed by both parties.

6. Should the Local State Administration Institution be re-organized into other Local Executive Branch institution, this Agreement will remain legally valid for the new institution. The Agreement will remain valid in

case of the reorganization of the University. Should a new Institution be created on the legal basis within the University and authorized to supervise the terms of this agreement, this Agreement will remain valid as well.

7. Any arguments between the two parties are to be resolved according to Ukraine's laws.

8. The legal addresses of the parties:

University - Vinnytsia State Agrarian University

8.2 Administration - Rayon State Administration

Signatures

UKRAINE

VINNYTSYA OBLAST STATE ADMINISTRATION

21100, Vinnytsya, Soborna street 70, tel.: 32-20-35, fax: 32-75-40. 35-00-91

To the Head of Rayon Administration

With the purpose of improving consulting and information support for private farmers and establishing the Rayon Administrations' advisory service for private agricultural producers, Vinnytsia State Agrarian University is bound to sign an agreement on opening and supporting the Center's for Private Farmer Training and Outreach rayon office.

The Oblast State Administration is sending the request to control signing the above mentioned agreement and opening the Center's rayon office in the soonest possible time.

Vice Governor for Agriculture

G. Zabolotnyi

**Report on Assignment to Ukrainian
Center for Private Farmer Outreach and Training
July 7 to 17, 2000**

James Trott

Associate Dean, College of Agriculture
Professor, School of Vocational Education
Louisiana State University

Acknowledgements:

The success of my work in the Ukraine was made possible by many individuals. I wish, at the outset, to acknowledge their collective efforts on my behalf and especially to thank them for their gracious hospitality during my stay.

Larry Brock and his staff provided every possible assistance. All would have been for naught, however, without the ability, patience, and understanding of Wanda Yamkovenko who helped keep two cultures seamlessly connected both during my visit and during visits to the LSU campus. With the good help of Vischeslav Sereda I was kept connected to the Internet so that I could keep work moving at my office and stay in touch with my family while in the Ukraine. He, along with his wife, were also most generous in giving of their personal time to help me gain a better understanding of their country during my stay.

Natasha Fishchuk and Petro Saulyak of VSAU have done excellent work in developing a structure and offerings for the formal education component of the project. Satish Verma has provided invaluable guidance and focus to this facet of the project. He and his staff deserve much credit for the excellent progress made thus far. The collective contributions of all to this most critical component of the project will ensure future success.

At Vinnitsa State Agricultural University, Rector Leonid Sereda and his Vice-Rectors were most helpful in my efforts and extended the kindest of hospitality during my stay. The vision exhibited by Chancellor Bill Richardson of the LSU Agricultural Center, President Dimitry Melnychuk, of the National Agricultural University of Ukraine, and Director Gannady Palshin of the Ukraine Branch of the World Laboratory have been key to the success of this initiative.

The success of my visit was due, in no small part, to the excellent work of Dr. Lakshman Velupillai and his staff in the LSU Agricultural Center's Office of International Programs. Their professionalism and attention to every detail allowed me to devote my energies to the tasks at hand.

**Ukrainian Center for Private Farmer Training and Outreach
Formal Education Component**

**Based on site visit, discussions with faculty, and discussions with private
farmers**

(Site visit 7 July - 17 July, 2000)

The initial scope of work focused on two topics;

- Collaboration with formal education faculty relative to progress in planning and preparing formal education component of the program.
- Collaborate with faculty concerning the design and use of the learning outcomes assessment model for program development and evaluation.
- Provide seminar presentations on non-formal education techniques and specific delivery methods as determined in consultation with VSAU faculty.*

* Prior to the trip, the scope of work was modified to include specific seminars for faculty and raion agents that addressed non-formal teaching techniques and methods, brainstorming as an idea and problem solving tool, and the planning and facilitation of meetings. The changes proved both timely and appropriate.

Summary of Activities and Observations

Formal Education Program

The formal education program is discussed in two parts; the development of university courses and short course/workshop offerings.

The proposal wisely anticipated that educational programming would have to be tiered; focusing initially on meeting the immediate needs of the farmers while concurrently developing a more formalized program to address longer-term needs. The decision to include level appropriate coursework at both the undergraduate and master's levels was also sound. It will ensure that timely and appropriate instruction is provided to the next generation of agricultural leaders for the Ukraine. The decision to establish the Center for Post Graduate and Extension as an 'institutional home' was wise and provides a formal mechanism within the university structure to foster the development of the programs. This arrangement provides a sound means for coordinating the assignment of faculty, ensuring that faculty are properly recognized for their efforts as part of their job assignment, and providing a stable environment for the program to grow and develop.

Discussions were held during prior visits to LSU by the VSAU faculty who are providing leadership for the formal education program. The meetings centered on developing curricula for the proposed formal education program. The VSAU faculty had made good progress in fleshing out the programs by the meeting at LSU during April 2000. The most pressing need continues to be offerings to meet the immediate needs of the farmers. Prior to my arrival, the formal education group had prepared and conducted a workshop for farmer's wives on farm accounting practices. This was in response to a request from a particular raion, however, when explored further, proved to be an item having a broader base of appeal. The ability of the formal education leadership to respond to the need with a quality program is commendable and reflects an ability to be flexible based on criticality of need. Discussions with the farmers and their wives at a raion meeting reflected general satisfaction with the content and focus of the program. The participants also noted the continual assessment employed by the faculty and their willingness to make adjustments as needed during the workshop. This reflects skilled application of extension techniques to an operational program. It is my general impression that the farmers are quickly coming to rely on the project as a source of timely, high quality information. They also know that when ask questions, they will receive a timely response and good support. I suspect that one of their greatest challenges, particularly at this early stage of programming, will be in managing the tension between following the planned program and being sufficiently flexible to respond to expressed needs in a timely manner. There will always be a range of needs to be met, the key is going to be effectively using needs as inputs into a program of continuous planning and revision. The use of a logbook to document participation based on content covered, time in attendance, dates, etc. seems to work well. The log seems valued by the participants and provides a ready means for tracking material accomplished. The implementation of the two-year certificate program should prove of great value to the farmers. It will increase their knowledge in a format that recognizes the time constraints of those engaged in production agriculture.

Good progress is being made in developing courses appropriate for inclusion in the various degree programs of the university. A course for undergraduates to orient them to the philosophy and organization of the extension system and how to effectively utilize the available services should be a high priority. The dividends from this effort should be recognized in short order. Similarly, a more robust set of offerings at the graduate level will be an excellent compliment and should prove of immediate value to those actively engaged in extension work.

Using the Outcomes Assessment Model

The use of a outcomes assessment model for developing and revising both credit courses and certificate offerings should provide a sound mechanism for gathering and incorporating stakeholder input, ensuring current course objectives, and fostering continual program review and revision. Very productive discussions have been held between key LSU and VSAU faculty concerning the implementation and use of this model in developing and evaluating the Center's program offerings. Reference materials and established model programs drawn from the agricultural disciplines have been supplied to the project staff for their reference and use. These include a copy of the **departmental guide and record book for student outcomes assessment and institutional effectiveness** and a sample from one of the LSU-COA units as an example.

Formal Seminars

The third SOW objective involved delivering seminars on three topics: adult learning techniques, brainstorming, and meeting facilitation. Attendance at each meeting averaged 20+ persons and included university faculty, raion agents, and project staff. Each presentation was evaluated favorably and was generally followed by useful discussion among those in attendance. The following observations seem in order relative to the impact of these presentations.

- Those working directly with farmers seemed to identify particularly well with the content regarding non-formal instructional techniques. The questions and discussion that surrounded the presentation suggested that those in attendance are becoming comfortable with the content and principles used in extension work and the techniques appropriate to working with non-formal adult audiences.
- A very animated discussion followed the presentation on brainstorming. It was led by those faculty who had attended a parish level LCES visioning workshop during their time at LSU. The relative ease with which concepts observed were applied to the local situation underscores the value and importance of providing opportunities for exchange and observation. Similarly, the depth of understanding evidenced by those who had participated when questioned by other members of the group speaks to the quality of the leaning experiences. The training manual used to prepare visioning workshop leaders has been provided to the VSAU partner faculty for their use in local leadership development.
- There was high quality dialog pertaining to meeting facilitation and the use of meetings for disseminating information, issue identification/clarification, and information gathering. The contextual understanding and comfort level

evidenced by the participants suggests a high likelihood of future application in their assigned work.

My primary caution to the VSAU faculty who are providing leadership is to continually remember that they will be unable to meet every expressed need and that the timing of requested programs represents a constant tension between their planned offerings and those identified by others outside the normal planning cycle. There is a common tendency to try to respond to any expressed need at the time it is expressed. Most individuals making requests are generally satisfied when their request is acknowledged as having value and feel that it is line for proper attention. As a rule, how widely a topic is requested is a good guide to how broadly it is perceived to be an important issue and one needing attention.

The formal education faculty needs to continually evaluate how they are assessing client satisfaction and gain from offered programs. Drs Trott and Verma are providing follow-up guidance with respect to techniques and methods in this area.

As the program grows it is becoming more evident that the two formal education faculty providing leadership to the project are stretched relatively thin when their project responsibilities are combined with their continuing university responsibilities. It would be my recommendation that consideration be given to adding a third individual to the formal education team with primary responsibility for implementing outcomes assessment and developing instrumentation for the evaluation of both internal and external training. The position descriptions of all three should be developed so as to clearly delineate the respective roles and responsibilities of each. Clear delineation of responsibilities is particularly critical in situations where an individual's appointment is divided among multiple academic divisions and where the program is continually evolving.

Attachment D. Dr. Walter Morrison's Report

**Report on Assignment to Ukrainian
Center for Private Farmer Outreach and Training
August 19 to September 9, 2000**

Walter C. Morrison
Extension Agronomist
Louisiana Cooperative Extension Service
LSU AgCenter

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Summary

Three weeks (August 19-September 9, 2000) were spent in Vinnitsa, Ukraine, evaluating the Ukrainian Center for Private Farmer Training and Outreach Project. More specifically, the Extension delivery methods of the Center involving Plant Science activities in various raions were studied to see where improvements could be made. The research base was evaluated to see if more effective work could be carried out to benefit Extension programs and Ukrainian growers.

The Scope of Work (SOW) involved visits to farms, research stations, agricultural colleges and institutes. A seminar on Extension methods was presented to the faculty of Vinnitsa State Agricultural University and to Extension faculty of the Center.

Recommendations in this report are not made to be critical, but to improve the Extension and Research programs already begun in Vinnitsa. The following recommendations were given:

- 1) Implement more on-farm demonstrations that address a major crop production problem.
- 2) Use cost and return data in these farm demonstrations to give them more credibility.
- 3) Limit research on the farm. Also, limit demonstrations on research stations and at agricultural colleges. Growers will respond more to something that they can perform with their own equipment.
- 4) Work on establishing committees of Extension and Research to determine recommendations for Vinnitsa Oblast.
- 5) Conduct more training of raion specialists on using the ISS and in developing educational materials and demonstrations.
- 6) Ask for cooperation from Vinnitsa growers in implementing what you plan to do. I believe that they will respond. Some of this is occurring now, but needs to be increased.
- 7) Limit duplication of research by coordinating what each station or college is doing.
- 8) Avoid nationalistic tendencies which limit research results only to what was developed in Ukraine.
- 9) Establish research priorities based on contacts with growers and their problems.
- 10) Hire a faculty member to look at public and university policy and how it affects growers and the University. The currently hired lawyer may be doing some of this.

From what I saw while in Vinnitsa, limited progress is being made with private farmers using established Extension methods. One cannot expect overnight results from such an effort. I also saw the response from farmers to good raion specialists when they were helped by people from the Center. Because Ukrainian farmers are backwards in agricultural technology compared to the West, it is highly possible that rapid progress can be made in improving their farm production. I saw a tremendous work ethic and land resources that many farmers in the world only dream about. All that is needed is that little extra push to help them help themselves. I believe that when we can convince Ukrainians that true privatization of farms will work, the results will surprise many people in the world.

My thanks to all the Center staff and to the Ukrainian people for having me in your country.

Report

Purpose

To evaluate with Project Staff of Ukrainian Center for Private Farmer Training and Outreach the plant science research and extension educational programs currently in place in Vinnitsa Oblast and to suggest ways to more effectively deliver this knowledge to farmers.

Objectives:

1. Evaluate plant science on-farm demonstrations and other outreach delivery methods
2. Evaluate current plant science research base in Ukraine
3. Provide advice on the coordination and use of research by the World Laboratory
4. Evaluate and provide advice on the activities of the Vinnitsa Research Council

Schedule of Activities

The assignment began in Vinnitsa on August 20, 2000, and ended in Kiev on September 8, 2000. I met with VSAU staff and project staff immediately upon my arrival to Vinnitsa. For the first week I accompanied Dr. Bill Brown on visits to research stations and to agricultural and technical colleges. We talked to Directors, some researchers and lab personnel, and looked at their facilities. On each of these visits we were taken to look at field plot research and demonstrations. When Dr. Larry Rogers arrived, I accompanied him for one day to meet with a raion administrative staff, to talk to several farmers on their farm and to visit an agricultural college. For the remainder of my time I looked at farms, talked to farmers and raion specialists and interacted with Agricultural industry personnel and with the staff of the World Lab. A seminar on "Successful Extension Methods" was presented to about 25 project staff, VSAU faculty, raion specialists, and district supervisors. I also participated in a birthday celebration for a college director, celebration of University Day and celebration of Intelligence, Science and Spirituality Day at VSAU.

Assessment

Recommendations or suggestions made in this report are based on what I saw and what was told to me by the people I met while on my assignment in Vinnitsa Oblast. Since I was only vaguely familiar with the production of many of the crops grown in Ukraine, I made production recommendations only where obvious problems existed. I made no attempt to dictate production technology since that is best done by Ukrainians based on their research data. Most of my report and findings will be confined to Extension methodology.

Findings and Recommendations

Objective 1-- Evaluate plant science on-farm demonstrations and other outreach delivery methods.

Growers are producing wheat, corn, alfalfa, sugar beets, soybeans, sunflowers and buckwheat in Vinnitsa Oblast on larger farms. They also produce vegetable crops on smaller tracts. All are now privatized, but not as we know it. Growers cannot buy, sell or mortgage land. They can lease from the "owner", however. Most farmers are having great difficulty getting inputs such as herbicides, fertilizer, pesticides and good seed because of a shortage of capital. Equipment is badly outdated and will not hold up much longer. A few are able to buy equipment, but I am not sure how the financing is done in these cases. I suspect that close connections with someone of influence may be the method used to accomplish this. Many of the smaller growers are pooling resources such as land, equipment and labor and working the farms as partnerships. Since capital is limited, there is wholesale bartering for necessary items.

I saw very few truly on-farm demonstrations. There were some being conducted on research stations or on the land of agrarian colleges. Many of these were highly technical and did not address the most critical problems facing private farmers. I believe that I met farmers who were working very closely with the raion specialists and who would be glad to put one or more crop demonstrations on their farm. They just have to be asked and the proper guidance provided for them. Plot size does not have to be too large to demonstrate such technology as weed and other pest control, proper fertilization and application rates, use of new equipment, good varieties, good seed, proper calibration of application equipment, etc. With small plots, it would also be feasible for the project to purchase or get donated what the grower needs to complete the demonstration.

I believe that some raion specialists do not fully understand exactly what a field demonstration is all about. Some don't appear to be too willing to get out in the field and get their hands or shoes dirty. When doing demonstration work it is very important to convince the farmer that the person representing the project believes in what he is trying to teach and is willing to help with the labor involved in putting out the plots. Plots should be simple, should address one purpose or topic such as corn herbicides, plant populations, fertilizer rates, hybrid seed vs. farmer grown seed, etc.

Since most growers told us that operating capital is limited, more demonstrations should be designed to show that recommended inputs pay, rather than cost. Agricultural economists are available to help with calculating the costs involved in these demonstrations. An easy one to conduct would be one on source of seed. Many growers seem to be saving their own seed or buying or trading with their neighbor for a supply to plant. Many times it is of poor quality and is the F2 generation of a hybrid which results in poor performance in the field. A cost and return type demonstration is encouraged since growers need to see what gain they will get from investing their money. Agricultural economists should survey those growers who are buying land, equipment and other inputs to see how they are doing it. I was not able to determine this, but would like to know. There may be a lesson for those who are having trouble getting started. Some of the demonstrations appear to be replicated, research plots. There is nothing wrong with doing this on the farm, except that there is plenty of sound research already completed which has never found its way to growers. An effort should be made to extend this work, before getting too

involved in conducting new research. Some demonstrations also appear to be confounded or biased by trying to show more than one thing at a time. For instance using 2 different varieties to show the effects of a grown regulator, confounds the results.

There are an excessive number of varieties and hybrids developed by the various Ukraine Institutions. Demonstrations using only the best would be of great benefit to growers. I also think that it would be easy to get seed of varieties developed in similar latitudes of other parts of the world. These should be included along with the best from Ukraine. There are ample laws to govern what quality of seed is sold. Planting tagged seed of known quality next to farmer grown seed would be a natural for a demonstration. The above two demonstrations would address **major** problems.

Distribution of seed, fertilizer and pesticides is poor on most farms. I think this is a function of poor equipment and poor expertise in calibration of the applications. Engineers are available to the project staff who could help with demonstrations on this important phase of crop production.

I didn't see very many publications which give current recommendations to growers. This may be premature to ask, since the project is still new to all involved. However, this method of delivering information is vital to extending research information to the farm level. Publications should first take care of the basics in Ukrainian crop production before getting too technical and detailed.

I would suggest that all raion specialists and district supervisors be trained on the specifics of designing and conducting on-farm demonstrations. This would be, of course, in addition to normal training that they might receive on Agricultural Production, Farm Management and Marketing. Growers should be much more willing to accept new technology that a neighboring farmer has demonstrated on their farm. Also, when field days are held they should be on the farm of a well respected grower, one that the others look up to as a leader. Results of all demonstrations should be written up, circulated among raion specialists and to growers. It would be good for the raion specialist to present these results at their winter production meetings, so that each can gain stature in the eyes of the growers.

Perhaps the best piece of educational technology that I saw in Ukraine was the Information Support System (ISS) developed by the World Lab. If this is as complete and up to date as I think it is, it will be of tremendous support to raion specialists, growers and to researchers. Without proper training of every new project employee on its use, the system will not pay for itself. Each Center employee should also contribute to the system by providing input back on strengths and weaknesses.

Training meetings or seminars, field days and short courses seem to be a popular means of dissemination of information to growers. Care should be taken to make sure that growers will attend these meetings at the locations selected. A good way to determine this is through the use of an advisory committee where growers decide on the location of meetings and on content of programs. Farm visits have always been a vital means of educating farmers and learning what their problems are. Many of those that I visited seemed extremely receptive to us and to discussing problems and possible solutions. I believe that those raion specialists who make this method a priority will not have many impediments to doing an effective job.

I have witnessed the willingness of local officials and farmers to cooperate with raion specialists and with Vinnitsa State University faculty for the betterment of agriculture. I believe that if they are made to understand what we want and are asked, they will respond and fully cooperate with the farm demonstration program that works so well in the United States.

Objective 2--Evaluate current plant science research base in Ukraine.

