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FINAL REPORT:

REDUCING POTATO LOSSES  
IN RUSSIA AND UKRAINE

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 University of Idaho  
*College of Agriculture*

**REDUCING POTATO LOSSES  
IN RUSSIA AND UKRAINE**

**A Report to the  
New Independent States Task Force  
U.S. Agency for International Development**

**October 1992**

**THE POSTHARVEST INSTITUTE FOR PERISHABLES  
COLLEGE OF AGRICULTURE  
UNIVERSITY OF IDAHO**

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Note: The recommendations and conclusions contained in this report do not necessarily reflect the views and policies of the U.S. Agency for International Development.



Names and boundary representation of administrative divisions are not authoritative. Final boundaries of Estonia, Latvia, and Lithuania with the former Soviet Union are expected to be confirmed by agreement. Other boundary representation is not necessarily authoritative.



## **LIST OF ACRONYMS**

<b>ACDI</b>	<b>Agricultural Cooperative Development International</b>
<b>AIU</b>	<b>Agroindustrial Union</b>
<b>AKKOR</b>	<b>Russian Association of Farmers' Enterprises and Agricultural Cooperative Societies</b>
<b>cwt</b>	<b>hundredweight</b>
<b>EBRD</b>	<b>European Bank for Reconstruction and Development</b>
<b>FAS</b>	<b>Foreign Agriculture Service (USDA)</b>
<b>ha</b>	<b>hectare</b>
<b>IIDF</b>	<b>Iowa International Development Foundation</b>
<b>kg</b>	<b>kilogram</b>
<b>LOL</b>	<b>Land O'Lakes</b>
<b>NIS</b>	<b>New Independent States</b>
<b>NISTF</b>	<b>New Independent States Task Force</b>
<b>PIP</b>	<b>Postharvest Institute for Perishables</b>
<b>PIPIC</b>	<b>Postharvest Institute for Perishables Information Center</b>
<b>ROKAP</b>	<b>Russian Corporation for Agrifood Processing</b>
<b>ROSCAR</b>	<b>Russian Potatoes Concern--Russian</b>
<b>RPC</b>	<b>Russian Potatoes Concern--English</b>
<b>RFR</b>	<b>Russian Federal Republic</b>
<b>RR</b>	<b>Royal Russet</b>
<b>TSPC</b>	<b>Tula Seed Potato Company</b>
<b>USAID</b>	<b>U.S. Agency for International Development</b>
<b>USDA</b>	<b>U.S. Department of Agriculture</b>
<b>VOCA</b>	<b>Volunteers in Overseas Cooperative Assistance</b>

## **EXECUTIVE SUMMARY**

### **Assessment of Potato Losses**

Russia produces almost twice the tonnage of potatoes as the U.S. (34 million metric tons vs. 18 million in 1991) and Ukraine slightly less (15 million tons). Yields, however, are only about one-third those in the U.S. so that, in Russia, the area devoted to potatoes is almost six times the area in the U.S.

According to official statistics, roughly one third of potatoes produced in Russia and Ukraine are grown on state and collective farms and are sold to official procurement agencies in the cities (or, increasingly, used as barter goods to obtain needed machinery or inputs). This "formal" marketing system, a hold-over from the old command economy, is undergoing change as a part of the process of privatization. The remaining two thirds of production originate on small farms, rural garden plots, and suburban "dacha" plots. Growers who are members or employees of state and collective farms typically sell a portion of their output through these farms so that it enters the formal market channel. A large but indeterminate amount is sold "informally" by growers in public markets in the towns or to middlemen (traders) operating in the vicinity of larger cities, and the balance is self-consumed. A tiny fraction of potatoes produced in Russian and Ukraine, less than three percent of production, is processed into potato granules, flakes and snack foods.

While precise data on potato losses is not available, officials interviewed by the PIP team in Russia and Ukraine estimated that 40 to 60 percent of the amount harvested is lost before reaching the consumer. During the time of the team's visit (July/August) the team was able to observe the process of harvest and storage of early potatoes at only one location. However, it was possible, by visiting potato farms, on-farm storages, and storage bases, and by discussing losses with managers and scientists, to assess the causes of loss.

Losses originate at several key points in the pre- and post-harvest handling process. Disease infected seed and inadequate plant protection during the growing cycle increases the potential of having a diseased, low-quality storage crop. Poor harvester design causes damage to the tubers due to rough handling as they pass through the machine. During post-harvest handling in sorting and grading sheds, potatoes again suffer damage due to excessive drop distances. Storage buildings on state and collective farms (mainly used for seed potatoes) have poorly designed air systems (non-uniform air flow, lack of environmental controls), leading to further losses during storage. Damaged and diseased potatoes are particularly susceptible to storage losses and can cause deterioration of good quality potatoes if storages are improperly managed.

Temporary outdoor storage of potatoes is utilized for market potatoes on state and collective farms at times of transportation shortages or lack of urban storage capacity. Losses increase with storage duration in these temporary storages, especially under adverse weather conditions. Potatoes transported from farms to the urban storage bases also suffer damage when they are shipped by rail in open hopper cars and exposed to the weather. Actual storage conditions at these bases are generally adequate, but could be improved by addition of modern environmental controls. Losses of another kind occur at storage sites when employees remove potatoes for their own use, a practice often unofficially tolerated.