I visited quite a few research stations, institutes and agricultural colleges. They all have a great land resource and plenty of labor. Shortfalls include modern equipment, computer and Internet access, facilities and Ph.D. level researchers. I was told that there were plenty of on-going research projects of an applied nature. We saw some of them as well as some more basic work. The mix appears to be about right. I think that for all the available land, there is room for more research, each unit concentrating on some different area which is properly coordinated. However, at present the available land resource is used mostly to support operating costs of the units. There appears to be too much duplication or overlap of work for so small an area (Vinnitsa Oblast).

A tremendous amount of energy is devoted to varietal development. Many stations are breeding new plant varieties and also supplying the seed for farmers. I think more care should be exercised in getting new, improved varieties out to the farming public. These varieties should each offer unique improvements to what is now available. There is no way that the large number of varieties and hybrids released are all justifiable. Maintaining all of them is tedious and costly. Concentrating on only a few of the best for each species grown in Ukraine would mean better quality foundation seed or planting stock going to farmers at a lower cost. I also think that these varieties should be tested against the best from around the world to insure that they are the best that Ukrainian farmers can obtain.

I talked to some outstanding researchers who are doing work comparable to that of any other country in the world. There is a strong realization that cooperative work with other disciplines and with researchers from other countries is important. My only concern is that strong nationalistic feelings not get in the way of scientific endeavors to the point that Ukraine growers are deprived of the best seed, varieties, equipment, pesticides and other inputs needed for modern agricultural production. I believe that there should be more interaction between researchers and growers. I also realize that many of the staff are already overloaded with work responsibilities. Unless there are research advisory committees set up to give proper direction, either duplication of effort or unneeded research will occur, which does not help the farmer. I did not see a problem of researchers interacting with the Extension staff. There appears to be a good working relationship of raion specialists with all VSAU staff, other researchers and with the project staff. Such a relationship should make research advisory committees function well.

I don't know how much can be changed quickly with regard to taxation of college and research station land. This policy is taking funds away which could go to better research and a more productive agriculture, thus providing more income to governments.

There doesn't seem to be a conflict of interest policy in place for research or for Extension. This discrepancy allows for inefficiency in the work place. Neither is there a policy on nepotism which has been shown to disrupt many smooth-running staffs.

Objective 3—Provide advice on the coordination and use of research by the World Laboratory.

I did not visit with staff here very long, but did get a very good demonstration of the ISS which was developed and maintained by the World Lab. This system was referred to by several raion specialists as being very helpful in answering questions. My evaluation of it as a teaching tool for all project staff and for farmers was that if it was kept up to date, the system is an outstanding method of teaching and would be very effective. If not, then users would gradually lose interest in it. It is user friendly, but some of the raion specialists may need training, since I gathered that they were not all computer literate. The World Lab staff assured me that they as well as agricultural experts from around Ukraine contributed to the upkeep of the system.

Objective 4— Evaluate and provide advice on the activities of the Vinnitsa Research Council

I did not visit this group per se. I have already made suggestions concerning both extension and research activities in Vinnitsa Oblast.

I made a presentation to the VSAU faculty and to the Center's staff. The title of the seminar was "Successful Extension Educational Methods for Agricultural Producers". Wanda Yamkovenko, our interpreter, took my Power Point Presentation in english and translated it to Ukrainian so that the staff could follow along as I gave my talk. I believe from the number of questions, they did receive some ideas which they can use in their work. I have enclosed an outline of the presentation given on that date.

Attachment 1
Scope of Work

Vinnitsa State Agriculture Institute Training and Outreach Center Project

Proposed Scope of Work of Walter C. Morrison
LSU Agricultural Center
August 19 - September 9, 2000

Purpose:

To evaluate with our Ukrainian counterparts the plant science research and extension educational programs currently in place in the country and to suggest ways to more effectively deliver this knowledge to farmers.

Objectives:

1. Evaluate plant science on-farm demonstrations and other outreach delivery methods
2. Evaluate current plant science research base in Ukraine
3. Provide advice on the coordination and use of research by the World Laboratory
4. Evaluate and provide advice on the activities of the Vinnitsa Research Council

Planned Activities for:

Objective 1

1. Visit with cooperators and view demonstration plots on farms
2. Determine the value of on-farm demonstrations and whether they address main farmer concerns
3. Determine whether clientele will be influenced by what they see in these plots

Objective 2

1. Visit research stations and universities where the work is being done and talk to the researchers about their interests and perceptions of what farmer needs are
2. Determine whether current research is aimed at solving local problems or whether it is too basic to be of value to growers
3. Determine whether good relationships and a cooperative spirit exists between research workers and the faculty of Vinnitsa State Agriculture University/Center and the Raion specialists

Objectives 3 & 4

1. Make presentations to Center Faculty, to researchers at the World Laboratory, and to the Vinnitsa Research Council on using tried and proven extension methods to influence farmer clientele on making the right decisions with regard to production practices
2. Interact with above personnel to get a feel as to what they perceive as the best methods to reach the goal of #1 above and then to determine whether there is a difference of opinion as to how these goals can be reached.

Attachment 2

Itinerary of Walter Morrison's Visit

Itinerary for Dr. Walter Morrison's Visit to the UCFTO and
VSAU Scheduled for August 19 - September 9, 2000

Program

TIME	ACTIVITY	PERSON RESPONSIBLE
<i>August 19, 2000, Saturday</i>		
23:00	Meeting at the airport (flight # 402)	V. Sereda
00:30	Checking in hotel "Russ"	V. Sereda
<i>August 20, 2000, Sunday</i>		
10:00	Trip to Vinnytsia	V. Sereda
14:00	Checking in hotel "Podillia"	G. Loyanych, L. Brock
16:00	Meeting with the project staff and discussing the itinerary and plans	V. Petrychenko, V. Mamalyga, G. Loyanych, L. Brock
19:00	Dinner	L. Brock
<i>August 21, 2000, Monday</i>		
9:00-10:30	Visit to Vinnytsia Oblast Agricultural Research Station "Elite"	V. Petrychenko
10:30-11:15	Visit to Oblast Agrochemical Laboratory	V. Petrychenko
11:15-11:45	Trip to the Horticultural Research Station "Podillia"	V. Petrychenko
11:45-13:15	Review station research and visit demonstration fields	V. Petrychenko
13:15-14:30	Lunch at the University	V. Petrychenko
15:00-16:00	Meet with the Rector of the University, Dr. L. Sereda and project faculty	G. Loyanych
18:00	Dinner	V. Mamalyga
<i>August 22, 2000, Tuesday</i>		
9:00-11:30	Visit Feed Institute, meet with the Institute Director, Dr. O. Babych and overview demonstrations	L. Sereda V. Petrychenko V. Mamalyga
11:00-12:00	Trip to Illintsi State Agricultural College, Illintsi raion	L. Sereda V. Mamalyga
12:00-13:30	Review activities, visit Center's office, and demonstration plots of the Project on the college farm - a training ground for students practice	L. Sereda V. Mamalyga
12:45-14:00	Lunch at the College	L. Sereda V. Mamalyga

	Return to Vinnytsia	
18:00	Dinner	L. Sereda
<i>August 23, 2000, Wednesday</i>		
8:00-10:00	Trip to Verchivka Agricultural College	V. Petrychenko
10:00-10:45	Meeting with the Director of the College, Dr. O. Kushnir	L. Sereda V. Petrychenko V. Mamalyga
10:45-12:00	Observing Project demonstration fields	V. Petrychenko V. Harkovenko
12:15-13:15	Lunch	V. Petrychenko V. Harkovenko
13:15-14:00	Trip to Ladyzhyn Agrarian College	V. Mamalyga
14:10-16:30	Study College activity and structure	V. Mamalyga
16:30-17:30	Dinner at the College	V. Mamalyga
17:30	Return to Vinnytsia	V. Mamalyga
<i>August 24, 2000 (Independence Day)</i>		
18:00	Celebration Dinner	G. Loyanych L. Tesliuk
<i>August 25, 2000, Friday</i>		
9:00-10:00	Trip to Bratslav State Agricultural College	L. Sereda V. Mamalyga
10:15-11:30	Study College work and structure	L. Sereda V. Mamalyga
11:40-13:00	Trip to Tulchyn College of Veterinarian Medicine. Taking part in the celebration of the 70 th year birthday of the College Director, Dr. V. Bezsmertny	V. Mamalyga
13:15-14:30	Lunch at the College	V. Mamalyga
<i>August 26, 2000, Saturday</i>		
9:00-10:00	Trip to Moguliv-Podilsky Technological College	V. Mamalyga
10:00-11:00	Study activity and structure of the College	V. Mamalyga L. Sereda
11:00-12:00	Trip to Cherniatyn Statefarm - Technical School	V. Mamalyga
12:00-13:00	Study farm operation and College structure	L. Sereda V. Mamalyga
13:00-14:00	Lunch at the College	V. Mamalyga
2:00 pm	Return to Vinnytsia	
<i>August 27, 2000, Sunday</i>		

10:00	Trip to Uladovo-Lulynetska Research Station	V. Petrychenko
11:00-13:00	Study station's activity	V. Petrychenko
13:00-14:00	Lunch at the station	V. Petrychenko
14:00	Return to the hotel	
<i>August 28, 2000, Monday</i>		
9:30-10:30	Visit Jaltushkiv Research Station	V. Petrychenko
		V. Mamalyga
10:30-11:30	Study activities and structure of the station	V. Petrychenko V. Mamalyga
12:00-1 pm	Lunch	V. Petrychenko V. Mamalyga
2:00-4:00	Visit to Vinnytsia	O. Nedbaluk N. Fil
<i>August 29, 2000, Tuesday</i>		
8:00-11:30	Work at Project Office	L. Brock
12:00-1:00	Lunch	V. Mazur V. Pryshliak R. Dmytruk
2:00	Work at the Project office	G. Loyanych
7:00	Dinner	
<i>August 30, 2000, Wednesday</i>		
8:00-13:00	Trip to the private farm, "Flora" and "Brothers Zhebansky, Kryzhopil raion	V. Petrychenko V. Mazur V. Pryshliak V. Fedoryshyn
13:00-14:30	Lunch	
14:30-17:00	Return to Vinnytsia	
18:00-19:00	Dinner	P. Ivanycky
<i>August 31, 2000, Thursday</i>		
10:00-13:00	Participation at the celebration of a University Day at VSAU	G. Loyanych V. Petrychenko V. Mamalyga
13:00-14:00	Lunch	L. Tesliuk
14:15-15:15	Meeting with the project faculty - present seminar	G. Loyanych V. Petrychenko V. Mamalyga

18:00	Dinner	
<i>September 1, 2000, Friday</i>		
10:00-13:00	Participation at the Celebration of the Intelligence, Science, and Spirit Day at VSAU	G. Loyanych V. Petrychenko V. Mamalyga
13:00-14:00	Lunch	L. Tesliuk
14:30-17:00	Work in the office	G. Loyanych L. Brock
<i>September 2, 2000, Saturday</i>		
10:00	Visit private farm, "Spring water" (farmer Pidvalniuk) observe farm operation Picnic	
<i>September 3, 2000, Sunday</i>		
Free Day		
<i>September 4, 2000, Monday</i>		
9:00-13:00	Visit to private farm in Koziatyn raion	V. Mazur O. Nedbaliuk N. Kredentser
13:00-14:00	Lunch	V. Mazur O. Nedbaliuk N. Kredentser
14:30	Return to Vinnytsia	
18:00	Dinner	
<i>September 5, 2000, Tuesday</i>		
9:00-13:00	Orativ raion farm tour	V. Mazur V. Todosiychuk V. Pochtar
13:00-14:00	Lunch	V. Mazur V. Todosiychuk V. Pochtar
14:30	Return to Vinnytsia	
18:00	Dinner	
<i>September 6, 2000, Wednesday</i>		
9:00 am	Visit vegetable farm Gorbanivka, Vinnytsia	P. Ivanicky
2:00 pm	Visit Stroom-Agro	V. Petrychenko

4:00 pm	Trip to Kiev	P. Ivanicky
<i>September 7, 2000 Thursday</i>		
9:30 am	Visit world lab in Kiev	P. Ivanicky
4:00 pm	Visit with Brad Campbell, representative of Progressive Genetics Co.	
<i>September 8, 2000, Friday</i>		
9:30	Visit with Vitalmar Agro representative, Roman Bairak	P. Ivanicky
1:30	Free afternoon in Kiev	
<i>September 9, 2000, Saturday</i>		
6:30 am	Depart hotel for airport and trip home	P. Ivanicky

Attachment 3

Daily Activities Report

Daily Activities of Walter C. Morrison on Assignment to Vinnitsa, Ukraine

Saturday, Aug. 19, 2000

Arrived at Kyiv airport at 11:30 PM and was met by Larry Brock and Wanda Yamkovenko. We proceeded to Rus Hotel for overnight stay and to meet and travel with Dr. Bill Brown.

Sunday, Aug. 20, 2000.

Travelled to Vinnitsa and checked into the Podilla Hotel. We met with project staff and went over proposed agenda for myself and for Dr. Bill Brown. It was decided that Dr. Brown and I would proceed together for his time here evaluating research stations and Agrarian colleges and that after he left, I would evaluate on-farm demonstrations and talk to farmers. We were welcomed by G. Loyanich, Paul Ivanicky, Ludmilla Tesluk, Slava Sereda, V. Mamalyga, V. Petrychenko, and the 3 district field administrators.

Monday, Aug. 21, 2000

Travelled to Vinnitsa Oblast Agricultural Research Station known as "Elite". This was a large station where 120 hectares were devoted to research and 2000 more hectares were involved in seed production. Crops included summer vetch, canola, brewing barley, and soybeans. There is also some breeding work to improve genetics of dairy cattle and pigs. Thirty-four scientists are employed. It could not be determined what level of education these people had although 3 were plant breeders.

There was a department of applied research which involved among other labs, soil fertility and fertilizer work and plant protection (weeds, diseases, and insects). This station is considered a link between production and the technical institutes. There are 14 trial farms which end up doing applied production studies. The main purpose is to produce and sell seed to farmers. There have been over 100 crop varieties developed at this station.

Seed production, cleaning and storage is carried out at this location. Equipment from German company Petkus. National seed standards established in 1993. Includes germination %, purity, disease and insect levels present, and energy content (must mean some measurement of seed vigor). Different levels similar to our Foundation Program but names are different, i.e., Elite, Super elite, etc. Ukraine standards try to comply with international seed standards.

There is also an extensive animal breeding program which is directed towards development of dairy breeds. Two new breeds have been developed at station, from which have come cows which produced 8 to 10 thousand kilos milk per year. Artificial

insemination is practiced, but semen is from Russia, who has access to the best in the world.

It is opinion of staff at the station that the most profitable crops in Ukraine are wheat, sugar beets, and livestock. Pure line varieties are developed and sold, hybrid seed are bought from companies, mainly Cargill and Monsanto. Through cooperation with these companies the seed brand name of Kadr has been developed.

Several labs were visited. One tested mainly for chemical pesticide residues. Have capability to test for 60 different pesticides. They are concerned with soil pesticide carryover and soil contamination with harmful pesticides. No nutrient soil analyses conducted here. Another lab visited was concerned with testing grain quality. Brewing barley was evaluated for protein, carbohydrates and soil or clay content. Sugar beets were analysed for heavy metals, mainly from auto emissions (lead). Other grains analysed for protein, calcium, phosphorus, moisture, nitrites, fat, fiber, ash, and TDN, but we concluded that they called it something else. Main needs were equipment, computers, and one extra employee.

Field visits were made to demonstration plots where faba beans, soybeans, and buckwheat were observed. Yields look good, but it appears that these were what we would call applied research work instead of demonstrations. Dr. Petrychenko showed us his work on the station using the Neddler Design in which rows are planted like spokes in a wheel. As row gets to the center, row spacing decreases. This appears to measure how much of a population density a variety can take before it lodges. Seems to have very little practical value in farm demonstrations. Dr. Petrychenko indicated that the biggest need was a new Ukrainian Agrarian Policy.

We next visited the Horticultural Station "Podillia", which concentrated their efforts on orchard fruit. Station has 600 hectares, of which 200 are orchards and 30 are devoted to tree nursery production. Corn, wheat and perennial grasses are used for rotational purposes. There are 150 employees of which 11 are considered scientists. Production of apples, strawberries and plants is biggest source of income and source of funds for covering the expenses of the station. They attempt to grow all varieties of Ukrainian origin to preserve genetic base. Since they have no resources for virus testing, most trees are of Dutch origin which kicks up the cost per tree by 300%. Scientists at station not afraid to borrow technology from neighboring countries and adapt it to their own situation.

We observed drip irrigation of orchards, mainly used to apply additional needed nutrients. There was also a large virus-free tree production nursery and production of dwarf fruit varieties. We also looked at a strawberry plant nursery.

Needs of station include more equipment. About 50% of income comes from sales and 50% from state funding.

In the latter part of the afternoon we met with the Rector, Dr. Leonid Sereda, and project faculty of Vinnitsa State University. We introduced ourselves to them and asked questions of them. Found out that 80% of their research work is of the applied type. They are all involved in heavy teaching loads and in the Extension program. The faculty as a whole believed that if current research and recommendations were followed, production from farmers could increase by 4X; most would accept a 1.5X increase at present as a success story. Faculty felt that limitations to their job were outdated lab equipment, mainly for soil and feed analysis and time constraints.

Tuesday, August 22, 2000

In the morning we visited the Feed Institute which is under the Ministry of Agrarian Policy and works in all aspects of feed production, mainly forages. They are also involved in reproduction and selection of livestock, mainly pigs, poultry, dairy and beef. The Institute cooperates with 20 oblast experiment stations and 15 other institutes.

Departments of Feed Institute(labs):

Feed crop selection, forage seed production, development of cultural practices for crops, specialized feed crops, corn silage production, grain legume crops, pastures and range, feed production under the irrigated system, weed science, fertilizers for feed crops, feed nutrition, feed rations and pre-mixes, storage of feeds, feeding trials and digestibility; and coordination of scientific work, economics and management.

Their research farm totals 1700 hectares, 300 of which are used for research. Also under the control of the Feed Institute is the Mykolaiv oblast station in the south of Ukraine which has 4000 hectares and is mostly used for seed production of feed crops.

The Feed Institute derives 50% of operating funds from the state and 50% from self-generated income. Seed sales make up a large portion of the self-generated income. Constraints of institute are materials, equipment, facilities, modern lab equipment, and new field machinery. One note of interest is that employees are not paid regularly.

One feed mixture which they have developed and continue to work on is the use of whole soybean forage harvested at R5 stage and mixed with corn. Two million hectares of corn are grown in Ukraine with an average yield of 4 tons/hectare; they are getting twice that in demonstration plots.

We toured soybean research plots with Dr. Petrychenko and saw variety work, cultural practices, rotation work, weed control and seed production. Soybean varieties being developed are Maturity Groups 00 and 000. Forage crops researched are birdsfoot trefoil, a perennial legume that is adapted to heavy grazing, clovers, soybeans, and corn. Irrigation research involves using all types of irrigation systems including poli-pipe.

That afternoon we visited Illintsi State Agriculture College, one of the oldest and largest agrarian colleges which houses one of the project raion specialists. The college was

completely destroyed by WW II but began rebuilding as an education institution in 1964. About 4000 hectares of land are used to teach students, which number about 1100. They produce seed for grain crops and potato. Other work involves horses, pigs, cattle, and bee hives. They process agricultural products and have available a grain mill, feed mill, cannery and dairy.