### Proposed Technical Assistance/Training/Equipment Demonstration Program

The program proposed by PIP would provide assistance to address the constraints which are preventing improvement in potato handling and storage in Russia and Ukraine. Elements of the program are:

- training in potato seed improvement,
- training in improved plant protection practices,
- monitoring of storage facilities during winter storage,
- training of Russian and Ukrainian specialists in the U.S. on modern storage, harvesting and handling techniques,
- assistance in design of an improved harvester,
- training for collaborating organizations in promoting investment opportunities in potato equipment and processing,
- provision of documents on potato handling techniques from PIP's Information Center and,
- training in installation and operation of modern potato storage facilities.

PIP recommends that this program be carried out in collaboration with institutions in Russia and Ukraine which are exclusively involved in seed and market potato production, in potato marketing and processing, in research, and can provide the necessary potato experts to serve as counterparts to U.S. specialists. In Russia, PIP recommends the "Russian Potatoes Concern" as collaborator, and in Ukraine the Potato Institute of Ukraine.

Should USAID decide to proceed with purchase and donation of demonstration potato storages in Russia and Ukraine, PIP recommends that they be installed at locations controlled by the above two institutions so that they can serve both as commercial, profit-making ventures, and as sites where training in storage operations could be carried out jointly by PIP and local experts. PIP experts could also assist in providing improved designs for small-scale storages for private farmers and farmer groups, and could advise on retrofitting existing on-farm storages with improved air systems wherever feasible.

### Trade and Investment Potential

Russia and Ukraine offer an enormous, virtually untapped market for quality fresh and processed foods, and for the industrial machinery to produce them. American products are greatly respected and American investors assiduously courted. The capacity to pay hard currency for imports is, however, greatly limited at present. U.S. companies should consider joint ventures or licensing arrangements with well established local enterprises to manufacture machinery using the maximum of locally sourced components.

Opportunities exist in:

- (1) Manufacture of potato storage buildings and air systems of 1,000 to 5,000 ton capacity, and simple air systems for retrofitting to existing storages.
- (2) Manufacture of improved potato harvesters adapted as necessary to row width, soil types, and potato varieties.

- (3) Manufacture of handling equipment such as self-unloading trucks, pilers, scoopers and conveyors.
- (4) Potato processing and potato processing machinery.

Processing of potatoes into snack foods, frozen french fries or other forms, and dehydrated granules and flakes, is in its infancy in Russia and Ukraine. The inevitable expansion of this industry presents exceptionally interesting opportunities to U.S. processors and equipment manufacturers. The domestic market will be able to absorb increasing quantities of these products as incomes increase. Export markets should also be available as labor costs in Russia and Ukraine are significantly lower than those in Eastern and Western Europe.

Both Russian and Ukrainian governments have adopted legislation favorable to foreign investment. Trade agreements recently negotiated with the U.S. promise non-discriminatory treatment of U.S. firms. However, there remain concerns over such issues as the uneven enforcement of laws and regulations, the lack of commercial and market information, enforcement of contracts in the courts, and the adequacy of transportation and telecommunications infrastructure.

#### Economic and Agrarian Reform

Uncertainty continues about the pace and direction of economic and agrarian reform in these two countries. Reform is farther advanced in Russia than in Ukraine; experience in the former country may be repeated in the latter. Privatization is well along in Russia in some sectors of the economy, but lags behind in agriculture and agribusiness. Conversion of state and collective farms to joint stock companies is partially complete but most still remain closed to outside ownership. Management of these farms remains much as it was and inefficiency abounds. As government subsidies are removed, management of these farms seek to achieve economic viability in various ways, such as forming associations with other farms to produce and market quality seed potatoes, and to establish potato (and other crop) storage and processing complexes. At present, in the absence of a Western style marketing system with wholesale-retail networks, producers remain dependent on the existing state-dominated channels. Layoffs of redundant personnel on these farms present socio-economic problems which have not yet been addressed.

Agrarian reform measures adopted in 1990 have led to rapid growth in the number of full-time independent farmers. Yet these farmers face difficulties in gaining access to inputs such as farm machinery, agricultural chemicals, and fertilizer. As yet no private sector distributors of these products have appeared, leaving private farmers to secure them as best they can through state and collective farms. The formation of marketing and farm supply cooperatives on the U.S. model is under discussion in some areas.

In Russia, policies on agroindustrial reform are still evolving under the leadership of Vice President Rutskoy's "Center of Land and Agroindustrial Reform". Plans are underway to create land banks which would for the first time allow loans for agriculture and agro-industry to be backed by mortgages on land. This movement has the potential to inject badly needed capital into the agribusiness sector in Russia.