Students get both scientific and practical training involving improved technology in planting practices. Ten-day seminars are used to give intensive training in a short period of time. The full-time faculty of 92 has access to the Internet. Better graduates of this college are prepared to go to Vinnitsa State University which has a cooperative agreement with Illintsi. Majority of graduates go into farming and processing. One interesting note here is that raion specialist is housed here. He helps in promoting seed sales and in organizing seminars. He uses expertise at college to help answer questions. In answer to my question concerning home economics work, I was told that there was no home economics or youth extension program at present.

College faculty have different levels of education but generally most are equivalent to B.S. degrees, with a few studying for the M.S.

We visited station plots which included soybean, sunflower, sugar beet and buckwheat fertility work. The general production looked outstanding.

Wednesday, August 23, 2000

We travelled to Verchivka College which has about 400 students and 470 hectares of land. This college provides agronomic training and equipment and animals are used for hands-on study. Has a bakery, sunflower oil press and a processing plant to make cereal from grain. Faculty all have equivalent of B.S. degree. Five hectares are devoted to fruit crops, 52 acres of ponds with some fish production. There is also a raion specialist located here who handles the questions on legal issues as well as Ag technology. He is an agronomist by training. Most raion specialists are agronomists, economists or engineers.

The college's Department of Agrarian Management is relatively young. They have no Internet access. Have a unique computer information system which would help raion specialists get answers to their clientele.

Crops grown are sugar beets, winter wheat, barley, food peas, corn, soybeans, cattle and pigs.

Part of operating budget is derived from sale of grain and livestock. However, they must pay taxes to raion government. Tax is a property tax based on fertility of land and on crops grown on it.

We observed plots of corn, soybean and sunflower. Most of these are production plots with very little research being done.

In afternoon we visited Ladyzhyn Agrarian College which is a 68 year old technical institution. They produce mechanical and electrical engineers. College has 550 full-time students, 62 faculty and 2 lab assistants. Facilities are relatively new. Has been a collective farm but since restructuring they are an educational facility. College has 382 hectares which is cared for by the students who plant winter rye, summer barley, sugar beets, sunflower and buckwheat. Main purpose is to develop student education in agricultural production, use of machinery, etc. rather than high yields. Budget funds come from Ministry of Agricultural Policy. If they make any profits, they are allowed to use that money as well. College receives a given amount of funds for each vocational education student enrolled. Surrounding towns contribute some because they feel that graduating students may stay in the area and help out the community. Enrollment had dropped off some but is steady at present.

Main needs are agricultural equipment because graduates have not been trained in use of modern equipment. A portable lab for soil analysis is also needed. There are adequate computers, but access to Internet is too expensive at present. Computers are only used to teach and to run programs.

Thursday, August 24, 2000

We celebrated Ukraine Independence day by going to a lake near Vinnitsa for picnicking and fishing at the invitation of a small farmer.

Friday, August 25, 2000

In the morning we travelled to Bratslav State Agricultural College. They teach accounting, finance, banking, commodity production and agricultural management. The college has graduated 18,000 in 60 years who work in all agricultural areas of Ukraine such as in banks, processing plants and on farms, and it has made the top of the list for quality of standards the last 3 years. They have 58 computers in 5 classrooms, which they consider adequate, and most are used to train bookkeepers and to run programs. Every graduate is a computer expert. Another specialization is in the use of electronic accounting equipment. Graduates have been employed worldwide.

Professors are encouraged to constantly upgrade their knowledge. There are 86 faculty which are considered to be at a special higher educational level (above a B.S. degree, I believe). Five are working on post graduate degrees (something above the B.S. or M.S.) They had an incentive for students where superior performing ones were rewarded with reduced or free tuition, but it was dropped because of pressure from above. There are some legislative stipends which are awarded to certain students.

The budget is 70% from state funds and 30% from tuition. The college consists of only 120 hectares of land. Barley and sugar beets are grown and proceeds go to help with land costs because they must lease some land. One program involves training more women to take care of bookkeeping activities while the husband handles the agricultural production.

College needs are: finish construction, build new facilities, and obtain enough equipment and enough computers for 2 more classes (14 in each class); and access to Internet.

Facilities available are: café, grocery store, bakery, grain processing factory. Facilities we saw were better kept up than many other seen thus far. Dr. Sereda pointed out that he would like to organize this college like American colleges are at present.

In the afternoon, we participated in 70th Birthday Celebration of the College Director of Tulchyn College of Veterinarian Medicine, Dr. Bezsmertny. Following this we talked to the Assistant Director of the college. This college was established as an animal breeding and veterinarian college in 1956 and has graduated over 10,000 students thus far. The main specialty is now Vet. Medicine. There are 820 students at present and 83 faculty. Of the faculty there is one DVM, one MVM, 5 postgraduates, 2 honoured teachers, and 6 Endocrinology specialists. Some Vinnitsa professors come to the college to lecture. This college turns out most of the Vet. Specialists (I don't believe that they would be equivalent to Vets in the US) in Vinnitsa. In 1993 they had only one building, but now have some newer ones transferred from the military. The college has only 15 hectares, but really don't need any more.

The budget is derived from 95% state funds and 5% from tuition. More modern equipment is needed. Vets are in great demand; training is to take care of both large and small animals. Supplies are available for vets, but cost is high. We toured the facilities, classrooms and labs of Vet. College. A few were renovated but many more are being worked on gradually.

Saturday, August 26, 2000

We travelled to Moguliv-Podilsky Technological College which is down near the Moldovian border. It was established in 1948 as a trade technical college but in 1983 it became a technical college under the Ministry of Grain Storage and Processing. They trains several types of specialists. The first is in the processing and storage of grain. Graduates work at elevators and grain receiving ports where they grade and define purity and damage. Other graduates are also involved in processing and milling of flour and production of cereal. Another type of specialist is trained to develop feed rations from grain. They use canola, sunflower and soybeans as protein source and crush for oil content.

A third type specialist trained is bookkeepers or accountants. They are trained to work at processing plants, mills, and grain elevators, but deal with the business part rather than the technical aspects. Some computer classes are taught especially to accountants.

The college has 500 full-time students and 300 who take correspondence courses. Sixty percent of each course is devoted to lectures and practical lessons while 40% involves practical experience with equipment. Students trade labor at the college for the learning experience. Student option is to enter college after 9th grade or after 11th grade (end of high school). Study will be from 2 ½ to 3 ½ years depending upon which option is

selected. Better students are accepted at Vinnitsa State University or at Kiev Technical University as 3rd year students. Corresponding students must come to the college twice a year. They bring test papers and take exams and get oriented on a self-study program. Students are advanced to the second year if they pass the first. There is only one other technical college of this nature in Ukraine.

College administrator and both assistants are women. Majority of college enrollment is made up of women. The 36 faculty all have advanced education, 25% higher than B.S. degree, and 3 senior teachers. The budget comes from state funds (80%) and from tuition (20%). Basic needs of this college include equipment, machinery and another computer lab. They have accessed the Internet this year. Students have a working plan and must pass all levels with a 3, 4 or 5 out of possible 5. Some faculty have interest in research and attend international conferences and publish work. Students also do some research and must pass comprehensive exam.

In the afternoon we travelled to the Cherniatyn State Farm- Technical College. This college was established in 1944 as a collective farm and two years ago was named as an Agrarian college. It consists of 2200 hectares, 1700 arable. There are 500 hectares of orchards and fruits and 140 of ponds. Strawberries, raspberries, plums, apples and pears are grown. There are 1200 dairy cattle, 900 of which are replacement heifers, and 300 pigs. Students help grow seedling fruit plants to give them practical experience. There are 650 day students and 350 corresponding students. As in other colleges they may enter after the 9th or 11th grades.

The main purpose is the production of fruit with other specialties in agronomy, bookkeeping, farm mechanization, and bee keeping. Enrollment is at a limit because of limited dorm space. The budget is 80% from state funds and 20% from tuition. The farm income helps pay electricity, building renovation, and other upkeep.

There are 320 agricultural workers and 120 staff (66 are considered faculty). Each student is responsible for one beehive and 1000 fruit seedling trees. They get 10% of profits for themselves. College tuition is equivalent to about \$100 per year (\$120 for accountants). Dorm room rent is about \$1.70 per month. Specialists in agricultural mechanization are more in demand than accountants. Most profitable crops are wheat and apples. The college and farm pay a heavy tax burden which is a fixed property tax based on quality of soil, number of hectares, and on types of crops grown.

Sunday, August 27, 2000

We visited the Uladovo-Lulynetska Research Station which was established in 1888 as a sugar mill and sugar beet research station. A very prominent breeder ran the station from 1898 to 1962. The breeder's goal was to develop varieties of sugar beets from Ukraine which were resistant to disease and had one plant per seed instead of two. Current breeder indicated that pea breeding is also an important project of station. They have developed 80 varieties of sugar beets and 40 of peas. It is one of the larger breeding programs in the country. The former USSR grows about 20% of their varieties of sugar beets and 40% of

their pea varieties. Three sugar beet hybrids have been developed, two in cooperation with Yugoslavia and Germany. Hybrids produce exceptionally high yields of 70 Tons/Hectare and 21% sugar. Five new pea varieties have also been recently released by Ukraine scientists.

The station encompasses about 6300 hectares, about 5000 which are arable. It is divided into 3 units:

- 1) Selection and seed production of sugar beets
- 2) Selection and seed production of peas
- 3) Development of production technology for different crops.

There are 110 employees. There are 9 M.S. and one Ph.D (pea breeder). There are 1100 hectares of winter wheat, 400 of sugar beets, 300 of peas, 450 of barley, 600 of corn green chop, and small amounts of soybeans, buckwheat and vetch. Seed is produced for most of these crops. Farmers are able to buy or barter for seed for planting.

Station relies on feedback from farmers and on their own experiences to decide upon recommendation and release of new varieties. Most breeders have at least 20,000 different genetic lines to work with. When breeder wants to release a variety he applies to Kiev Board and receives a certificate which is not equivalent to Plant Variety Protection but certifies that it is registered. It is then tested at 40 sites for 3 years. If proved to be 5% better in one or more traits, it is then registered as a nationally approved variety. Variety characteristics are defined by further investigations and then a passport (patent) is issued. The station of development is considered the owner of the variety. Royalty payments are hard to come by, for reasons not understood, except there appears to be little enforcement of some pretty good seed standards. The farmer can get a quality guarantee from the station by asking for one. This station is a member of IONA, which is an international variety protection organization. Ukraine has a genetic bank for germplasm preservation similar to the one in St. Petersburg, Russia. This station is the only one in Ukraine which evaluates variety germplasm from all over the world.

The station is also involved in the production of pigs and has 80 bee hives. Equipment includes 70 tractors, 85 vehicles, 12 combines, and 5 sugar beet harvesters. It has a flour mill, a bakery, but no sugar mill. Their biggest difficulty is keeping equipment up to date. Budget is 70% from state funds and 30% from self generated funds.

Monday, August 28, 2000

Dr. Brown visited Yaltushkiv Research Station and visited with Governor of Vennitsa oblast. I was ill and stayed in all day and worked on some of this report. My visit was rescheduled for September 2.

Tuesday, August 29, 2000

I spent most of day preparing for presentation to VSAU faculty scheduled for Thursday and on planning other future activities. In late afternoon Dr. Sereda took Dr. Brown, Dr. Rogers, Slava, and me on Vinnitsa city tour to visit church which was memorial to prominent Ukranian, M. Pyrogov. Also visited site of bunkers build by Hitler during WWII for him and his staff.

Wednesday, August 30, 2000

Dr. Brown left for Kiev and we were joined by Dr. Larry Rogers on this date. We first visited Kryzhopil Raion office and talked with the raion specialist and with 4 farmers who were invited there. One of them was Flora, the head of the raion farmers association. The raion specialist was an agronomist from St. Petersburg Academy of Science and was Head of the Agricultural Board in USSR times. When restructuring came, he was hired into our project. He has 80 farmers in his raion. Farmers there farm 500 hectares of land and stated that their main problem was obtaining money for agricultural equipment and for good seed since they are seed producers. Raion specialist says he is able to help his farmers by using his connections with government and with other agencies to get help with needed inputs.

From there we visited the farm of the two Zhebansky brothers. We were informed that they had just bought 3 new tractors; we saw a new one. Source of purchase funds was not clear. These growers appeared to be progressive and are the type that we need to work with since they are more likely to follow recommendations and have the eye of their neighbors. They were hand harvesting sugar beet seed which was filled with weed seed. The corn crop looked good but the distribution of the plant population was poor and too low. He indicated that he applied about 120 # of N to the acre. He planted hybrid seed, but indicated that only collective farmers were usually allowed to use this type seed, and that he had obtained special permission. We inspected several of the livestock barns which were purchased from an old collective farm. They were in bad disrepair but growers indicated that in a year they would look much better.

On our return to Vinnitsa we stopped by Bratslav State Agricultural College to visit with the station director who had not been there in the previous visit of August 25. Also visiting him was a seed company representative. The director seemed hostile to the new initiatives of the project and to the programs which the company representative talked about to help farmers purchase inputs. He kept referring to the good days of the old Soviet system. Visit was short as we had already visited the facilities of the college.

Thursday, August 31, 2000

Participated in the Celebration of University Day at VSAU in the morning. This is an orientation program for new students just entering the University.

In the afternoon I gave a seminar entitled, "Successful Extension Educational Methods for Agricultural Specialists". There were about 25-30 university faculty, raion specialists, and district administrators present. We discussed Louisiana Extension methods and how they might or might not work in Ukraine.

Friday, September 1, 2000

We participated in the Celebration of the Intelligence, Science and Spirituality Day at VSAU. This is the first day when all students at the University return and is a program getting them ready for the new school year.

In the afternoon, I worked at the project office on this report.

Saturday, September 2, 2000

First stop was the Bar Raion Administrative office. The purpose was to obtain the support of the raion administration in supplying office space, telephone, computer, etc. for a new raion specialist to be hired. The specialist can be from the area but must be qualified; either an agronomist or an animal scientist. We want at least 3 to apply. The raion administrators appeared concerned that a new man and/or a new farmer cooperative might interfere with the current Agricultural Board which is a carryover from USSR days. Brock assured them that our intent was only to add to what they already have for the further benefit of farmers. After some discussion, they agreed to submit a list of qualified job candidates and to provide what the new raion specialist would need. A representative of a militant farmer group was allowed to speak and voiced his opinion that his group would be left out in obtaining our services if this new plan was instituted. Brock assured him that this would not happen.

In afternoon we travelled to Yaltushkiv Research Station and visited with the Director of the Kiev Institute of Sugar beets which is under the Ukraine Academy of Agrarian Science. The farm has 2 units: a breeding unit and a production unit. This station is over 100 years old and its main goal has been the development of better varieties of sugar beets. They were the first to breed a variety with one plant per seed. The second world war and the death of the plant breeder delayed research somewhat. They now have released 21 of 27 varieties with this trait. Dr. Roik, the new breeder, began work in 1998. Work is now concentrated on hybrid seed production and on genetic transformation. Two new pure line varieties and 5 hybrids in cooperative efforts with Slovakia and with Germany have been released. They are also working with American Company, "Better Seed" and with German Company, "KBS".

Other breeding efforts are directed at feed beets and buckwheat. Two varieties have been submitted and one has been released to Czechoslovakia.

All breeding work is developing germplasm that is adapted to local climate. Seventeen scientists, with labs and greenhouses are involved. Major thrust is the breeding of transgenic sugar beet hybrids. Resistance to a disease which causes an excessive fibrous root system is a concern.

They have discovered and put the "Bar" gene into both male and female plants to obtain Roundup Resistance (Basta Resistance). Current work on this is with the Adventis Company. Testing has shown that Basta resistant hybrids are equal to or better than current conventional hybrids. They are on their own at present since there is no government structure in place to handle transgenics. Dr. Roik has one other employee who keeps up with other GMO's and their use in other countries of the world. They are more interested in breeding herbicide resistance since it will mean using less "poisons" in the environment. Dr. Roik is not against the Bt gene personally, but is very cautious. He is working on a joint venture in the greenhouse with Monsanto to develop male sterility in RR lines so that RR pollen will not contaminate the environment.

We looked at the greenhouse work where seedling sugar beet plants were being screened for herbicide resistance and for genetic male sterility. They have also found that tetraploid hybrids have 30% heterosis, while diploid hybrids have only 10% over pure line varieties of sugar beet.

Sunday, September 3, 2000

Free day

Monday, September 4, 2000

In the morning we visited the Koziatyn Raion Specialist, Nadia Krendentzer. She is a 1993 graduate of Vinnitsa State University with a degree in Agricultural Economics and Farm Accounting. Her main experience is work with a food company distributor. She has worked for the project for less than a year. Activities performed thus far include the organization of several technical seminars during the winter. One was a week long and was designed to train wives to handle the accounting of the farm, since their husbands had formerly worked on the collective farm and this had been done for them. Other activities have included helping organize a farmer's cooperative and working with livestock producers on construction of farm buildings. She has enlisted the help of Vinnitsa professors when necessary. When asked whether she had problems getting acceptance from farmers because of being a woman, she indicated no, because she does not try to downplay her lack of experience, but just tries to help them.

We visited one of Nadia's demonstrations which was a corn field where the herbicide Basis was applied to one hectare and a one hectare check was cultivated with no herbicide. There was a definite difference in weed control in the herbicide treated plot and it appears that ears were larger. Upon harvesting of the plots, she will calculate costs and returns for each treatment. Further inspection and questions revealed that it was planted with farmer saved seed which meant that hybrid seed was not used. Also, only fertilization was compost or manure with an unknown rate. Field looked like it would yield 115 bushels/A. Stand was uniform which I considered unusual from what I had seen of Ukrainian planters.

We talked to another farmer who grew potatoes. He was hand grading them for seed purposes. He grows 5 hectares, one for seed, which includes 13 varieties, and the other four for cash or for barter for labor. He farms a total of 25 hectares and grows sugar beets and buckwheat also. He seemed very receptive to the raion specialist's help. He indicated that he would like to cooperate by planting a potato variety demonstration since he felt that his seed customers would like to look at all the varieties that he handles. He has sought and received advice from the Potato Institute in Kiev on occasions.

In the afternoon we returned to Vinnitsa Project office and worked on this report.

Tuesday, September 5, 2000

We travelled to Orativ raion and met with raion specialist, Mr. Pochtar, who is housed in a machinery park facility. Prior to restructuring, the facility served as a support system for a collective farm, taking care of equipment, building of roads, and buildings. Mr. Pochtar is an agronomist by training and before coming to the project he managed a collective farm for 7 years, was head agronomist in another raion and head agronomist for the Orativ Raion Agricultural Department. All his experience has been involved with agricultural production, equipment maintenance and administration. When asked about what the difference in responsibilities is now, he stated that farmers are now free to take his advice or not. This was not the case earlier. He uses University specialists when needed and main thrust is to help new privatized farmers get the advanced training that they need. He takes them on farm tours at different times of the year to see timely production practices being carried out by other, successful growers. He has assisted children of growers get into Vinnitsa State University.

We talked to Mr. Smolokov and to Mr. Andrushak in the raion office. Smolokov farms 16 hectares, which he has rented for 5 years. He would like to buy it. He has no agricultural education, and no equipment. He felt like his only options were to work in the markets, shops or on the farm. His needs are help with legal issues involving land and information on getting into farming. Mr. Andrushak works 115 hectares and grows buckwheat, corn, sugar beets and proso millet. This is his first year of farming on his own, prior to experience as head agronomist in a collective farm. He has some training at the National Agricultural University. From the center he has obtained information on new farm technology, leasing of equipment, farm accounting, and on rapeseed production. Both farmers pool resources with their neighbors such as equipment and labor. They both had questions of me concerning US government support aid, irrigation, government help with fertilizer purchases, and on getting loans.

We toured the equipment park which now belongs to a group similar to a corporation of stockholders. They lease land from small holders and farm it, paying rent to the owner a pre-arranged amount of the crop grown. They also lease some of their equipment out to small farmers. They appear to have a lot of space to store equipment and grain. However, everything is old and will only last so long.

We visited the farm of a third grower who left a construction company and bought 50 hectares. He too has no agricultural experience. Some other growers lease small tracts to him also, making his total cultivated land amount to 840 hectares. Has 380 head of cattle and 550 pigs. This grower is involved in milk and meat processing and runs a flour mill and a vegetable oil crushing plant. He employes 120 people and pays them in grain, oil or sugar. He uses the center for many purposes which include crop rotation information, improvement of livestock production, bull selection, construction of swine facilities, help with obtaining elite wheat seed, and help with quality and pricing of pigs. He and the raion specialist plan on a pig feeding demonstration.

A fourth grower was contacted on his farm and we found out that he pooled his resources with 3 other growers. They work it as sort of a partnership, each contributing land, labor and equipment. They grow carrots, sugar beets, winter wheat and buckwheat. They have purchased "tagged carrot seed" but found out that it was not pure, having many off colored plants. Biggest advantage that he sees in the current arrangement is that they control more of what they do, than in collective farm days.

Mr. Pochtar appears to understand his role as raion specialist better than most, is very knowledgeable and obviously gets around, and is an effective teacher.

Wednesday, September 6, 2000

Sasha Krivokov, raion specialist for Vinnitsa took Paul Ivanicky and I to visit a vegetable farm near Vinnitsa. The raion specialist is an agricultural economist and had prior experience working with a bank. He has little agricultural experience and confines his activities mostly to helping growers market their crop. We did not visit the grower, Mr. Bershan, but saw his production fields and his greenhouse. He began with 3 hectares and because of his success has increased to 11 hectares. He was growing melons and cucumbers in the greenhouse, but recently had problems with an insect that had infested and killed all plants prematurely.

Two demonstrations on using Nitrogen-fixing bacteria on tomatoes and a growth regulator on cabbage were shown to us. It doesn't seem like growers or raion specialists know proper demonstration design techniques, as this grower used two different varieties with the growth regulator demonstration, confounding the results. Also, I think that it would have been better to demonstrate the more basic production inputs such as quality seed, fertilizer rates, varieties, pest control methods, or planting dates, rather than something which is probably in the distant future for Ukraine farmers. This grower was disillusioned on using "tagged seed", since his bad experience with poor cabbage seed convinced him to save and use his own seed this next year. He is sold on the center and will do any thing that we ask. All he needs is proper direction.

In afternoon, Paul, Dr. Petrychenko, and I visited Stroom-Agro, a soybean seed production and processing company. They are in their 3rd year and have 3000 hectares in seed production. They process soybeans into animal feed and food for human

consumption. All production is with Ukrainian developed varieties. The company has government guarantees that a certain portion of seed will be put each year into a government reserve fund.

Farmers who deal with the company are assured of good varieties and quality seed. Attention is placed on proven varieties for the locale. Their varieties range from early maturing, Group 000 to later maturing, Group 0. The growers are provided with consultants who advise them on crop production practices. The company provides a market for the crop and will finance the operation if it is deemed sound. Presently they pay growers, \$200 per MT which is \$5.45 per bushel and would be a good price at today's market demand. They deal mainly with large collective farms, but will work with any farm size, private or not. Stroom-Agro provides services to 1/3 of Ukrainian soybean crop. They are in Ukraine because they see a boom in soybean production and at present there are not enough good varieties and seed available, nor are growers prepared to grow the crop. They expect the Ukraine crop to double next year to 90,000 hectares. Stroom-Agro cooperates with Vinnitsa State University and especially with Dr. Petrychenko on variety demonstrations on 3 farms totaling 5 hectares. He involves company personnel in our seminars.

The company is working with Monsanto to develop transgenic varieties. Ukrainian scientists and company personnel have stated that they are cautious with this new technology, but don't want to get left behind other areas of the world. They would like to work on joint research projects with the US. I was asked about no-till production of soybeans in Louisiana. From what I have seen it is years away in Ukraine. Significant advances in herbicide use and equipment will have to occur plus some incentive to change the way the grower is farming at present. Soybeans have a future in Ukraine because they can be produced cheaply and do well in similar latitudes in the West.

We said goodby to staff of Vinnitsa State University and Paul Ivanicky drove to Kiev, checking in at the Rus Hotel.

Thursday, September 7, 2000

I spent the morning working on this report and then visited the World Lab in the afternoon. Dr. Gennady Palshin, Director of the World Lab, was not in. We met with Yelena Nazarova who updated me on the history and structure of the organization. It is based in Geneva and has several branches, one of which is in Ukraine. Operates by cooperative agreements or grants from different countries, one of which is USAID. Works on environmental problems and issues such as the Chernopyl accident. Other areas are energy conservation in urban areas, gene therapy, new medicines for heart and cardiovascular disease and diabetes. There are 10 staff in Kiev, but more than 100 scientists working on temporary projects. Of special interest to me was their Information Support System (ISS) which was developed by the World Lab mainly to support the Extension work done by raion specialists. There are about 10 programming specialists working with agricultural experts around Ukraine to keep the information system

updated. I was given a demonstration of how the system works. They were giving Dr. Rouse Caffey credit for the idea and support for such a system.

When asked about the two Extension systems that they have been exposed to, they point out that they would like to develop their own system, combining the best of the US and European systems.

We met Mr. Brad Campbell, representing Progressive Genetics, for dinner and visited about his activities in Ukraine. They are primarily interested in promoting soybeans, but will probably get into rapeseed, sorghum, and sweet corn. They work with growers in large demonstrations designed to use US varieties, herbicides and irrigation in a no-till system. Most of their work is south of Vinnitsa and involves Group II varieties. They are high on soybeans for Ukraine, but will not work with growers who cannot cash flow. He indicated that yields as high as 55-60 bushels per acre have been realized. Mr. Campbell does not have a very favorable impression of Ukrainian developed varieties. They yield much lower than US public varieties developed in Minnesota and Iowa, shatter badly, and are not cold tolerant early in the season. The company is looking for partners to collaborate with.

Friday, September 8, 2000

Paul and I met with Roman Bairak, a native Ukrainian and graduate of LSU in Agricultural Economics. He has worked for Cargill and now is employed as General Director of Vitalmar Agro, an oil seed processor in Kiev. They have outlets in Russia, Argentina, and in Ukraine. They decided to get into the Ukrainian market a few years ago, because of the 2.8 million hectares of sunflowers planted each year. Most of the production comes from eastern and southern parts of Ukraine. Government policy concerning an imposed trade duty has hurt exports. At one time they were #2 exporter of vegetable oil. They are now also interested in getting into processing of rapeseed oil. We discussed the terrible shape of Ukraine agriculture and its problems. Mr. Bairak indicated that a new program called Grain 2001 was supposed to double the grain production next year, but he doubted whether growers would trust the government to follow through on their promises to help them with grain production.

The remainder of the day was spent looking at sights in Kiev and in shopping.

Saturday, September 9, 2000

A driver from the World Lab picked me up at Hotel Rus at 6:30 for the airport and the trip home to Baton Rouge.

Attachment E. Dr. William Brown's Report

**Report on Assignment to Ukrainian
Center for Private Farmer Outreach and Training
2000**

William Brown
Associate Vice Chancellor and Associate Director
Louisiana Agricultural Experiment Station
LSU AgCenter

OPTIONS FOR ORGANIZING AGRICULTURAL RESEARCH IN VINNITSA OBLAST

William H. Brown
August/September 2000

The purpose of this report is to discuss the agricultural research capabilities in Ukraine's Vinnitsa Oblast, to provide some options for developing a coordinated research program that will serve agricultural stakeholders, and to illuminate a number of issues that will have to be dealt with as these or other changes are made. This report was prepared using data assembled by Mr. Viacheslav Sereda and information collected on personal visits to five research stations and seven colleges in Vinnitsa Oblast during the period August 19-31, 2000. A substantial amount of insight was also provided by the staff of the Ukrainian Center for Private Farmer Training and Outreach (UCPFTO), a USAID-sponsored project operating as a part of Vinnitsa State Agrarian University (VSAU).

Although every attempt was made to be comprehensive and accurate there are always more details that could have been explored and issues that could have been developed in more depth if more time were available. Further, in spite of the valiant efforts of the translators, the intricate details of many issues relating to Vinnitsa's teaching, research, extension, and agricultural production systems were not fully fathomable. I apologize for any oversights or inaccuracies in facts, names (especially names), titles, and places; they are not intentional and, hopefully, will not detract from the overall themes and recommendations of the report.

METHODOLOGY

A "Scope of Work" was prepared in June 2000, reviewed, revised, and approved by the International Programs Office of the LSU Agricultural Center. It is attached as one of the Appendices.

In late June and July personnel of the UCPFTO led by Mr. Viacheslav Sereda assembled data on agricultural production in Vinnitsa Oblast and on the research capabilities of a number of research stations. During this time UCPFTO personnel also prepared a program of visits to five research stations and seven colleges that took place during my personal trip to Ukraine during the period August 19-31, 2000. For many reasons numerous modifications were made to the original schedule and a "marked up" version showing the actual activities is shown as an Appendix. Each research station and college visit explored that entity's current program, its human resources, its physical facilities, the sources of its budget, and its highest priority needs. Brief summaries of these findings are included in the Appendices.

INTRODUCTION TO RECOMMENDATIONS

Any discussion of agriculture in Vinnitsa Oblast must begin by stating some fundamentals that are obvious to those who live, work, or visit there but sometimes overlooked as basic building blocks for a thriving agricultural industry.

- Vinnitsa Oblast has exceptionally extensive areas of fertile, productive soils and a favorable climate which allow the production of a wide variety of crops and livestock.
- The presence of Vinnitsa State Agrarian University provides a foundation of growing importance for creating, transferring, and extending science-based agricultural knowledge throughout Vinnitsa Oblast and the surrounding region.
- Throughout Vinnitsa Oblast the colleges and research stations contain many talented, dedicated, and enthusiastic educators and researchers who already play critical roles in science and education.
- Many of these research and education leaders are becoming very innovative and entrepreneurial in carrying out their respective missions. (Examples are creating and offering new, high-demand courses, developing private sector research partnerships, and developing new ways to add value to farm production and re-investing the income into their teaching and research programs.)
- Some of the colleges and stations have immense land resources for conducting research, for extension demonstrations, for student training, and for producing income to supplement limited program budgets.

These fundamentals are the building blocks for the next steps in constructing what I will propose as the Vinnitsa Oblast model of a "Ukrainian Land-Grant University," a systematic, balanced, and comprehensive program of agricultural teaching, research, and extension.

The history of the "land-grant" university in the U.S. is well known. For well over 100 years universities have conducted scientific research, extended that science-based knowledge to users, and taught science-based information to the next generation of users. The U.S. land-grant university system has been instrumental in the development of a highly productive agricultural system which provides a wide array of highly nutritious and relatively inexpensive food choices to its citizens. Let me hasten to add that this is not to suggest that the Ukrainian science and education system should be reformed to look exactly like a U.S. land-grant university but I do recommend that the three basic tenets of the U.S. land-grant university system, **teaching, research, and extension**, are critical and vital functions that must be provided if Ukrainian agriculture is to achieve its formidable potential. Ukrainian leaders must implement what works best in Ukraine but the formal implementation of these three basic tenets is needed to properly serve the farmers and the agricultural businesses of Ukraine.

VINNITSA STATE AGRARIAN UNIVERSITY

Vinnitsa State Agrarian University has a long, rich tradition of educating students in many phases of agriculture. Formed in 1982 as Vinnitsa Agrarian Academy, becoming

Vinnitsa State Agricultural Institute in 1991, and Vinnitsa State Agrarian University in 2000, approximately 5,000 students are now being educated. Although improvements are always possible and should be sought, the "land-grant" **teaching** component is securely institutionalized. With the recent formalization and legalization of the "Extension Institute," the "land-grant" **extension** mission of VSAU has been recognized and institutionalized. Two of the three traditional land-grant functions are securely in place. The final challenge is to broaden, deepen, and formalize the **research** capability of VSAU and then seek all possible means to adequately support all three areas.



Vinnitsa State Agrarian University.

To further justify the need to formalize the research function consider that current VSAU faculty are expected to contribute in the following five areas of responsibility:

- teaching
- methodological work
- organizational work with students
- research
- assistance to producers

The first three of these are synergistic and are fundamental to an excellent teaching program. (All university faculty know that students come first; when classes are in session and students are in the classroom their needs must be met and other duties are postponed.) The last one has recently been formalized by the formation of the Extension Institute. Portions of selected faculty members' time is separately budgeted

and dedicated to a sustained program of extending knowledge to agricultural interests in each of Vinnitsa's raions. This leaves number the fourth, research, as the final of the three "land-grant" components to be formally addressed.

Full-time teaching loads at VSAU range from 20-26 clock contact hours per week. When preparation time, grading and evaluation time, and the duties associated with the second and third areas listed above are added it becomes obvious that, in reality, there is very little time remaining for faculty members to develop comprehensive and sustained programs of agricultural research. This is especially so if the programs involve field research conducted at multiple locations which is precisely the types of research programs that are needed if Ukraine's reputation as the "breadbasket of Europe" is to be renewed.

PROPOSAL

I propose the establishment of a "Research Institute" within VSAU which will parallel the Extension Institute and the traditional teaching function by formally dedicating faculty time and budgetary resources to a sustained and comprehensive research function. The envisioned Research Institute would provide resources (salary, operating [logistics], and capital budgets) dedicated to enable faculty to dedicate portions of their time to establishing and sustaining critical agricultural research programs.

SPECIFIC RECOMMENDATIONS

STEP 1: Unite the very significant research capabilities that now exist in Vinnitsa Oblast into a coordinated research program as a part of the proposed VSAU Research Institute. The entities that should be considered, in no particular priority order, are the ELITA Research Station, the Podilla Research Station, the Feed Institute, the Uladovo-Lulynetska Research Station, and the Yaltushkiv Research Station. The challenge of integrating these stations into a coordinated research program is logistically complex, may be emotionally unsettling to those affected, may require several years to fully accomplish, and may not involve all of the listed stations because some play a national or regional role. (This latter "role and scope" question may depend on the long-term role of VSAU; will it remain a local university or will it play a larger, regional role in Ukraine? More discussion about this point is in the "Issues" section of this report.)

Although there are significant challenges in implementing this step, there are many advantages that would accrue:

- Scientists located at these research stations have, in general, the same research objectives as do VSAU scientists.
- Many already have collaborations or other relationships with VSAU faculty which would be strengthened.
- A coordinated research program with united leadership will be more efficient in the use of limited physical, budgetary, and intellectual (scientific) resources.
- Leadership can encourage the formation of new collaborations.

- Many of the scientists at the research stations are qualified for faculty rank by having education and experience equivalent to current VSAU faculty.
- The resulting pool of scientific talent can be more closely focused on the problems and research needs of agricultural producers in Vinnitsa Oblast and the nearby region.
- Informal teaching now being done by some scientists at research stations can be formalized to enhance VSAU teaching programs and to release time for research for current VSAU faculty.

[An example of the research-teaching trade-off follows:

Scientist A currently located at a research station has a 100% research responsibility and is paid R100. He has valuable knowledge and experience which is needed to offer a course(s) at VSAU. Scientist B, currently a VSAU faculty member with a full teaching commitment wants to expand his research program. He is paid T100. Solution: The research station scientist is assigned a 25% teaching appointment and is paid $R75 + T25 = 100$. The VSAU faculty member is paid $R25 + T75 = 100$. Both can guide students, conduct research, and do what they do best. Similar "splits" between research (R) and extension (E) or between teaching (T) and extension (E) are also possible.]

- Student training and learning at the research stations can be broadened and strengthened to produce more highly-qualified graduates and provide motivated assistance for researchers at these locations.
- Perhaps most importantly, coordination will provide closer and stronger ties with the VSAU Extension Institute and the UCPFTO to focus research and improve extension efforts.

STEP 2: Unite the remainder of the technical colleges under the VSAU umbrella as Verhivka and Tulchin are currently administered.

The advantages to this action are:

- More efficient articulation of students from the technical colleges to VSAU.
- Improved opportunities for developing the teaching, research, and extension capabilities of technical college faculty members. These faculty, about 459 among the seven colleges I visited, represent a pool of talented individuals, some of who may be interested in acquiring additional training and are capable of shouldering additional responsibilities. Such a talent pool will need to be developed and utilized as changes are implemented. (Refer to Issue 17, Leadership Development, later in this report.)
- Greater ability to coordinate course offerings at the technical colleges to avoid duplication, to more effectively use limited resources, and to develop and implement strategic plans. (Refer to Step 4 later in this report.)

STEP 3: Reorganize and refocus the extensive land holding of the colleges and research stations and assign them distinct missions. One possible set of distinct missions (there may be others) would be: (1) research, extension, and teaching

activities, (2) providing quality germplasm to Vinnitsa and regional farmers, and (3) generate resources to support priority programs throughout the reorganized VSAU system (including college and station programs.)

Implementing Step 3 may be the most difficult and challenging one proposed in this report. Therefore, a brief discussion of the envisioned missions of these three areas follows:

(1) Research, extension, and teaching: Clearly define the research mission for each major land resource and, at each location, provide land, infrastructure (machinery, buildings, etc.), and technical support to carry out the defined mission. The initial research missions would likely be very similar to each location's current activities but may evolve as a result of increased coordination within the system, the avoidance of duplication within the system, the total support resources available, and sharper focusing on the needs of Vinnitsa and regional farmers. Resources (land, technical support, etc.) would also be made available to support coordinated and focused extension demonstrations. Finally, undergraduate and graduate student training would be carried out at appropriate locations.

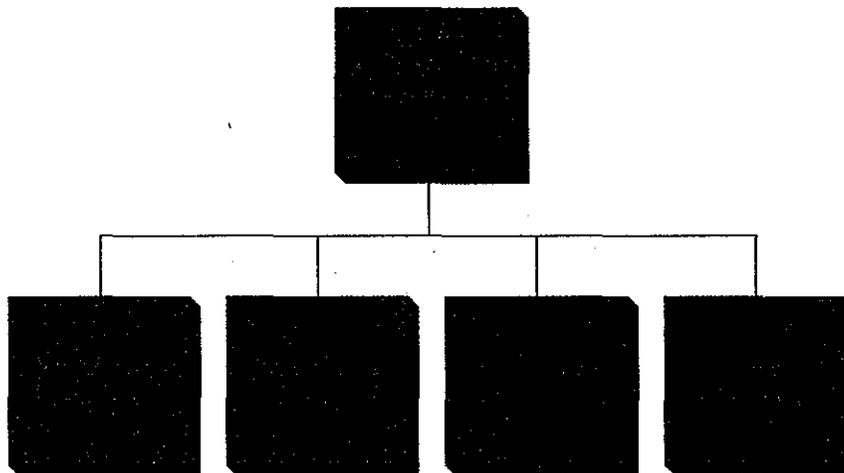
(2) Providing quality germplasm: This would be an inter-face between research and a purely business operation. Again, a clear mission for each major land resource would be developed whether it be the provision of plant genetics, animal genetics, or both. Research and extension demonstrations will determine the crop varieties or livestock breeds/strains which perform best in the various regions of Vinnitsa. The business enterprise would then produce these genetics (high quality seeds, sires, or dams) for sale to Vinnitsa and regional farmers. This would be administered as a business enterprise expected to support itself and to return a profit that would be reinvested into the high priority needs of the reorganized VSAU system. Because it would be treated as a business strict fiscal, accounting, auditing, and budgetary controls would need to be put in place and a personnel reward structure based on achieving operational efficiency within the assigned mission would need to be instituted.