## INTRODUCTION

Under a grant from the New Independent States Task Force (NISTF) of the Agency for International Development, a team from the University of Idaho, Postharvest Institute for Perishables, carried out a mission to Russia and Ukraine in connection with potato storage and handling. The PIP team was in Ukraine from July 13 to 25 and in Russia from July 25 to August 12, 1992. Team members were:

Richard Abbott, Team Leader/Agric. Marketing Specialist  
Harvey Neese, PIP Director/Training Specialist  
Jim Eckhardt, Potato Storage Facilities Specialist  
Mike Lewis, Potato Postharvest Specialist  
Vladimir Yefimov, Economist and NIS Specialist

The objective of the mission was "to improve upon the storage of potatoes in the NIS giving emphasis to the emerging private sector and the need for low cost storage in agricultural producing regions". Specific tasks were to:

- identify storage constraints (technical, facilities, equipment, policy, training, management),
- develop recommendations to address constraints, including potential USAID support in the form of technical assistance, training, facilities and equipment to assist with potato storage and help increase food availability for the 1992/93 and 1993/94 winters,
- provide recommendations on low-cost, on-farm or nearby storage facilities,
- provide technical assistance to host-country counterparts to minimize food losses, and
- identify potential marketing and investment opportunities for U.S. manufacturers of storage facilities and equipment.<sup>1</sup>

It became apparent during the first week that a high proportion of potato losses reported as occurring in storage, actually originated at other points in the system. Inadequate plant protection leads to the harvesting of diseased potatoes which later infect good potatoes. Rough treatment during harvesting and postharvest handling causes damage to tubers. Exposure to the elements during transport further degrades the product. Storage of these sub-standard potatoes without proper control of temperature and ventilation accelerates the loss rate. Accordingly, the PIP team expanded the scope of work to include an assessment of losses wherever they occur, and a compilation of constraints which prevent a reduction of losses. Some of the team's findings must be tentative because there was little opportunity to observe harvesting, handling and transport of potatoes during the July/August period, which was prior to the potato harvesting season.

The PIP team also concluded that there were no signs of a shortage of potatoes in the foreseeable future for either Russia or Ukraine, barring large-scale crop losses due to weather or disease. Shortages may, however, develop in urban areas due to inefficiencies in the distribution system and the need to obtain supplies to replace former shipments from Belarus and hard currency imports from Poland. The privatization process may also affect supplies; state and collective farms no longer must accept state-dictated prices for their potatoes and are negotiating higher prices with

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<sup>1</sup> The complete scope of work appears in Appendix E.

municipal procurement agencies. This does not necessarily create a supply problem, since producers are increasingly selling direct to retail stores and bypassing the distribution base system.

Readers will also note that much of the report deals with large-scale potato producers--the state and collective farms now in the process of privatization. Under present conditions in Russia and Ukraine, the team concluded that only these commercial-scale operations provided the necessary conditions for a coordinated technical assistance/training/equipment demonstration program which would (1) have an impact on the handling and marketing of large lots of potatoes in the short to medium term, and (2) support the formation of joint ventures with U.S. firms in the manufacture and sale of storage buildings and equipment, and in potato processing.

While in Russia and Ukraine, the PIP team made contact with a number of other organizations working in related fields in order to coordinate PIP activities with them. These organizations included:

- U.S. Department of Agriculture
- U.S. Department of Commerce
- U.S. Embassy
- Volunteers in Overseas Cooperative Assistance (VOCA)
- Iowa Farmer-to-Farmer Program
- European Community Representative

A report on these and other contacts are included in Appendices A-C.

PIP was also to prepare a report on storage facilities and other agribusiness opportunities for U.S. businesses and present the findings at a one-day workshop in the Washington D.C. area. This report was prepared<sup>2</sup> and the workshop held in Rosslyn, Virginia on September 11, 1992.

The report is divided into four parts: an assessment of potato losses, including the causes of such losses and the constraints to improved performance; recommendations to USAID for a technical assistance/training/equipment demonstration program; a report on trade and investment opportunities for U.S. companies; and a review of the status of economic and agrarian reforms affecting agriculture and agribusiness in Russia and Ukraine. The appendix includes reports on contacts made by the team in Russia and Ukraine.

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<sup>2</sup> "Report to Investors: Opportunities in Russia and Ukraine in Potatoes", Postharvest Institute for Perishables, University of Idaho, September 1992. Note: All the material in this document is also included in this report.

## I. ASSESSMENT OF POTATO LOSSES

### A. Background: Potato Production and Marketing

The table below compares potato production and yields in the U.S. with that of the three main potato-producing republics, and shows the total for the former Soviet Union. Potato production for the entire former Soviet Union was more than three and a half times U.S. production, yet about half of this production is lost before it reaches the consumer. Russian potato production alone was almost double that of the U.S. in 1991. Yields are well below that of the U.S. Russian and Ukrainian yields average one-third of U.S. yields, while those of Belarus, the most efficient producer, are only 44 percent of U.S. yields.

	1991 Production (millions)		Planted Area (millions)		Average Yield	
	Metric Tons	cwt	ha	Acres	MT/ha	cwt/acre
Russia	34	748	3.1	7.6	11	98
Ukraine	15	330	1.5	3.7	9.5	85
Belarus	9	190	0.6	1.5	13.7	122
Former Soviet Union	65	1,430	5.8	14.3	11	98
USA	18*	394*	0.6	1.4	32	290

\* USA data from 1990

People of the former Soviet Union are big consumers of potatoes. Per capita annual consumption in 1986-1988 was 104 kg. (233 lbs), compared to 64 kg. (141 lbs.) in Western countries.