(3) Farming operations to generate resources for VSAU system support: This would be purely a business operation with the objective of generating farm profits for re-investing into operational support whether it be salaries, equipment, building renovation or replacement, or other high priority needs. Efficient farm managers would need to be put in place and their expectations and responsibilities clearly defined. Their reward structure would be based on how effectively they carried out their responsibilities. The farm managers should be challenged to be innovative and to think beyond simply producing commodities. Value-added initiatives such as further processing of farm products should be encouraged where there a market demand to be met. Innovative land use should be encouraged such as for forestry or for wildlife development. As the private sector develops agricultural input companies may want to establish their own experimental farms in Vinnitsa to evaluate their current and developing products. They should be invited to locate on VSAU land holdings and enter into long-term but arms-length arrangements with the VSAU system. These are just a few examples. Many

other developmental options will, I am sure, present themselves to enterprising farm managers.

I suggest that a high-level administrator, probably at the Vice-Rector level, be given the oversight responsibility for the operation of the business portions of the reorganized VSAU system, in particular the production and sale of high-quality genetics and the farm production operations. (See the attached proposed organizational chart.) Ideally this person would have a strong agricultural production background as well as an appreciation of research, extension, and teaching. This administrator should be given the operational freedom to manage the land holdings and related businesses to optimize income. This administrator should also very clearly understand that his/her primary responsibility is to generate revenues that can be used to improve the effectiveness of the entire VSAU system. This includes supplementing salaries, providing operational support, acquiring new scientific and farm equipment, and replacing or renovating buildings. The managers of the land resources and businesses should be free to utilize the best technology from the public sector or the private sector. This assures that public sector technology will be competitive with private sector technologies and vice-versa. There are many unmet budgetary needs in the VSAU system and priorities will have to be set. I suggest that an "administrative council" composed of the VSAU Rector and all Vice-Rectors have this responsibility. This "Council" can request input from others both within and from without the VSAU system as needed for assistance in their priority-setting process.

PROPOSED VSAU ADMINISTRATION



The implementation of items (2) and (3) above raises many issues and requires much thought, careful planning, implementation of the most modern farm production methods and fiscal policies, and consideration of legal issues. I am not able to answer all of those issues in this brief consideration but I feel the model proposed is viable and worthy of careful consideration.

[Hereafter in this report the "VSAU system" will refer to the proposed group of colleges and stations administered in a coordinated fashion under the flagship of Vinnitsa State Agrarian University as the model Ukrainian land-grant university.]

STEP 4: Development of long-range plans: I strongly suggest that a strategic planning activity be initiated after action (whatever it may be) to implement all or parts of Steps 1, 2, and 3. This strategic planning effort would address the time horizon beginning in 3-5 years and stretching to 10-20 years into the future. Major changes will take place in Ukraine during that time; the transportation infrastructure will improve and people will become more mobile, farm production will improve dramatically, the private sector will play a much larger role, and perhaps fewer people will live in the countryside with their livelihoods connected to agriculture. These and similar changes will require many management decisions to address college offerings, college locations, major land holdings and their missions, etc. The long-term role of VSAU will be a key component of these changes; will it remain a local university serving the needs of Vinnitsa Oblast or will it have a much larger role as a regional Ukrainian University anchoring the agricultural teaching, research, and extension programs of several oblasts in the region?

Two situations are briefly offered to illustrate the need for strategic planning. First, four of the colleges visited, Bratslav, Ladijin, Tulchin, and Verhivka are located within a 40-km diameter cluster southeast of Vinnitsa. Each currently has a well-defined and important primary mission but all appear to have some overlapping programs, especially in business-oriented offerings. As student mobility increases, as demand and specializations change, and as electronic networking increases, the best long-term roles for each of these colleges or some coordinated entity comprised of these colleges needs to be defined. A second strategic area is the management and use of the extensive land holdings that, if Steps 1, 2, and 3 were implemented, would be consolidated under coordinated management. Are they all needed, are they in the most appropriate locations, what are their most appropriate locations, what are their most appropriate and most lucrative uses, how will competition with the private sector be dealt with? These and many other difficult questions will arise and careful strategic planning is needed.

ISSUES

Many issues arise as a result of considering the changes proposed in this report. The following are in no particular order of importance but each will need to be addressed as the proposed VSAU system grows and matures.

1. Implementation of any of the steps proposed herein will require that VSAU examine, modify, or perhaps develop policies that address faculty hiring, promotion, tenure, and reward. The inclusion of what some may see as "non-traditional" faculty needs to be carefully considered so that equitable policies prevail.
2. Scientific objectivity must be protected and scientists must have the opportunity (indeed, they have the obligation) to publish results of properly designed and statistically analyzed research studies. Examples are comparative performance of crop varieties, comparative effectiveness of crop protection chemicals, performance effects of feed mixes and ingredients, etc.
3. Faculty should be paid competitive salaries to insure that their allegiance is to scientific objectivity and the improvement of Ukrainian agriculture rather than to distracting financial interests.
4. Appropriate "outside employment" policies for faculty, if not present, should be developed and put into place.
5. Strict fiscal controls including comprehensive records, accounting, and auditability must apply to all VSAU operations, especially the business-oriented activities of producing and selling improved genetics and farm products.
6. Central budget coordination and prioritization is important but too much centralized control can be detrimental. Researchers, farm managers, seedsmen, etc. must have some degree of freedom to exercise their authority and to innovate. Leadership will be challenged to find the appropriate balance of providing direction without smothering innovation.
7. The purely business operations (production and sale of improved genetics, farm production, and any other value-added operations) may need to be separated into a non-profit corporate structure or a foundation whose purpose is solely to benefit VSAU. These decisions will depend on Ukrainian business and legal issues, which I am unable to comment on, and must be made by VSAU leaders with appropriate legal advice.
8. Taxation of proceeds of business operations (production and sale of improved genetics, farm production, and other value-added operations) was reported during several of my visits to be a significant disincentive. I am unable to comment on the severity of the reported taxes but I do urge that both the education and political leadership of Ukraine renew their efforts to make public educational institutions tax-free. Research and education are among the keys to a bright Ukrainian future and to diminish them by taxation is false economy.
9. Import duties on farm inputs such as feed ingredients, crop protection chemicals, fertilizers, equipment, etc. must be reduced or eliminated. Restricting Ukrainian farmers' access to world-class genetics and production tools will be detrimental in both the short and long terms.

10. Access to English language training, short-term study leaves, or longer-term "sabbatical" leaves should be made available on a wider basis. Personnel at colleges and stations should have the same opportunities as the present VSAU faculty where there is a clear benefit to be derived. A few specific suggestions out of many possibilities are offered:

- Involve individuals who have English language capabilities (such as those at Bratslav and Mogiliv-Podilsky) in expanded translation and language training activities that will benefit a wider range of individuals in the broader VSAU system.
- Provide selected scientific personnel Mogiliv-Podilsky with international training opportunities at the Kansas State University Grain Science Department. (Due to the vast amounts of grain produced in Vinnitsa and the surrounding region, the knowledge of and application of the best technologies in grain storing and processing is a very important link in the efficiency and profitability of the Ukrainian food system. Mogiliv-Podilsky has a vital role to play in this area.)
- Provide selected VSAU scientists longer term (seasonal related to crop cycle) international training opportunities for plant breeders, agronomists, and weed scientists. These training "sabbaticals" should expose the scientists to both campus-based research as well as research station applied research activities. The LSU Agricultural Center could provide some of these opportunities but many other institutions could serve equally well. An additional discipline that will need emphasis and expansion as productivity increases is market development and international trade. Ukraine must think ahead to the day when the economic vitality of its agricultural sector and the national treasury will depend on the export of agricultural products.
- Provide an opportunity for appropriate scientists at the Podilla Research Station to learn the procedures used by the "virus-indexed" fruit tree clone production program operated as NRSP-5 at Washington State University.

11. It will be essential to move with all possible speed to electronically network and provide Internet access to all of the entities that are included within the VSAU system in Steps 1 and/or 2. Raped communication among scientists within Ukraine and with international collaborators is vital.

12. Upgrading and replacing scientific equipment and field equipment must be a very high priority. The most consistently expressed constraint expressed to me as I visited the colleges and stations was the lack of modern scientific equipment for both research and for teaching.

13. Building renovation and/or replacement is also a very high priority for which special funding should be sought or dedicated. Some locations have architectural treasures (Verhivka, Chernyatin, and Tulchin) which should be preserved but must be rapidly modernized if the teaching and research done in them is to rise to world-class standards. Many other office buildings, laboratories, and farm service buildings need modernizing and a comprehensive plan for doing so should be developed.

14. There are some important, specific research programs that should be implemented if they are not already in place. If they are already in place I apologize for this redundancy but these are critical technical issues for improving crop production in Vinnitsa.

- A systematic, continuous variety trial program for Vinnitsa's major crops should be in place. The leading varieties of each major crop should be uniformly and statistically evaluated in each major growing area each year. These results should be published on an annual basis and the results should be made widely available to extension specialists, farmers, and researchers. Private sector varieties should be included along with those from the public sector. Partial funding for this program should be sought from seed companies.
- Systematic fertility trials for the best varieties of the major crops should be conducted on each major soil type to provide nutrient vs. yield data sets that can be provided to farmers and used for extension demonstrations.
- Seeding rate and date-of-planting studies should be systematically done for the best varieties of the major crops.
- Systematic herbicide trials should be conducted annually for the best varieties of the major crops on the major soil types. These trials need to be repeated annually as crop varieties change and as new herbicides enter the market. Agricultural chemical companies should be approached for partial funding of this program.

15. As the VSAU system is reorganized a research project planning and documentation system such as the USDA's Current Research Information System (CRIS) should be put in place. This is needed to provide both researchers and administrators information for planning and coordinating research activities and will enhance the transfer of technical information through extension activities.

16. The VSAU system should continue to support and to interact with grower organizations such as the Private Farmers Organization and commodity-oriented groups as they emerge. The private farmers group may evolve into a strong agricultural support and policy group and the commodity-related organizations will also play important roles in support and in focusing research and extension programs on critical grower needs.

17. Leadership development must become a priority within the restructured VSAU system. Aggressive and innovative leadership will be needed at all levels from farm managers to technical support personnel to research leaders. These leaders must share the common vision of applying science to renew Ukrainian agriculture and the common goal of making it the best in the world. Dr. Sereda and his colleagues have provided visionary leadership to build VSAU to its present status. If a bold and aggressive restructuring similar to that proposed in this report is undertaken one of the major challenges of top leadership will be to give broad direction but to encourage the development of scientists and leaders at all levels within the organization. The educational institutions in which we labor will outlive all of us. One of our most

important challenges is to develop the next generation of leadership to insure that the institution effectively carries out its mission far into the future.

18. As the educational system in Ukraine evolves it is not feasible to expect that every oblast will have a comprehensive agricultural university such as the VSAU system envisioned in this report. [As comparisons, Texas, which is only slightly larger than Ukraine and has a population of about 20 million, has one major, comprehensive agricultural university, one major agricultural teaching university, and some smaller teaching schools. Louisiana, which is about one-fifth the size of Ukraine, has one major, comprehensive agricultural university and some smaller teaching schools serving a state with about 4.5 million people.] Based on Ukraine's size and diversity and the existence of the National Agrarian University in Kiev, it appears that three to five strong comprehensive regional agricultural universities (including teaching, research, and extension programs) could evolve to serve the different and unique agro-ecological and climatological areas of the country. VSAU certainly has the potential of becoming one of these predominant regional agricultural universities serving several oblasts in its region. This is an important long-range national planning issue that the Ministry of Agrarian Policy (and/or other appropriate governing bodies) needs to address. The decisions made will be critical determinants of the future role and scope of VSAU.

ACKNOWLEDGMENTS

I want to express my appreciation to Dr. Leonid Sereda, Dr. Lakshman Velupillai, to USAID, and to my administrators at the LSU Agricultural Center for providing me with the opportunity to make a second visit to Ukraine and to Vinnitsa. It was a long and taxing trip but it was a valuable experience for me both personally and professionally. I sincerely hope that the contents of this report will provide both encouragement to Ukrainian scientists and administrators and planning elements that VSAU, with the support of the appropriate governing bodies, can implement to enhance and expand its ability to support Ukrainian agricultural producers.

I am indebted to many others for making my trip pleasant and successful. Among them are Mr. Viacheslav Sereda for gathering pertinent data, Mr. Larry Brock for accompanying me on the majority of the visits and for providing his insights, Dr. Walter Morrison, my LSU Ag Center colleague who was very helpful with his agricultural production insights, and Mr. Paul Ivanicky for translation assistance and for providing much general Ukrainian background. Dr. Grigory Loyanich, Dr. Vasyi Petrochenko, and Dr. Vasyi Mamaliga provided advanced planning, assistance on visits, and extensive specific and general information on Ukrainian agriculture. The administrators and scientists at the colleges and stations visited were open, helpful, and patient in discussing the operations of their respective organizations. Finally, there are three people who, without their untiring and valuable services, this activity would not have been possible. They are Ms. Wanda Yamkovenko and Ms. Ludmilla Tesluk for their excellence and their patience in translating for me and Mr. Anatole Viasiuk for driving us safely to and from our destinations. I have the greatest respect for all of them.

I also want to thank Vinnitsa Oblast Governor Yuriy Ivanov and Ukrainian Ministry of Agrarian Policy Deputy Minister Sergiy Melnyk for their time and attention as I provided them with preliminary oral versions of this report on August 28 and August 30 respectively.



Governor Ivanov and Rector Sereda, 8/28/00.



Rector Sereda and Deputy Minister Melnyk, 8/30/00.

SUMMARY

The recommendations contained herein are ambitious and challenging. If implemented they should be done so carefully and deliberately and over an appropriate period of time. The benefits and efficiencies that are realized will, similarly, accrue over a period of time. Agricultural research cannot be turned on and off as is the water tap.

Sustainable and competitive agricultural productivity in Ukraine will depend on a stable and sustained research program that is open to build on knowledge and technology from around the world and fully integrated with both teaching and extension programs. Although the recommendations suggest formidable and challenging changes, progress will not be made without a dream and a plan. After two visits to Ukraine I am convinced that the dream of returning Ukrainian agriculture to its potential as the "breadbasket of Europe" is widely held and that Ukrainian leaders have already begun the journey and that they are committed to continuing it.

I want to acknowledge that this report sounds very much like an institution-building plan for Vinnitsa State Agrarian University and, in many respects, it is. Let me very quickly and emphatically assert that the fundamental reason for having a strong agricultural university is to serve the farmers of that state or region. Without a continual flow of new technologies from a broad, well-supported research program extension specialists are quickly limited in their abilities to extend new information. Similarly, teachers (especially those not engaged in research) are no longer able to provide the most current knowledge to the next generation. Institutions exist, first and foremost, to serve the citizens that support them. The very best way to insure that Vinnitsa (and Ukraine) farmers are profitable, competitive, and sustainable is to back them with a strong, comprehensive agricultural university.

Finally, Ukrainians should not underestimate what they can do for themselves. They should, of course, explore external ideas, accept assistance when offered, and adapt those that will work in Ukraine. But, in the final analysis, Ukrainian citizens are a powerful force. They are intelligent, resourceful, and hard-working people who have within themselves the capabilities to make the important changes that will improve their research, their universities, their agricultural productivity, and their way of life.

APPENDIX 1
COLLEGES VISITED

ILLINTSIY COLLEGE

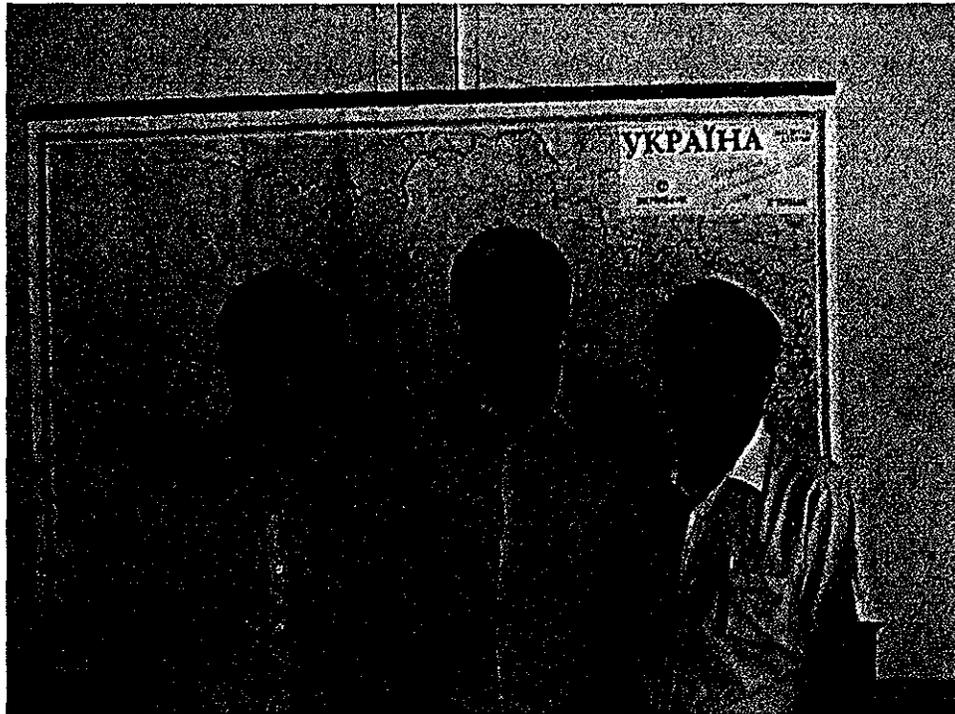
Illintsiy College is located about 58 km east-southeast of Vinnitsa. I met with Deputy Director Olexandr Syrota along with Illintsiy Raion Specialist Ivan Kachula on August 22, 2000. Illintsiy is one of the largest and oldest colleges in Vinnitsa Oblast originating in 1921. It was destroyed in World War II and began rebuilding in 1944. The building it currently occupies was constructed in 1976. Illintsiy College has over 900 full-time students and about 125 correspondence students studying improved agricultural production technologies, animal science, economics, and food processing (milling and canning). There are 92 faculty mostly holding the B.S. degree. Cooperation with VSAU is very close with field facilities available to VSAU scientists. VSAU faculty are planning to offer an animal science course at Illintsiy.

The College has 4,000 ha of land of which 3,668 ha are arable. Elite seed of grain crops and potatoes is produced and sold to farmers. Livestock resources include cattle, pigs, and bees. The College works closely with canning and dairy processing plants in the town of Illintsiy. Extensive UCPFTO demonstration plots of sunflower, soybean, and sugar beets were located on College land.

The College was relatively clean and neat, one building had been recently repainted, and a new machinery storage building had been built. Some Internet access is available to faculty and there is limited availability to students. Adding computers and related capabilities is a top College priority.



Illintsiy College, 8/22/00.