From 60 to 70 percent of production is on small private farms or plots averaging less than 1/2 hectare (about one acre), and on garden size plots. The rest is produced by large state and collective farms (now in the process of privatization). Most privately produced potatoes are consumed locally or marketed through informal farmers' markets.

A typical collective farm in Russia or Ukraine may be 6,000 hectares (13,000 acres) in size and have 2,000 to 3,000 ha (5,000 to 7,000 acres) of arable land, planted mostly to wheat and fodder crops. Collective farms in potato growing areas might have 300 to 500 hectares (740 to 1235 acres) planted to potatoes. Some of these farms specialize in seed potato production; others grow primarily for the fresh market. In Russia, there are slightly fewer state farms than collectives (23,000 vs. 29,000) but they are typically double the size of collective farms.

Potatoes are marketed through both formal (state-controlled) and informal channels.

**Formal channel:** Under the old centralized system in the former Soviet Union, municipal agencies were responsible for procurement of potatoes directly from producers. They were shipped by rail or truck from farms to large distribution bases near the cities, often arriving in poor condition due to rough handling prior to shipment and to delays in transit. Moscow has by far the largest such network. The same physical system still exists, but under privatization now taking place, both the producing farms and the distribution bases are being converted into "joint stock companies" owned by their workers. Central control and the accompanying subsidies have been eliminated, leaving base managers free to negotiate the best deal they can with the large farms. This process is new to the participants and is not yet working well. In Moscow, for example, it is reported that contracts are not always observed by producers, as farm managers tend to shop their potatoes around for the highest prices. In Russia, approximately 4.7 million tons or about 15 percent of total production was marketed this way in 1991.

**Informal channel:** Part-time farmers, most with less than 2 acres, rural homeowners with garden plots, and urban dwellers with "dacha" plots outside the cities, all grow potatoes. A portion of this production is marketed through state and collective farms where small producers live, some are sold privately through open public markets in towns, and the balance is self-consumed or used as animal feed. Middlemen operate in rural areas near cities, purchasing from farmers and selling in public markets or directly to retail stores. It is surprising to note that about 2/3 of total production, or about 27 million tons in 1991, came from these plots, though data is lacking on how much moves through the various channels.

It should also be noted that the small farmer is also severely handicapped by lack of access to inputs such as small tractors, small harvesters, plant protection chemicals, fertilizer, and quality seed.

The most serious constraint in the marketing system as a whole is the absence of a producer-wholesaler-retailer network for fresh produce such as exists in Western countries. There are no private or cooperatively-owned packhouses in producing areas to serve small independent farmers with properly equipped storages, enabling them to assemble large volumes of potatoes and to market them over a period of months to take advantage of higher prices during the off-season.

Russia and Ukraine have the potential to export fresh market potatoes, and add foreign exchange once some of the problems mentioned in this report are solved. The ability to compete in export markets is certainly enhanced by the low labor costs which currently prevail. Further study would be required to establish actual production costs and some assumptions would have to be made about the future exchange value of the ruble.

## B. Causes of Potato Losses

Physical losses of 40 to 60 percent of the stored potato crop are frequently reported in Russia and Ukraine. The primary causes were described to the PIP team as rot due to poor storage and improper storage management. Although insufficient information was available to break

down this loss figure by source, the PIP team's assessment indicates that this magnitude of losses does exist and, in some years, the loss may be even more severe. The causes of the losses lie deeper within the growing, harvesting, and storing process.

#### 1. Plant protection

Plant protection chemicals not only aid in the certification program by protecting seed against virus and other diseases but they protect the plants against fungi like Late Blight (*Phytophthora infestans*). This fungus can be devastating when the infested crop is put under storage conditions, especially if the crop is not cured properly, stored in improperly equipped facilities, or inadequately managed.

Potato Seed Certification Programs in Russia and Ukraine are the starting points for determining the causes for storage losses. The programs are designed similar to programs found in the U.S. The problem lies not so much with the programs' design but with maintaining the disease-free standard because of the minimal use of plant protection chemicals. Without these protective chemicals, the seed tubers are rapidly infected with a variety of diseases which can be spread to future crops and potentially cause severe storage losses. Within a couple of years after the clean certified seed is released to the state or collective seed farms for expansion, the certification standards for disease cannot be met. By the time the fourth generation of seed reaches farmers, yield and storability have greatly diminished.

The reason for the lack of plant protection chemicals is two-fold: non-availability and cost. Currently, very few plant protection chemicals are being produced in Russia and imports require access to scarce hard currency. In some areas, foreign consulting companies are providing a crop protection service including crop consulting, application equipment, and chemicals for barter. This practice is not widespread.

The use of plant protection chemicals in Ukraine is limited. A few Russian pesticides are available for use against the Colorado Potato Beetle. Some fungicides are available but most are copper derivatives. Only one farm had used Ridomil for Late Blight protection. This lack of plant protection chemical use greatly increases the potential for large storage losses during years of severe Late Blight infection and renders the certified seed program useless. Very few herbicides are available for weed control thus causing decreased yields and numerous problems during harvesting. Fertilizers are also in short supply because most of the inorganic fertilizers are manufactured in Russia and currently very little is being produced or exported. Farms that have dairy operations use manure as their main fertilizer source.