Specialist Kachula, Rector Sereda, and Deputy Director Syrota; 8/22/00.

VERHIVKA COLLEGE

Verhivka College is located about 100 km south-southeast of Vinnitsa. I met with Director Olexandr Kushnir and Trostianets Raion Specialist Oleg Charkovenko on August 23, 2000. The College has operated with a line-item budget administered through VSAU since 1997. The College was begun in 1926 and it includes a historic "estate" building and a 25 ha arboreal park with about 450 plant and tree species. Verhivka College presently has about 460 students in agronomic studies and a relatively new curriculum in "agrarian management" which deals with the economics and management of farm production. The College has 34 faculty all with at least a B.S. degree and most with pedagogical training.

Total College land is 470 ha of which 360 is arable and is used for hands-on training of students. There are also 5 ha of fruit orchards and 52 ha of ponds. The farm operation produces a part of the operational budget of the College. It was stated that farm income is heavily taxed. Extensive and impressive UCPFTO demonstrations were located on College land. Other operations include cereal processing, oil seed crushing, and food processing and baking.

The "estate" building is under renovation but much is left to be done. Major upgrading to scientific and field equipment is needed. Specialist Charkovenko stated that farmers have major concerns about the legal issues regarding farm restructuring and many technical questions about production technologies including herbicide application and accounting.



Director Kushnir, Rector Sereda, and Specialist Charkovenko; 8/23/00.

LADIJIN COLLEGE

Ladijin College is located about 84 km southeast of Vinnitsa. I met with Director Ivan Katsavets and faculty member Pavlo Savuluk on August 23, 2000. Ladijin is a 68-year-old agri-technical college with a farm mechanization focus. Training is specialized in the mechanical and energy technology areas. Most graduates are employed in agricultural jobs with some entering the military and some working at an electrical power generating station located in the city of Ladijin. The College has 62 faculty who train about 550 full-time and 250 correspondence students. Instructional space is about 28 square meters per student.

Previously, the College had a 4,000 ha farm but the farm is now a private cooperative. Currently, the College has a 382 ha farm which is operated by its students producing winter wheat, other cereal grains, sunflowers, and sugar beets. The College is expanding its technical retraining role (welders, drivers, computer operators, etc.) and charges fees for this retraining to supplement the budget. Faculty can earn extra compensation for participating in these courses. The most serious need of Ladijin College is modern equipment, additional modern computers, and Internet access. The farm machinery and engines laboratories are seriously out-dated and upgrading to modern equipment should be given highest priority.



Ladijin College, 8/23/00.



Mr. Savuluk, Rector Sereda, and Director Katsavets; 8/23/00.

BRATSLAV COLLEGE

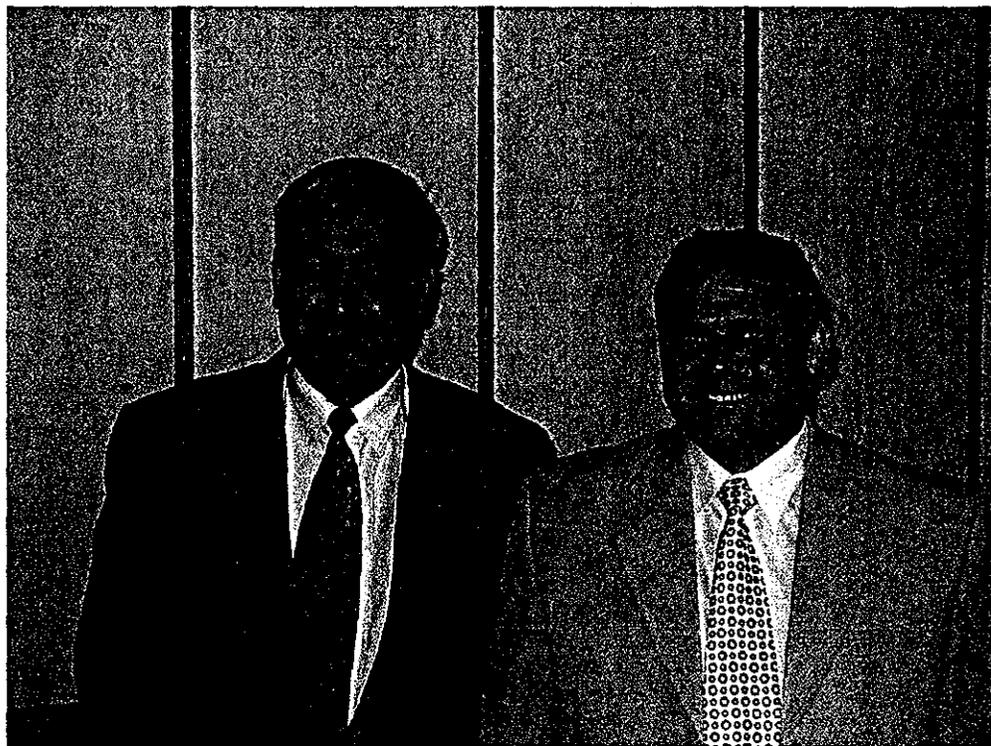
Bratslav College is located about 58 km southeast of Vinnitsa. I met with Director Dmitriy Rishzman along with staff members Valentina Lisenko, Oksana Zhurakivska, and Gennadiy Petin on August 24, 2000. Bratslav College celebrated its 60th anniversary last year. It specializes in training in bookkeeping, finance, accounting, commerce, and agrarian management. Most graduates (over 18,000 trained over the years) are employed in some phase of agricultural production, processing, or business. Many enter VSAU and other higher education institutions. Currently the enrollment is 800 full-time and 150 correspondence students and the faculty number is 86.

Bratslav College's budget is 70% state funds and 30% self-generated (including fees). The College leases land (70 ha for grain production and 50 ha for sugar beet production) to produce income to supplement its budget. Five agricultural workers and some students operate the farm. It was stated that the farm production proceeds are taxed.

The greatest needs of the College are additional space, additional new computers, and Internet access. The College leadership appears to be energetic, innovative, and entrepreneurial. Students are being trained in important areas.



Bratslav College, 8/24/00.



Rector Sereda and Director Rishzman, 8/24/00.

TULCHIN COLLEGE

Tulchin College is located approximately 67 km south-southeast of Vinnitsa. I met with Deputy Director Anatoly Kisliy on August 25, 2000. The visit to Tulchin coincided with the 70th anniversary (birthday) of the College's Director Vasil Mikolayevich. Tulchin College was founded in 1956 with a zootechnical (livestock) base. It now offers only Veterinary Medicine. Full-time students number 820 instructed by 83 faculty. Many courses are team-taught, some with the involvement of VSAU faculty. The productivity and excellence of Tulchin is evidenced by 10,000 graduates since 1956, the chief veterinarians in 19 of Vinnitsa's 27 raions are Tulchin graduates, and 98% of the veterinary specialists in Vinnitsa Oblast are Tulchin graduates.

Tulchin College had space limitations until 1993 when it acquired the buildings of a historic military complex. The main building has more than adequate space but it faces a nearly overwhelming restoration challenge. Some renovations have begun since Tulchin became administered through VSAU in 1996. The College has 15 ha of land for animals and is requesting an additional 200 ha. The College is supported by fees (5% of budget) and from state sources (95% of budget). The College is in serious need of building restoration and modernization, modernized laboratories and animal facilities, and modern scientific equipment.



Tulchin College, 8/24/00.

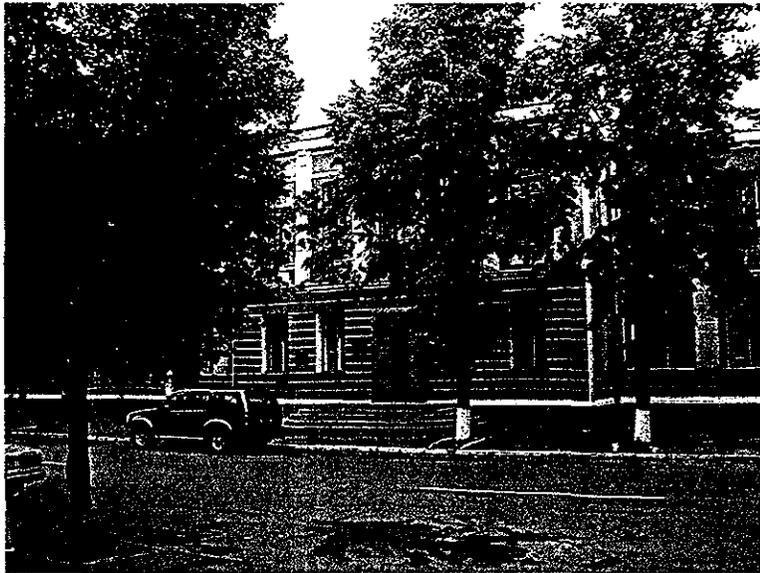


Deputy Director Kisliy and Rector Sereda, 8/24/00.

MOGILIV-PODILSKY COLLEGE

Mogiliv-Podilsky College is located about 100 km south-southwest of Vinnitsa near the Moldova border. I met with Director Goelina Glavatskaya and her associates on August 26, 2000. Mogiliv-Podilsky College was established in 1948 as a technical college of trade (business) and commerce. In 1983 its focus changed to grain storage and processing. Bookkeeping and accounting is still offered. About 350 students are in the grain storage and processing program and 150 in the business-oriented program. The grain storage and processing program is comprehensive including storage, handling, grading, cleaning, quality analysis, milling, flour making, oilseed processing, and feed mixing. It is one of only two colleges in Ukraine to offer such a course. Graduates can go on to Kiev Technical University as third year students. Students obtain lecture and laboratory training at the College but 40% of their training is at private grain handling and processing plants in Mogiliv-Podilsky and at nearby Vendicani. The College has 36 faculty, 25% with higher than B.S. education, 3 senior teachers, and 3 methodologists. One programmer and 4 assistant programmers support computer labs. Grain-flow schematic programs were being used and Internet access is expected within the year. State funding supports the grain processing program and the business program is supported by fees. The College budget is about 80% state and 20% self-generated. The greatest needs of the College are modern, updated equipment and additional operating (logistics) funds.

Mogiliv-Podilsky College appears to be a very capably administered institution. Its facilities were neat and clean and laboratories and classrooms were very well-organized, neat and clean. The College appears to be doing an excellent job of carrying out its mission, one that is extremely important to Vinnitsa and Ukraine.



Mogiliv-Podilsky College, 8/26/00.



Director Glavatskaya (2nd form left), Dr. Mamaliga (center), Ms. Tesluk (right), and Mogiliv-Podilsky staff; 8/26/00.

CHERNYATIN COLLEGE

Chernyatin College is located about 43 km southwest of Vinnitsa. I met with Director Vitaliy Malyuta on August 26, 2000. The College's roots go back to 1944 when it was an estate and then a collective farm. As a College, Cherynatin is only 2 years old. It has 650 full-time and 350 correspondence students instructed by 66 faculty. The College offers a broad range of courses including fruit growing, agronomy, mechanization, bookkeeping, and apiary.

It has extensive land holdings of about 2,200 ha which includes 1,700 ha of arable land, 500 ha of orchards, and 140 ha of ponds. Animal resources include 300 dairy cows, 900 beef cows, and 300 swine. About 320 agricultural workers operate the farm which has to pay taxes based on its land quality and the crops grown. It also carries debt remaining from the collective farm. The College budget is 80% derived from state funds and 20% from self-generated funds.

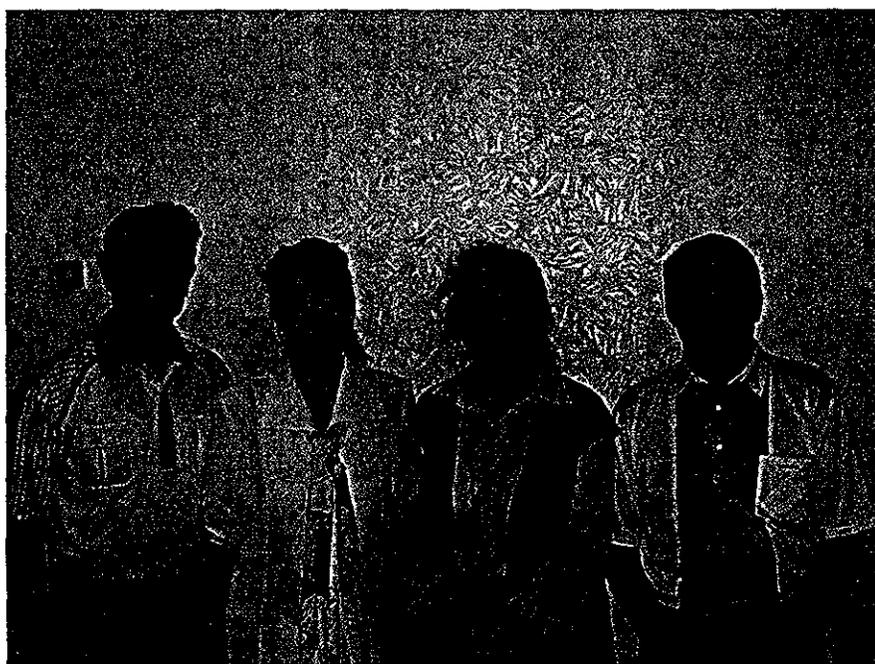
Greatest needs are equipment and facility modernization and restoration of the "estate" building. The administration appears to be very sincerely interested in improving the College.



Chernyatin College, 8/26/00,



Director Malyuta with some of Chernyatin's 500 ha of orchards, 8/26/00.



Dr. Mamaliga, Chernyatin Academic Director, Ms. Tesluk,
and Director Malyuta; 8/26/00.

APPENDIX 2
RESEARCH STATIONS VISITED

ELITA RESEARCH STATION

The ELITA Research Station is located at Vinnitsa. I met with Director Oleg Grom and Associate Director Mykola Romanenko on August 21, 2000. ELITA was established in 1886 as the first research station in Russia. It was started by two princes, primarily for selecting improved seed, and it had partnerships around the world. After the "October Revolution" in 1917 it narrowed its focus and in 1956 it moved its headquarters to Vinnitsa. It has developed over 100 crop varieties over the years and it began production technologies and animal breeding research in the 1950's and 1960's. The major crops of interest are rapeseed, brewing (malting) barley, vetch, and soybeans. Animal research is primarily on swine and dairy cow genetics. The two main Ukrainian dairy types are the Vinnitsa red and white and the Podilla black and white, both of which are based on Canadian genetics. The Station has access to worldwide genetics through a Russian company and qualified artificial insemination technicians are available throughout Ukraine. ELITA has over 8,000 ha of land at sites in Vinnitsa, at Olexandrivka in Trostianets Raion, and at Nemyrchi in Murovani-Kurylivtsi Raion. Some land is dedicated to research, some to the production of elite seed, and much to farm operations.

ELITA has 34 scientists including three plant breeders who lead crop development groups and four plant protection scientists dealing with entomology, plant pathology, and weed science (herbology). The Station has seed handling, cleaning, storage, and bagging equipment manufactured by Petkus (German). It has adhered to national seed standards on purity, germination, and disease free seed since 1993.

The ELITA Research Station appears to have very good research, seed production, and farming operations with immense land resources. Its proximity to VSAU makes it a natural for research collaboration, for extension demonstrations, and for student training. The Station's physical resources including buildings, laboratories, scientific equipment, and field equipment need major updating, replacement, and renovation.



ELITA Research Station, 8/21/00.



Dr. Petrochenko, Director Grom, and Associate Director Romanenko; 8/21/00.



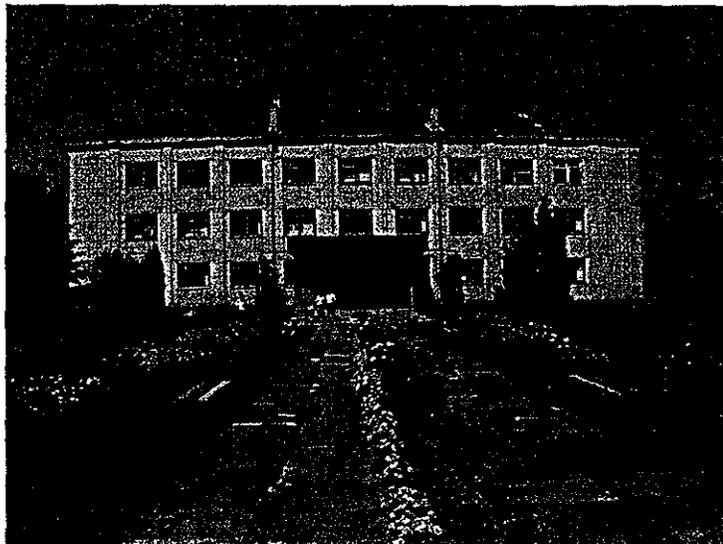
Dr. Petrochenko and Dr. Morrison reviewing ELITA research plots, 8/21/00.

PODILLA RESEARCH STATION

The Podilla Research Station is in an area well suited to fruit production about 14 km west of Vinnitsa at Vedmezhe-Vushko. I visited with Director Vitaly Ripamelynk and his associates on August 21, 2000. The Podilla Research Station is comprised of 600 ha and is dedicated to fruit and berry research with about 200 ha of orchards, 50 ha of berries, and 30 ha of nurseries. Land for fruit production is rotated with corn, wheat, and grasses. The Station has about 150 employees including 11 scientists and it houses a national germplasm repository. Apples provide the greatest profit potential with possible yields ranging up to 20,000 tons per ha. The staff feels that virus-free fruit tree clones are needed and micro-irrigation is needed, primarily for precise nutrient delivery rather than for water. Money to implement these technologies is a limiting factor.

The Podilla Station staff considers it very valuable that they have been able to travel to other areas of Europe to see advanced production technologies. They have an excellent collaboration with a Dutch company to implement and evaluate dwarf orchard culture using trellised, micro-irrigated production. Grafted seedlings are produced for sale to area farmers.

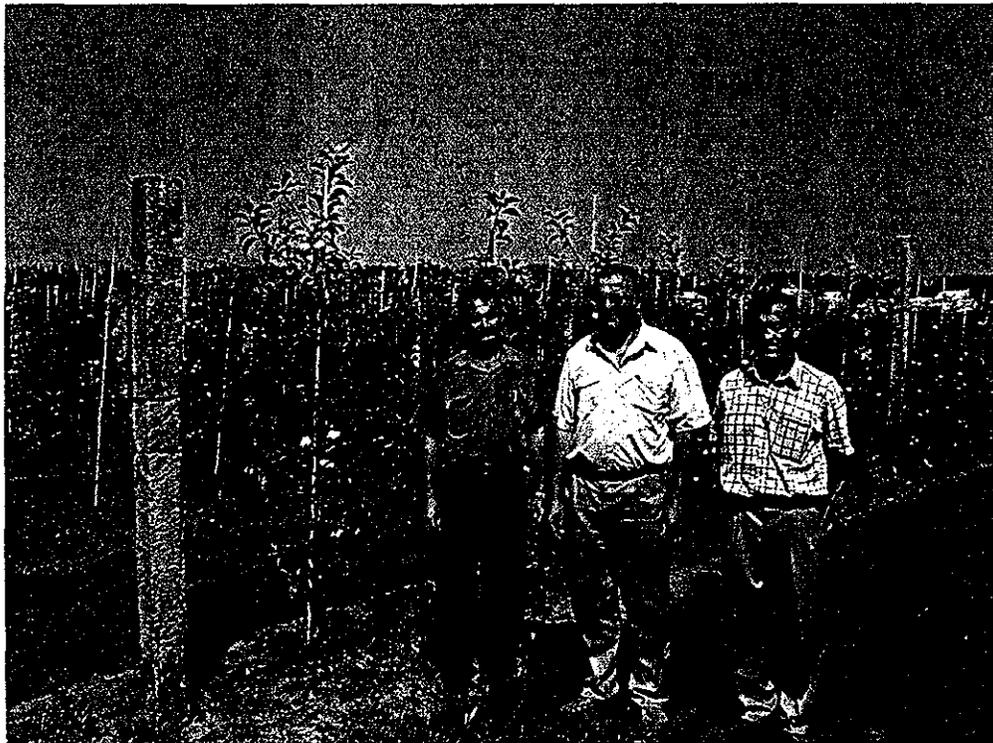
Podilla is administered and supported through the Ukrainian Academy of Agrarian Sciences which provides about 50% of its budget. The remaining 50% is self-generated. The Station's physical facilities (buildings and farm machinery) appear to be very outdated and in need of major renovation and replacement. Modern scientific equipment is the top priority need as seen by the Podilla administration. The close proximity of Podilla to VSAU via excellent roadway suggests that a much greater collaboration between the two in research, demonstration, and student training would be very feasible and very beneficial to both entities.



Podilla Research Station, 8/21/00.



Director Ripamelynk and associates at Podilla, 8/21/00.



Podilla staff and Dr. Petrochenko with dwarf orchard culture, 8/21/00,

FEED RESEARCH INSTITUTE

The Feed Research Institute is headquartered in Vinnitsa. I met with the Institute's Associate Director Mychailo Kulyk on August 22, 2000. The Feed Institute, originally begun in another oblast, was moved to Vinnitsa in 1973. It is the only entity in Ukraine dedicated to research on animal fodder (feed) production. Programs are coordinated through 20 research stations in other Ukrainian oblasts and through feed science departments in 15 other Ukrainian institutions. The Institute is administered and supported by the Ukrainian Academy of Agrarian Sciences which provides 50% of its budget. The remaining 50% is self-generated.

The Feed Institute's laboratories are extensive and cover a broad array of agricultural sciences including plant breeding and selection; production technologies including fertilization and rotation; mechanization, weed science, and irrigation; feed quality and mixes; zootechnical evaluation of feeds (animal feeding trials); and economics and management. The Vinnitsa area land resources are 1,700 ha of which about 300 ha are dedicated to research. Another 4,000 ha are available at a research station in Mykolaiv Oblast southeast of Vinnitsa Oblast. The Feed Institute has 5 Ph.D.'s, 40 M.S., and 160 technical support positions (B.S. and technical college) in the Vinnitsa headquarters. There are 13 scientists, separately budgeted and primarily dedicated to seed production, at the Mykolaiv location. The Vinnitsa field visits to review variety development, rotation research, and irrigation research showed excellent field activities.

The major constraints on the Institute's productivity are facilities and scientific equipment that need major renovation and modernization, new field machinery for production and research, and regular pay for employees. The close proximity to VSAU suggests that it would be desirable to broaden and strengthen the cooperation between the two entities.



The Feed Institute, 8/22/00.



Associate Director Kulyk, Dr. Petrochenko, and Dr. Loyanich; 8/22/00.

ULADOVO-LULYNETSKIA RESEARCH STATION

The Uladovo-Lulynetskia Research Station is located about 36 km northwest of Vinnitsa. I met with Director Oleg Hylnytsky and Associate Director Eugene Kovlasiuk on August 27, 2000. This station began in 1888 when it developed around a sugar factory. An early sugar beet breeder with a Polish background provided leadership for the Station's sugar beet selection program from 1898 to his death in 1962. His goal, which remains the Station's primary mission today, was to develop superior sugar beet varieties. In more recent times peas have been added as a priority crop for variety development. Over 80 varieties of sugar beets and 40 varieties of peas have been developed and are widely planted in the former Soviet Union countries.

Today the Uladovo-Lulynetskia Research Station is one of the largest in Ukraine with 6,300 ha of land (5,000 ha arable) dedicated to both research and production. In addition to the selection of sugar beets and peas technologies of production are also studied. Most recently three sugar beet hybrids have been produced, two cooperatively with Yugoslavia and Germany respectively, with yields of greater than 70 tons/ha and 21% sugar when all appropriate inputs are applied. The research enterprise is led by 10 scientists, 9 with M.S. degrees and 1 with a Ph.D. degree. The station's budget is 70% funded by the Ukrainian Academy of Agrarian Sciences through the Sugar Beet Institute. The remaining 30% is provided by self generated funds from the farming operation which produces wheat, peas, barley, corn silage, sorghum, vetch, sugar beets, seeds of sugar beets and numerous other crops, pigs, and proceeds from a 1,000 loaf per day bakery. The research budget, especially the salaries of the scientists, is supplemented from farm income.

The Station also serves as one of the 40 Ukrainian sites used by the National Seed Board to evaluate cultivars that are undergoing evaluation for national registration. Additionally and importantly, it maintains a museum documenting and commemorating historic advances in sugar beet variety development and the accomplishments of the Uladovo-Lulynetska Research Station.

The Station's greatest need is for funds to begin to systematically replace the farm fleet and production equipment which now stands at about 70 tractors, 85 cars/trucks, 12 combines (all Russian), and 5 beet harvesters. The Station has energetic and innovative leadership which demonstrates that excess farm income can be generated and used to supplement research budgets.



Uladovo-Lulynetska Research Station, 8/27/00.

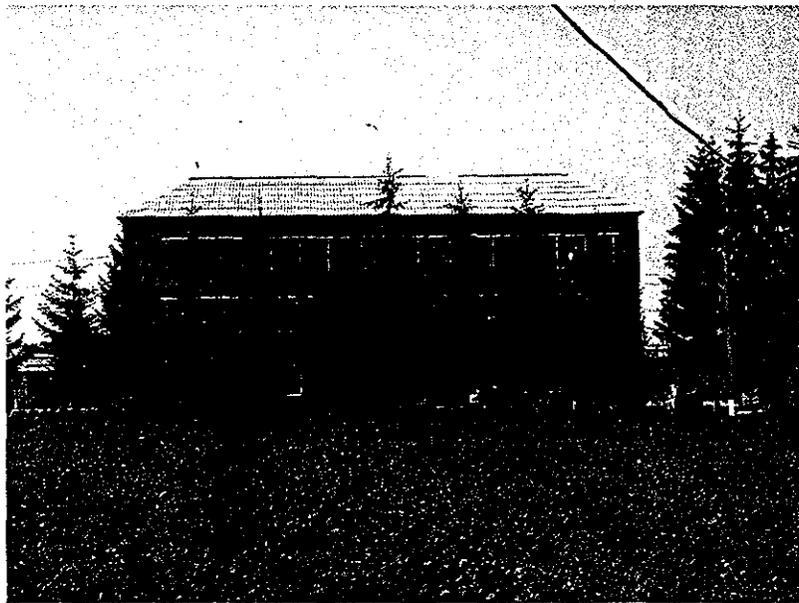


Associate Director Kovlasiuk, Dr. Petrochenko, and Director Hlynysky; 8/27/00.

YALTUSHKIV RESEARCH STATION

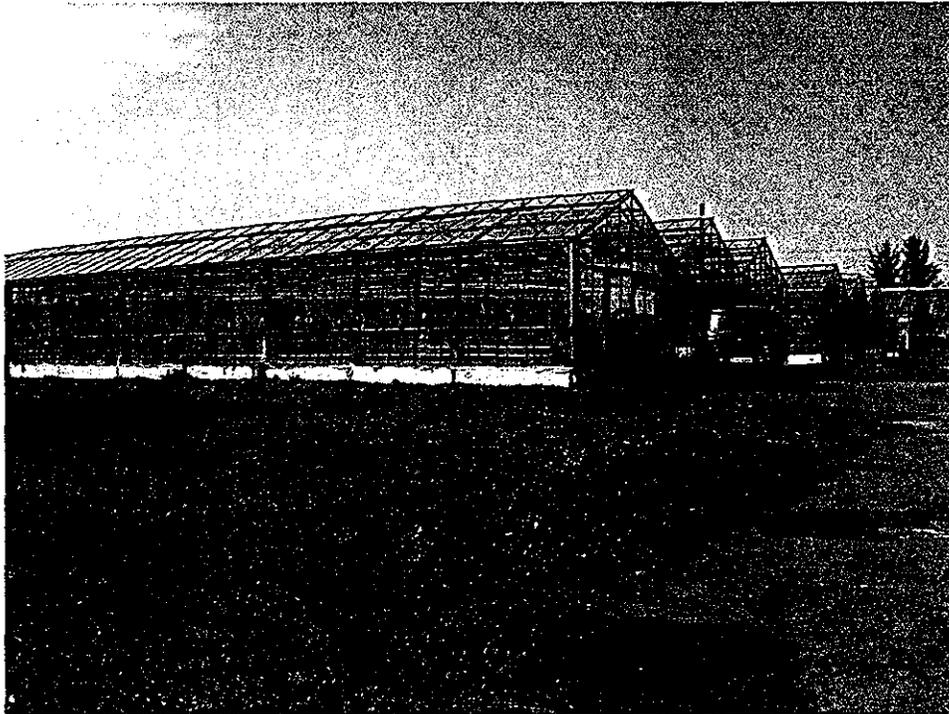
The Yaltushkiv Research Station is located approximately 79 km southwest of Vinnitsa. I met with Director Leonid Bystrytsky and Associate Director Grygory Goncharuk on August 28, 2000. The Station has a very rich history of sugar beet breeding dating to 1888. The first single-plant sugar beet seed was developed here which was revolutionary in sugar beet development and allowed complete mechanization of the production of the crop by eliminating the previously required hand pulling of one of the multiple plants. Originally, varieties were brought from outside Ukraine, then Ukrainian varieties were developed. In 1934 a sugar beet department from ELITA was moved here. World War II resulted in a near total loss of germplasm but the program was rebuilt after the war. The first single-plant variety was registered in 1956 and, at one time, about one-half of the entire Russian crop was produced with varieties developed at Yaltushkiv. In 1978 the program began to focus on hybrids and, using a male sterility technique, five Ukrainian hybrids have been registered and four more are in the registration process. Some cooperative efforts with KVS (German) and Better Seeds (U.S.) are underway. This station is now involved with transgenic sugar beet trials in cooperation with Monsanto (glyphosate resistance) and Aventis (glufosinate resistance).

The Station has 17 scientists, including 8 plant breeders, who are assisted by 21 technical support personnel. The Station's land area is 3,000 ha of which 2,500 ha are arable and about 350 ha are dedicated to research. This is the only station or college visited which had extensive glass greenhouse facilities which were used to accelerate plant breeding efforts. The budget for Yaltushkiv is 40% from the Ukraine Academy of Agrarian Sciences through the Sugar Beet Institute. The remaining 60% of the budget is self-generated primarily from farm sales.



Yaltushkiv Research Station, 8/28/00.

The Yaltushkiv Station has a very rich and productive history, it appears to be very efficiently operated, it is progressive with leading edge research and numerous international private-sector cooperators, and it generates a substantial portion of its own operating budget. Its greatest needs are modern production equipment and modern laboratory equipment. Some equipment donated by foreign companies has been very helpful.



Yaltushkiv Research Station's Greenhouse Facility, 8/28/00.



Associate Director Goncharuk, Dr. Petrochenko, Director Bystrytsky, and Plant Breeding Research Leader, 8/28/00.

APPENDIX 3
SCOPE OF WORK

**DEVELOPMENT OF ADMINISTRATIVE OPTIONS
FOR
AGRICULTURAL RESEARCH IN VINNITSA OBLAST
DRAFT--6/26/00**

Overall Objective:

Develop options for enhancing the effectiveness of the administration of agricultural research in Vinnitsa in support of a relevant and vibrant research infrastructure that will stimulate Ukrainian agricultural productivity.

- Sub-Objective 1: Inventory the current agricultural production within Vinnitsa Oblast; major crops, hectares of each, animal species and numbers.*
- Sub-Objective 2: Inventory the physical resources in Vinnitsa Oblast available for agricultural research; land, buildings (offices, laboratories support structures, etc.), animals, and machinery located at universities, colleges, and laboratories.*
- Sub-Objective 3: Inventory the intellectual resources in Vinnitsa available to conduct agricultural research; faculty by degree held, by location, and by functional commitment (teaching, research, service).*
- Sub-Objective 4: Integrate the information gathered and develop options for administering a clearly organized, non-duplicated, relevant, and productive agricultural research program in Vinnitsa.*

Justification:

Modern agricultural production is a highly technical activity based on the application of advances in plant and animal biology, physics, machinery, electronics, chemistry, and economics. As with any other highly technical activity a strong supporting research infrastructure is needed if the activity is to remain productive and competitive. An effective agricultural research infrastructure is composed of numerous scientists with many different disciplinary backgrounds, stationed at multiple locations, and operating complex physical facilities and laboratories. The efficient administration of such a research infrastructure must provide visionary leadership, foster an atmosphere of scientific creativity and relevance of application, be accountable for the use of resources, and recognize and reward significant research accomplishment. As Ukrainian agriculture is reformed into a private farmer, market oriented system concurrent reforms in how agricultural research is

organized and administered may be desirable to insure a relevant, productive, coordinated, and sustainable research program.

Process:

Maps showing the physical relationships of land, cities, universities, colleges, and laboratories and data on agricultural production within Vinnitsa will be prepared by personnel of The Center for Private Farmer Training and Outreach and the World Laboratory, Ukranian Branch. Agricultural production data will preferably include the major crops produced, an estimate of the amounts (hectares, kilos, etc.) of each, the animal species grown, and the numbers of each for each of the raions in Vinnitsa.

The inventory of intellectual resources available for research in Vinnitsa will be compiled by The Center for Private Farmer Training and Outreach using a questionnaire. This will include data on the number of faculty members or scientists by degree held (bachelors, specialist, masters, candidate) and by the scientific discipline in which the degree has been earned. Additionally, the functional time commitment of each scientist will be noted. For example, a scientist at a university may have a 75% teaching commitment and a 25% research commitment while a scientist at a laboratory may have a 100% research commitment. This information is needed to accurately assess research capacity. (The entities that are envisioned to be included in this inventory are the Vinnitsa State Agricultural University, colleges located at Illincy, Tulchin, and Verhivka, two sugar beet laboratories, a feed institute, a fruit research station, and an animal research station.)

Using an "overlay" method, much like GIS is used to overlay various physical features, the following overlay comparisons will be made:

1. Locations of the universities, colleges, and laboratories inventoried in relationship to major land resources and agricultural production areas.
2. Locations of the universities, colleges, and laboratories inventoried in relationship to transportation corridors.
3. Locations of scientific expertise with respect to the major agricultural production areas (crops, animals).
4. Location of scientific expertise with respect to other scientists (duplication, complementarity).
- Location of major land, buildings, machinery, or livestock resources available for research in relationship to major agricultural production areas (crops, animals).
- Locations of the various universities, colleges, and laboratories in relationship to the raion offices of The Center for Private Farmer Training and Outreach.

Outcomes:

The integration of the physical and intellectual resource data along with the overlay comparisons noted above will provide a framework for developing organizational and administrative structure options to support agricultural research in Vinnitsa. One or more administrative options will be developed that will support a well-coordinated and relevant agricultural research program.

During the course of developing administrative options other products, useful in and of themselves, will be developed.

1. The databases of research capacity will contain elements that will be useful for other planning activities. The inventory of physical resources (land, office and laboratory buildings, other special purpose buildings, animal units, etc.) will be needed for long-range capital improvement planning and capital budget development. The inventory of intellectual resources available for research will be needed to determine the needs for scientists with special expertise, to avoid duplication of effort, to optimize scientific collaboration, and to develop long-range staffing plans.

2. Regardless of the administrative option(s) selected, the agricultural research leadership will need to begin to develop assessment measures to evaluate research relevancy and productivity. These databases will be useful as measures such as scientific publications, farmer interest and use of research results, dissemination of research results through raion offices, and other indices of research relevancy are developed.

3. The development of administrative options will provide a basis for visualizing both the potential and needs of a comprehensive research system. The provision of adequate budgetary support for a sustainable program (facilities modernization, capital improvements, salaries, support personnel, and operating budgets, are some examples of items to be dealt with), insuring program flexibility, and the development of future leadership, are critical items that will have to be addressed and the options developed will provide a framework for making those decisions.

Schedule (Tentative):

The data referenced in Sub-Objectives 1, 2, and 3 will be collected during July and early August 2000. Information will be provided to Dr. William H. Brown at the LSU Agricultural Center as it is gathered.

Dr. Brown will travel to Ukraine on August 18/19, 2000. Accompanied by appropriate laboratory or project personnel, he will make personal visits to

the designated universities, colleges, and laboratories during the period August 21-26 and August 28 for on-site evaluations to clarify the assimilated data, to review land and facility resources, to clarify data collected, and to receive any additional data that the local administrators feel is pertinent.

August 29, 2000 will be utilized for data review, preliminary report preparation, and final conferences (as needed) with personnel from the Vinnitsa State Agricultural University, The Center for Private Farmer Training and Outreach, and the World Laboratory, Ukranian Branch. A preliminary verbal report will be given to the agricultural administrators of Vinnitsa State Agricultural University and the colleges and laboratories included in the study, private sector farm input suppliers, and, if desired, to the leadership of Vinnitsa Oblast.

August 30, 2000 will be utilized for travel to to Kiev and for a preliminary verbal report to USAID officials there. Dr. Brown will return to the U.S. on August 31, 2000.

A final report will be assembled and provided to the International Programs Office, LSU Agricultural Center by October 1, 2000.