State and collective farm directors contacted by the team in Ukraine feel that the future holds some promise for increased plant protection chemicals. Monsanto, for example, has started a joint venture supplying chemicals to Ukraine. The Dutch have also been involved in consultation, chemical supply and application, and supplying seed for some crops. They are hoping for more U.S. and European involvement.

## 2. Harvesting and handling into storage

The following information is based on conversations with farm directors, institute and university specialists, industry related personnel, and visual observations. The team was only able to observe one harvesting operation and that was an early-dig operation. Harvesting for storage does not start until September.

Most harvesters observed in Russia were manufactured in Germany although Russian and some Dutch machines are being used. The Russian machine is said to be designed after "Grimme" model made in the former West Germany. A large number of "Fortschritt" machines made in the former East Germany were also observed. All the harvesters observed were two-row direct-dig pull-type and had numerous design problems that cause extensive tuber damage during harvesting. The most severe of these problems are the excessive drop heights and unpadded chains. A lot of tuber damage occurs on older machines because of worn-out or improper replacement parts. There seemed to be a shortage of replacement harvesting equipment and spare parts for existing machines. It was reported that the main reasons for the shortages were: (1) the German harvester company is now out of business, (2) the Russian harvester manufacture has slowed production, and (3) the Dutch require hard currency for any purchases.

Ukrainian harvesting and handling methods are similar to those in Russia. One major difference between the two countries, based on the information received from potato industry personnel, is the age and quality of the farm machinery. Harvesters used in Ukraine are mostly Russian made with a few scattered German machines and most are older and in poor condition because of lack of replacement parts. New harvesters are very expensive and the supply is limited to nonexistent in some areas.

The actual handling of harvested potatoes was not observed by the team, with the exception of one site in Russia, but the equipment was made available for inspection and the process was thoroughly explained. The process of handling potatoes begins when the tuber leaves the harvester and is placed in the truck. The trucks used in Russia and Ukraine for hauling potatoes out of the fields are multi-purpose vehicles serving as dump trucks for domestic and military use and for farm use during the harvesting season. On large seed farms, potatoes are transported from the field, dumped into large hoppers, conveyed to sizers where they are divided into three lots; seed (40 - 60 g or 1.4 - 2.1 oz), culls (misshapen and over-sized), and market potatoes (size yet to be determined). Each lot of seed potatoes is then conveyed into large hoppers where they may drop as much as one to five meters (3.3 to 16.4 feet). From these hoppers the seed potatoes are then dumped back in the trucks (a drop of two to four meters, or 6.6 to 13.1 feet). At this point the seed may be dumped into another hopper then conveyed into a bulk storage. Market potatoes may also be dumped into hoppers and then placed into 250 to 450 kilogram (551 to 992 lb.) containers to be transported to distribution centers (bases) for storage.

The PIP team was not able to view the handling and transporting of potatoes by state/collective farms that grow mainly market potatoes in the two countries since it was off-season. It was reported that some market potatoes are transported in bulk by rail to the bases. The railcars most often used are coal-cars. These railcars are loaded by conveyers over the side of the cars and unloaded via hopper-bottoms and conveyed into

storage containers. Boxcars are also used to haul potatoes to the bases and are often unloaded by hand via shovels. Railcars are often delayed during transportation, sometimes as long as two or more days. These delays expose potatoes to seasonal rainy weather conditions during the latter part of the harvesting period. Potatoes are also transported to bases in containers via uncovered trucks.

The rough handling practices described above account for roughly one-half the total loss suffered during storage. There seems to be a complete lack of understanding or concern about the damage inflicted on the tubers from the severe and improper handling, possibly due to lack of responsibility or accountability for the raw product. The latter may be closer to reality because numerous times the team was told that the "handlers" job was to get the potatoes into the containers and to the bases; the storage of the potatoes was "someone else's responsibility".

### 3. Storage on state and collective farms

Approximately one-third of the total potato crop in Russia is grown on state and collective farms. State and collective farms can produce seed, market potatoes, or both. Even if one farm's main crop is seed potatoes, 20 to 30 percent of its total potato production must be provided to fulfill government contracts. A farm that produces mainly market potatoes typically contracts the entire crop to the government, except for next year's seed. (The use of noncertified seed seemed to be common, possibly because of the higher price of certified seed.)

State and collective farms in Russia store seed mostly on-farm and usually in bulk. The majority of seed storages are partly below-ground concrete structures with a soil cover. Most are constructed of prefabricated concrete panels or brick. The storages visited are structurally sound but poorly insulated. It was difficult to determine quality of the installed air systems without taking design specifications and air velocity measurements. Air for the pile is supplied by large centrifugal fans through a plenum into a duct system. The duct system is of two basic designs; an in-floor system with wooden or steel covers or an above-ground triangle-shaped wooden-slatted duct.

The systems appear to be adequate to store high-quality potatoes from September until May, but not for storage of damaged potatoes or those infected with disease or fungus (though the team was not able to observe the condition of seed upon removal from storage). Reported losses in these storages has reached as high as 30 percent. The control of environmental variables is very poor to nonexistent. Most controllers are just "on and off" switches with dial indicators for temperature. Storage operators informed the team that storages/potatoes undergo wide temperature swings due to the weather. There was often 6 C (11F) temperature difference between the top and bottom of the pile. This temperature difference and other information indicates poor air distribution throughout the storage. The air system is usually operated for only one hour per day. No supplemental humidity is added at any time during curing or storage. Only one of the observed storages had a humidity system (it was used for vegetable storage not potatoes) and less than ten percent had refrigeration systems.

Market potatoes, contracted to municipal procurement agencies, are sometimes stored temporarily on the farm, especially if transportation is not available or the bases are unable to handle the large volume of potatoes during harvest. These temporary storages, called "clamps", are holes or trenches dug in the ground. In some areas 30 percent of the crop is stored in these storages until April or May. The potatoes are piled in the trenches with or without ventilation, then covered with straw. This type of temporary storage provides very little protection from rain or prolonged cold weather. Fifty percent or more of the stored crop has been reportedly lost in these storages.

Storage structures and air system designs in Ukraine are similar to those in Russia. This is understandable because most all the technology and designs originated in Russia.

Potatoes grown in Russia and Ukraine are round, white skin varieties. Currently, over 40 varieties are grown in the NIS; some of the more common ones are: Nevsky, Gatchinsky, Sharminsky-2, Temp, Leningrad, Lugovsky, Volgzanin, and Vyatka. The Ukrainians have also tried many Dutch varieties like Santo, Binge-white, and Premier, with good success the first year then decreasing yields thereafter.

Historically, white-skinned potatoes are not known for their storability. Even with existing storages and poor air supply systems, storage managers get the job accomplished. Most of the more common varieties, like Nevsky, Lugovsky, and Temp have a long dormancy period (nonsprouting condition). Additionally, the Russians store all their potatoes (seed and fresh market) at 2 to 4 C (35.6 to 39.2 F) to help inhibit sprouting in storage. A number of Dutch varieties are currently being evaluated for fresh market and processing.

Note: Processing was usually the second, if not the first problem the team was asked to solve in Russia and Ukraine. Every state and collective farm director felt that storage losses could be reduced if the damaged tubers could be processed instead of stored. Storage as flakes or flour reduces the need for fresh storage and reduces the risk. Also the production of chips and french fries could provide a local as well as an exportable commodity. Some of their ideas are logical, but the quality of raw product required for processing is not available. Directors interviewed all were eager to form joint ventures with foreign firms.

#### 4. Storage on private farms

Production of potatoes on private farms accounts for two-thirds of the total production in Russia and Ukraine. It was reported that 30 percent of the private farmer's potato crop is sold to either the municipal bases or in public markets (similar to an U.S. farmers' market). Storage losses are reported to be much lower in the private sector because the majority of potatoes are hand-dug, thus eliminating the handling damage that occurs on larger farms. These farmers have storage losses due to diseases (no plant protection chemicals), poor seed, dehydration from inadequate storage conditions, and sprouting. Farmers estimated losses at five to ten percent, but after observing these facilities, the team believes that losses may be considerably higher.

Storages used by small farmers are small, one to two metric ton capacity, below-ground facilities located under a house or out-building. Potatoes are usually stored in bulk on an

earth floor. Some have passive air systems with a small vent to the outside. Supplemental heat in the winter, if available, is usually via a small space heater. Seed is often stored in the same manner only in a separate section of the underground storage. This type of storage is almost completely dependent on the weather for cooling.

Seed availability is a major problem for the small private farmer. Certified seed is too expensive so the farmer sorts seed from the previous year's crop for next year. Year after year the farmer replants the seed obtained from previous production and consequently yield and storability continues to decrease.

#### 5. Urban storage centers

These distribution centers, also called bases, are very large vegetable storage buildings centrally located within most cities in Russia and Ukraine. The city of Moscow has 24 of these bases. These facilities are designed to handle large volumes of vegetables stored in containers. All storages are equipped with refrigeration (most are ceiling mounted units), although none have humidity supply systems. The air systems are minimal at best. One base storage had inlets located on the ceiling along with the exhaust outlets. Air is supplied by large centrifugal fans which seem to be the standard in all of the storages, regardless of size.

These large urban storages could store high quality, properly cured potatoes for an extended period of time. However, with the high percentage of rotten and damaged potatoes that are delivered from the farms, it is understandable why a high percentage of the stored potatoes are lost. One manager estimated that over 30 percent of the potatoes delivered to the storage were damaged or decayed and could not be sorted out. And, even if the damaged/decayed potatoes could be sorted out, he would be faced with the problem of disposing of them. Potatoes often incur an additional three to five percent damage when shipped from storage to retail stores.

Sprout inhibitors are not used; sprouting is controlled strictly by temperature. Controls and monitoring equipment varied from adequate to simple "on and off" switches. Modern electronic environmental monitoring equipment for storages is nonexistent. Urban centers often import potatoes from Poland and the Netherlands because of their quality and long-term storability.

Ukrainian distribution bases are smaller than those in Russia but are identical in design. The task of the bases is to supply cities and industrial areas with potatoes and other vegetables. Ukrainian bases have a total of 1.7 million metric tons (1.8 million short tons) storage capability, half of which is refrigerated. They store approximately 600,000 metric tons (660,800 short tons) of potatoes for 2,500 retail stores. Maintenance of storage and equipment seemed to be a problem, mainly due to lack of spare parts. Retail outlets store 3-5 tons of potatoes or a one to two day supply. Storages are small refrigerated coolers designed for short-term storage. Most retail stores have cleaning and packaging facilities.