PHYSICAL FACILITIES QUESTIONNAIRE

Name of University, College, or Laboratory:

Location (city):

Total Land Area (hectares):

Hectares in agronomic crops:

Hectares in horticultural crops:

Hectares in pasture:

Hectares in forests:

Major buildings:

Number of offices and area (sq. m.):

Number and type of laboratories and area (sq. m.):

Number of greenhouses and area (sq. m.):

Number and type of animal housing units and area (sq. m.):

Other major facilities (size, purpose):

INTELLECTUAL RESOURCES QUESTIONNAIRE

Name of University, College, or Laboratory:

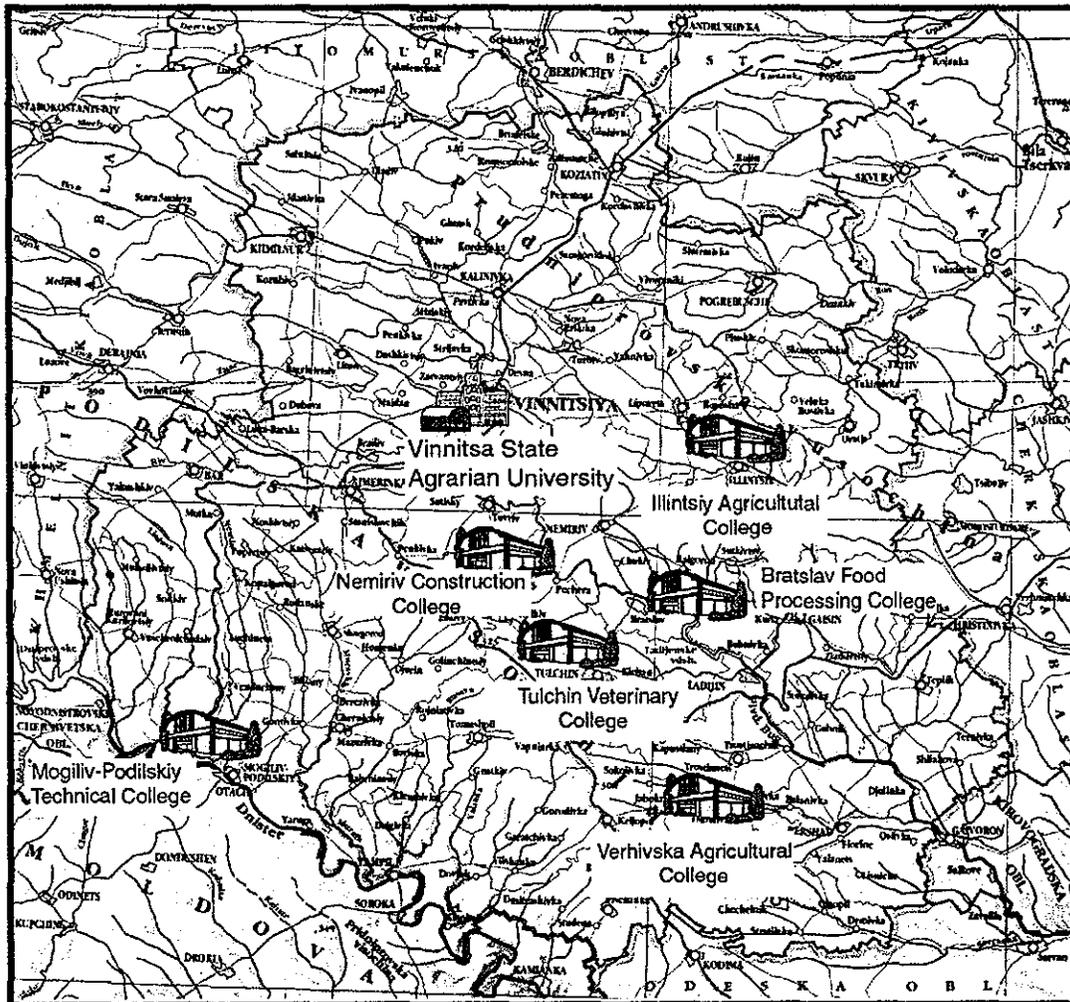
Location (city):

List of Faculty:

<u>Name</u>	<u>Degree Held</u>	<u>Discipline</u>	<u>% Research/% Teaching</u>
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APPENDIX 4
LOCATIONS OF COLLEGES

MAP OF VINNITSA OBLAST AND LOCATION OF RESEARCH STATIONS



OCCUPIED

According to the number of population

	VINNITSIYA	Cities more than 300 000
	BILA TSEKVA	from 100 000 till 300 000
	BERDCHIV	from 50 000 till 100 000
	JMERINKA	from 10 000 till 50 000
	SHARGOD	till 10 000
	Chernobyl	town
	Mazak	Villages
Administrative location		
	VINNITSIYA	Capital of Oblast
	SHARGOD	Capital of Rayon

	Rivers
	Lakes
	Джерела мінеральних вод

ROADS

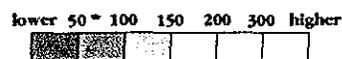
	Railway
	highways
	other
	Automobile highways
	highways and regional territorial
	Airport

BORDERS

	Ukrainian Borders
	Borders of Oblasts
	Borders of Rayons

RELIEF

SCALE OF HEIGHTS IN METERS



Scale 1: 1 200 000

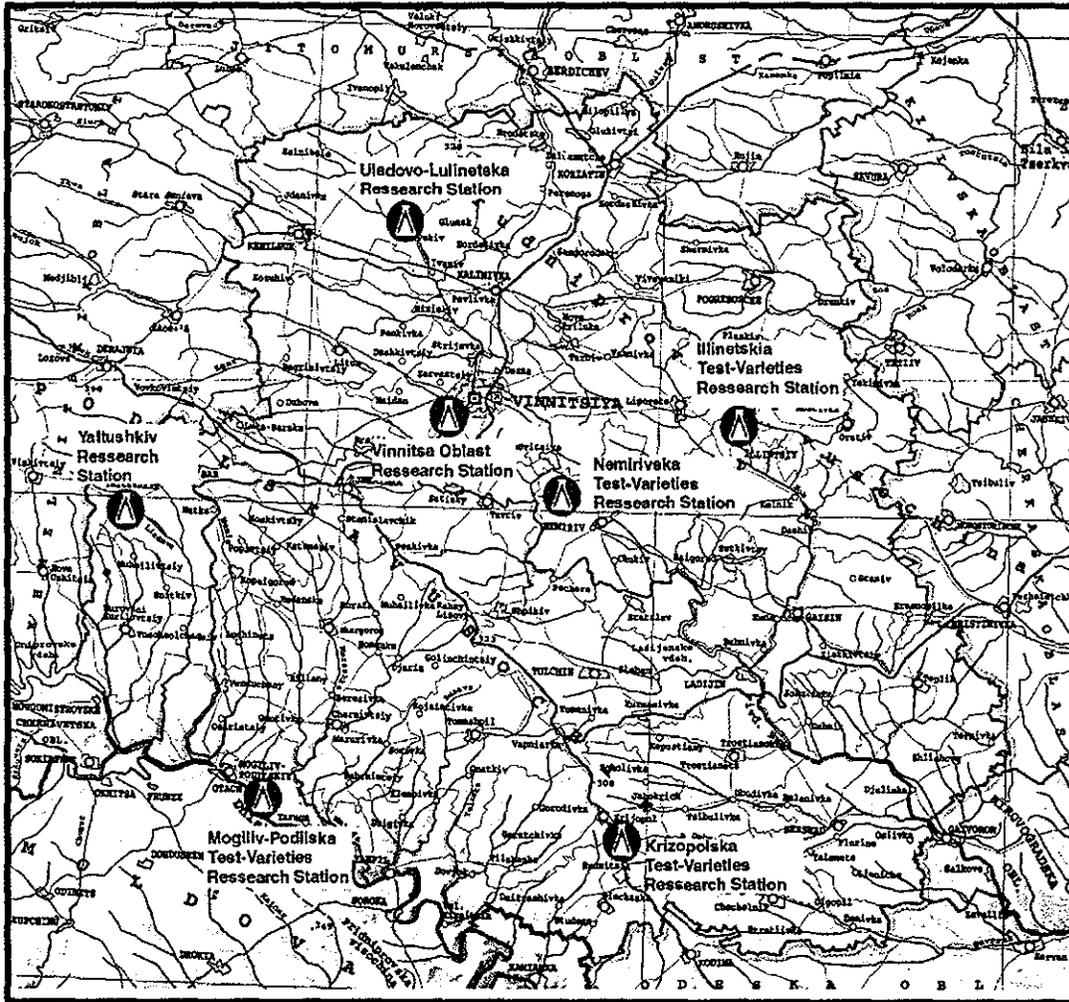
in 1 centimeters 12 kilometers



APPENDIX 5

LOCATIONS OF RESEARCH STATIONS

MAP OF VINNITSA OBLAST AND LOCATION OF RESEARCH STATIONS



OCCUPIED

According to the number of population

- VINNITSIYA Cities more than 300 000
- BILA TSEKVA from 100 000 till 300 000
- BERDICHIV from 50 000 till 100 000
- ZHURINKA from 10 000 till 50 000
- SLOBODO till 10 000
- Chernobyl town
- Hursiv Villages
- Administrative location
- VINNITSIYA Capital of Oblast
- SLOBODO Capital of Rayon

- Rivers
- Lakes
- Аэродромы і аеростанції

- ROADS
- Railway
 - highways
 - other
 - Automobile highways
 - highways and regional territorial
 - Airport

BORDERS

- Ukrainian Borders
- Borders of Oblasts
- Borders of Rayons

RELIEF

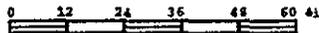
SCALE OF HEIGHTS IN METERS

lower 50 100 150 200 300 higher



Scale 1: 1 200 000

in 1 centimeters 12 kilometers



APPENDIX 6
SOILS MAP OF VINNITSA

КАРТА РИТКІВ
Масштаб 1:750 000



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APPENDIX 7
TRAVEL ITINERARY

Associate
 Schedule of Vice-Chancellor, Dr. Bill Brown
 August 19 - August 31, 2000

Program

Time	Activities	Responsible
<i>August 19, 2000</i>		
1 ²⁰ p.m.	Pick up Dr. Brown at the "Borispol" Airport (Lufthansa Airlines Flight 3372 - 1:25 PM) From Vinnitsa	Larry Brock Vanda Yamkovenko
2 ³⁰ p.m.	Check into Hotel "Rus"	Larry Brock
<i>August 20, 2000</i>		
10 ⁰⁰ a.m.	Depart for Vinnitsa	Larry Brock
2 ⁰⁰ p.m.	Arrive in Vinnitsa and check in at the Hotel "Podillia"	L. Brock G. Loyanich L. Tesluk
4 ⁰⁰ p.m.	Meeting with the staff of the Project and discussion of Dr. Brown's program (Project office/Hotel room)	V. Petrichenko V. Sereda G. Loyanich L. Brock
7 ⁰⁰ p.m.	Dinner	L. Brock
<i>August 21, 2000 - MONDAY</i>		
9 ⁰⁰ - 10 ³⁰ a.m.	Visit Vinnitsa Oblast agricultural research station "ELITA" <i>Near Vinnitsa -- Agronomic Crops</i>	V. Petrichenko
10 ³⁰ - 11 ¹⁵ a.m.	Visit Oblast Soil Analysis laboratory <i>Near Podilla Station</i>	V. Petrichenko
11 ¹⁵ - 11 ⁴⁵ a.m.	Trip to orchard research station "Podilska"	V. Petrichenko
11 ⁴⁵ - 1 ¹⁵ a.m./p.m.	Review station research activities and visit demonstration fields.	V. Petrichenko
1 ¹⁵ - 2 ³⁰ p.m.	Lunch (Vinnitsa State Agrarian University)	V. Petrichenko
3 ⁰⁰ - 4 ⁰⁰ p.m.	Meet with Rector, Prof. L. Sereda and Project faculty of Vinnitsa State Agrarian University	L. Sereda G. Loyanich
6 ⁰⁰ p.m.	Dinner	V. Mamaliga
<i>August 22 2000 - TUESDAY</i>		
9 ⁰⁰ - 11 ⁰⁰ a.m.	Visit Feed Research Institute, meet with the Director, Prof. Babich and overview of demonstration plots. <i>Fields, Office in Vinnitsa, observation</i>	L. Sereda V. Petrichenko V. Mamaliga
11 ⁰⁰ - 12 ⁰⁰ a.m.	Trip to Illintsiy college, Illintsiy rayon	L. Sereda V. Mamaliga
12 ⁰⁰ - 1 ³⁰ p.m.	Review activities of college and visit office and demonstration plots of the Project on the farm.	L. Sereda V. Mamaliga
1 ³⁰ - 2 ³⁰ p.m.	Lunch (Vinnitsa State Agrarian University) <i>Illintsiy College</i>	L. Sereda
2 ³⁰ - 4 ³⁰ p.m.	Return to Vinnitsa and visit private agricultural company "Strum Agro" <i>Syban Activities</i>	V. Petrichenko
6 ⁰⁰ p.m.	Dinner	L. Sereda

Optional

Program (continue)

Time	Activities	Responsible
<i>August 23 2000</i>		
8 ⁰⁰ - 10 ⁰⁰ a.m.	Trip to Verhivka agricultural college, Trostianets rayon (160 km from Vinnitsa)	L. Sereda V. Petrichenko V. Mamaliga
10 ⁰⁰ - 10 ⁴⁵ a.m.	Meet with the Director of agricultural college.	L. Sereda V. Petrichenko V. Mamaliga
10 ⁴⁵ - 12 ⁰⁰ a.m.	Visit the Project demonstration plots at the Verhivka agricultural college.	V. Petrichenko V. Harkovenko
12 ¹⁵ - 1 ¹⁵ p.m.	Lunch	V. Petrichenko V. Harkovenko
1 ¹⁵ - 2 ⁰⁰ p.m.	Trip to Ladijin agricultural college <i>of mechanization (Guisyn Rayon)</i>	V. Mamaliga
2 ¹⁰ - 4 ³⁰ p.m.	Study activities and structure of agricultural college.	V. Mamaliga
4 ³⁰ - 5 ³⁰ p.m.	Dinner at the college	V. Mamaliga
5 ³⁰ p.m.	Trip to the Vinnitsa	V. Mamaliga
<i>August 24 2000 . (Independent Day of Ukraine)</i>		
6 ⁰⁰ p.m.	Celebration Dinner	G. Loyanich L. Tesluk
<i>August 25 2000 - FRIDAY</i>		
8:30 9 ⁰⁰ - 10 ⁰⁰ a.m.	Trip to the Bratslav state agricultural college <i>(Nemiriv)</i>	L. Sereda V. Mamaliga
10 ¹⁵ - 11 ³⁰ a.m.	Study activities and structure of agricultural college.	L. Sereda V. Mamaliga
11 ⁴⁰ - 1 ⁰⁰ p.m.	Trip to Tulchin. Visiting Tulchin Veterinarian college. Participate in celebration of 70-years anniversary of Director, Dr. Bezsmertniy V.M.	L. Sereda V. Mamaliga
1 ¹⁵ - 2 ³⁰ p.m.	Lunch	L. Sereda V. Mamaliga
2 ³⁰ - 4 ³⁰ p.m.	Return to Vinnitsa <i>(actual return - 7:00 pm)</i>	L. Sereda V. Mamaliga
6 ⁰⁰ p.m.	Dinner	Larry Brock
<i>August 26 2000 - SATURDAY</i>		
8:30 9 ⁰⁰ - 10 ⁰⁰ a.m.	Trip to Mogiliv-Podilskiy agricultural college, Mogiliv-Podilskiy rayon (160 km from Vinnitsa)	L. Sereda V. Mamaliga
10 ⁰⁰ - 11 ⁰⁰ a.m.	Study activities and structure of agricultural college.	L. Sereda V. Mamaliga
11 ⁰⁰ - 12 ⁰⁰ a.m./p.m.	Trip to Chernyatin agricultural college, Jmerinskiy rayon.	L. Sereda V. Mamaliga
12 ⁰⁰ - 1 ⁰⁰ p.m.	Study activities and structure of agricultural college.	L. Sereda V. Mamaliga
1 ⁰⁰ - 2 ⁰⁰ p.m.	Lunch	L. Sereda V. Mamaliga
2 ⁰⁰ p.m.	Return to Vinnitsa <i>(actual return - 9:30 pm)</i>	V. Mamaliga

August 27 2000 - SUNDAY		
8:30 9 ⁰⁰ - 11 ⁰⁰ a.m.	Visit to Uladovo-Lulynetska Research Station. (Kalinivka Raion)	V. Petrichenko
11 ⁰⁰ - 1 ⁰⁰ a.m./p.m.	Study activities and structure of research station Sugar Beet, Pans (to feed)	V. Petrichenko
1 ⁰⁰ - 2 ⁰⁰ p.m.	Lunch	V. Petrichenko
2 ³⁰ - 4 ³⁰ p.m.	Return to Vinnitsia	V. Petrichenko
August 28 2000 - MONDAY		
8:30 9 ⁰⁰ - 10 ⁰⁰ a.m.	Visit Yaltushkiv Research Station (Bar Raion)	V. Petrichenko V. Mamaliga
10 ⁰⁰ - 12 ⁰⁰ a.m.	Study activities and structure of research station Sugar beets	V. Petrichenko V. Mamaliga
12 ⁰⁰ - 1 ⁰⁰ p.m.	Lunch	V. Petrichenko V. Mamaliga
1 ⁰⁰ - 2 ³⁰ p.m.	Visit to Lipovets-rayon Project office (optional)	L. Brock G. Loyanich
2 ³⁰ - 4 ³⁰ p.m.	Review office activities (3:00 - Governor of Vinnitsa Oblast)	O. Nedbaluki N. Fil
5 ⁰⁰ - 6 ⁰⁰ p.m.	Dinner	O. Nedbaluki N. Fil
August 29 2000 - TUESDAY		
9 ³⁰ - 10 ³⁰ a.m.	Meet with the Rector, Prof. L. Sereda at the Vinnitsa State Agrarian University.	L. Sereda
10 ³⁰ - 11 ³⁰ a.m.	Meet with Governor and Vice-Governor of Agriculture Dr. G. Zabolotniy.	L. Sereda
12 ⁰⁰ - 1 ⁰⁰ p.m.	Lunch	L. Sereda
2 ⁰⁰ - 6 ⁰⁰ p.m.	Remained in Vinnitsa Trip to the Kayv and check in at the Hotel "Rus".	P. Ivanicky
7 ⁰⁰ p.m.	Dinner	P. Ivanicky
6:00 am depart for Kiev - August 30 2000		
9 ⁰⁰ - 12 ⁰⁰ a.m. 10 ⁰⁰	Visit "World Laboratory", meet with Director Dr. Palshin and ISS team. Kordium & Scientists-	G. Palshin
12 ⁰⁰ - 1 ⁰⁰ p.m.	Lunch 10:30 - Deputy Minister of Agrarian Policy	
2 ⁰⁰ - 3 ⁰⁰ p.m.	Visit USAID and meet with Olexander Mulliar.	P. Ivanicky
3 ⁰⁰ - 6 ⁰⁰ p.m.	Free time (XXXXXX)	P. Ivanicky
6 ⁰⁰ - 7 ⁰⁰ p.m.	Dinner	P. Ivanicky
August 31 2000 - Thursday		
8 ⁰⁰ - 8 ³⁰ a.m.	Trip to the "Borispol"	P. Ivanicky
8 ³⁰ - 10 ⁰⁵ a.m.	Check in. Have a great flight home.	P. Ivanicky

Attachment F. Program for the Exhibition

Podillia Exposition - 2000

September 9, Wednesday

2pm Arrival of the participants. Registration, setting up displays.

September 10, Thursday

10.00 Opening Ceremony.

10.30 - 17.00 Consultations of the companies' representatives and university faculty being provided several at each scheduled time in different rooms.

- 10.30 - 11.00
1. Evaluation of the variety resources of the grain and legume crops and modern technologies of their growing. (Dr. V.Petrychenko)
 2. Most widely spread pests for field crops and main means of protection against them. (Dr. T.Butkaluk)
 3. Small agricultural equipment and its economical value for being used on a small farm. (Dr. A.Garkavyi)

- 11.00 - 11.30
1. Podillia varieties of alfalfa and clover and technologies of their growing for feed and forage and for seeds. (Dr. V. Mamalyga)
 2. Characteristics of different varieties of potatoes and technologies of its growing on farms and HPs. (Dr. V. Mazur, Dr. I. Polishchuk)

3. Podillia honey production and apiary technologies. (Dr. S. Razanov)
- 11.30 - 12.00
1. Modern systems of plant protection of weeds, pests, and insects. (Dr. V. Plionsak)
 2. Modern technologies of grain crop production. (O. Korniychuk - Dupont Nemur; Y. Melnyk - Monsanto)
 3. Feeding and keeping livestock for farmers and HPOs. (Dr. L.Poliovyi)
- 12.00 - 12.30
- Analysis commercial farm operations. (Dr. O. Tomchuk)