## 6. Stock shrinkage

An unknown but probably substantial amount of potatoes is removed for personal use by employees of state and collective farms and by workers at urban distribution bases. The PIP team also heard of cases of fraud involving unauthorized private sale of potatoes from official procurement agencies.

## C. Constraints to Loss Reduction

The technical constraints for reducing losses are numerous. The following is a listing (nonprioritized) of the constraints which currently prevent reduction of losses in Russia and Ukraine.

1. The lack of plant protection chemicals allows insects to go unchecked, decreasing yields and spreading diseases. Fungal and bacterial diseases that infect plants cause the tubers to rot both in the field and in storage.
2. Inadequacies in the potato seed certification program may be an indirect cause of storage losses. The Russian and Ukrainian seed certification programs have standards similar to those established in Idaho and other states. The Russian program has seven basic classes of seed: **Basic seed**, which is the first year the seed is planted out in the field for expansion, **Super-superelite**, the second year on the seed farm, **Superelite**, the third year in production, **Elite**, the fourth year of field planting, **Class A** (fifth year) and **Class B** (sixth year), and finally **commercial** potato production. State and collective farms that grow market potatoes try to plant Super-superelite, Superelite, or Elite seed to reduce the risk of disease contamination. Often this practice does not work. Because of the lack of plant protection chemicals, the standards of high quality certified seed cannot be maintained throughout the generations. By the time Class A or B seed gets to the small private farmer, who cannot afford the higher generation seed cost, the seed is often laced with disease.
3. Deficiencies in the design of harvesters used on state and collective farms result in losses due to rough handling during the harvesting process. Problems lie mainly in the lack of padding on strategic parts and excessive drop-heights. The poor quality of the metal and rubber used in manufacturing the Russian harvesters, the lack of replacement machines, and the lack of spare parts, all contribute to production loss. However, the harvesting and handling equipment on Russian state and collective farms is relatively modern and well maintained, at least on the farms visited by the team.

Note: One additional constraint on harvesting equipment is a result of row spacing. Russian farmers plant rows 70 centimeters (28.0 inches) apart unlike the U.S. standard of 85 or 90 cm (34 or 36 inch) spacing. Any demonstration harvesting equipment sent to Russia from other countries will have to be built to fit their current cultural practices. Also, special construction considerations may be required for the yields and the variety when evaluating a demonstration harvester. Most new U.S. harvesters are built for greater yields and larger average tuber size.

4. There seems to be little understanding of bruise-free potato handling techniques. Likewise, there is little sense of responsibility for quality by those in charge of the harvesting and handling process. It is likely that the low skill level for those who handle potatoes during harvest is due in part to the difficulty of finding experienced workers during that time of year.
5. Outdated storage and ventilation technology are major constraints. Most of the storages the team visited were structurally sound, although poorly insulated. The ventilation systems had poor air distribution because of the way they were designed. Antiquated controls and the absence of environmental monitoring equipment make it difficult to control storage temperatures especially during extreme cold weather. The lack of a humidity supply system in a storage built only two years ago indicates a lack of current technical storage information.
6. There is a lack of technical training and information dissemination for storage managers and associated personnel, especially at the private farmer level. Storage technology and potato physiology may be understood by a number of Russian and Ukrainian scientists, but they are not able to obtain current information on new research developments and changes in technology. Even libraries do not have current information. Nor is there a formal extension-type service in Russia and Ukraine as we have in the U.S.
7. As there are virtually no on-farm permanent storages for market potatoes, state and collective farms are sometimes forced to make use of temporary storages. These storages are adequate for short-term purposes (barring any severe weather) if the potatoes go straight to market. Potatoes cured and stored in on-farm temporary storages have a high potential for loss in long-term storage.
8. The failure to make use of potato varieties with better storage characteristics also contributes to losses. The current varieties seem to meet consumer demand for a small, round potato, though it is not clear if demand has been dictated simply by the varieties available. A new variety with a tougher skin, higher yields, and improved storability could increase the supply of potatoes shipped to the population.
9. Due to lack of irrigation, almost all potatoes in Russia and Ukraine are grown under dry-land conditions. This practice not only restricts yields but in years without a preharvest soil-conditioning rain, harvesting/digging potatoes is difficult because of clods. Clods, caused by dry soil, bruise the tubers and cause excessive amounts of soil to be transported to storages.

The constraints for Ukraine are the same as in Russia only in some cases are more severe.

10. The availability of replacement machinery and spare parts will continue to suppress the growth of the agricultural industry.
11. The certified seed program will continue to pose problems and will be unable to supply farmers with high quality seed until the plant protection constraint is corrected.

12. Leakage (losses due to stealing) may be even more serious in Ukraine than Russia because of lack of government control.

D. On-Site Technical Assistance

During the team's visits to state and collective farms, the potato postharvest specialist and the potato storage facilities specialist provided on-site technical assistance as opportunities presented themselves. Examples of this assistance are as follows:

- advice on modifications to potato harvesters to reduce damage, such as installing padding at transfer points where potatoes strike metal surfaces,
- advice on equipment modifications to reduce damage at packing sheds where potatoes entering and leaving large hoppers may be dropped as much as three meters, and
- advice on more effective use of plant protection chemicals by the use of several products in rotation in order to overcome build-up of immunity to a single product.

## **II. RECOMMENDED TECHNICAL ASSISTANCE/TRAINING/EQUIPMENT PROGRAM**

### **A. Background**

In this section the PIP team presents its recommendations for a program of technical assistance, training, and equipment demonstration to deal with the constraints outlined in the preceding section. By way of review, these constraints are:

- inadequacies in the seed certification program, complicated by an inadequate supply of plant protection chemicals,
- deficiencies in the design of potato harvesters,
- a lack of understanding of bruise-free handling of potatoes,
- outdated storage and ventilation technology,
- inadequate technical training,
- lack of access to documentation on modern storage technology,
- a shortage of on-farm permanent storage facilities, forcing some large producers to rely on temporary storage in outdoor pits, and
- the need for potato varieties with better storage characteristics.

The proposed program is aimed at improving the technical, managerial and training capabilities of key people in organizations involved with potatoes in Russia and Ukraine, and through these individuals to extend improved practices widely throughout the two countries. The emerging privatization of agriculture, including production, marketing, storage, and processing, makes this assistance very timely. The program is designed to complement the privatization process as much as possible.

The proposed demonstration equipment program would complement the technical assistance and training activities by (1) demonstrating the latest U.S. storage technology and thereby encouraging investment in badly needed new facilities, and (2) providing a site for training courses in storage practices to be organized by the collaborating organizations with help from PIP.

The program obviously cannot deal with all constraints affecting production and marketing of potatoes in Russia and Ukraine. The very limited availability of irrigated land places a restriction on potato yields. A shortage of investment credits and access to hard currency for imports affects the rate at which new facilities will be built. Current economic conditions also restrict availability of new agricultural machinery and spare parts for existing machinery. Continued uncertainty about ownership rights and sale of land affects the willingness of private farmers or farmer groups to make investments. Western-style marketing systems have yet to appear and are affected by the pace and direction of privatization in the food distribution system.

## B. Collaborating Organizations

### 1. Ukraine

The Potato Institute of Ukraine was selected as the primary organization with which PIP could collaborate to reduce potato losses in this country and promote private investment in the agricultural industry. This organization has branches throughout Ukraine. The Ministry of Agriculture and several collective farms which are privatizing are the other organizations which have tentative collaborative agreements with PIP. Additional information on the Institute is found in Appendix B.

### 2. Russia

Russian Potatoes Concern is a consortium of research organizations, collective and state farms producing potatoes for seed and consumption, and various private sector entities. This relatively new organization plans to serve as a supplier of seed potatoes to growers, carry out research on potato varieties and cultural practices, and improve plant protection, potato storage, and potato processing. They also have plans to invest in potato processing plants in partnership with foreign and local investors. PIP has a protocol agreement to collaborate with the organizers of Russian Potatoes Concern. (See Appendix A for additional information on this organization.)

PIP also proposes to work with the Russian Association of Farmers' Enterprises and Agricultural Cooperative Societies (AKKOR), an organization representing private farmers. Currently, AKKOR primarily acts as administrator of a government credit program for private farmers.

Another organization with which PIP intends to collaborate is the Agrarian Institute, a recently created smaller organization subordinate to the Academy of Agricultural Sciences, which advises on and monitors land reform in Russia.

The Agroindustrial Union is also a potential collaborator with PIP. This organization seeks to foster joint ventures with foreign companies, including production of seed and potato processing.

PIP will coordinate its activities closely with other USAID-funded projects in Russia and Ukraine in order to obtain the maximum amount of effectiveness. The organizations with which PIP sees opportunities for collaboration are Volunteers in Overseas Cooperative Assistance (VOCA), Agricultural Cooperative Development International (ACDI), and the US Department of Agriculture. PIP already has tentative collaborative activities with VOCA in Ukraine and Russia and hopes to work with ACDI in Russia.

## C. Organization of Training and Technical Assistance

### 1. Ukraine

#### a. Potato seed improvement--training:

**The Problem:** Storage losses for potatoes begin with poor potato seed in Ukraine. There is not a viable program to produce virus free certified seed available to smaller private growers, or large farms. Diseases such as Late Blight and poor seed quality show up during the storage process in increased decay of potatoes. A certified seed program utilizing the best adapted varieties has a high potential of increasing availability of quality potatoes to consumers.

**Proposed Action:** A certified potato seed specialist will make two visits to Ukraine to train Potato Institute specialists how to improve the Ukrainian certified potato seed program. This training will enable small private growers and larger farm operations to obtain quality seed. Topics and timing for subsequent specialized in-country training of Ukrainian seed specialists will be identified during the first visit, and will emphasize seed production/quality. In addition, a Ukrainian seed specialist will visit and interact with specialists in Idaho in its certified seed production program to follow up in-country training (see b below).

**Expected Results:** It is expected that the Potato Institute in Ukraine will be able to improve potato seed certification for growers and reduce the incidence of diseases which in turn cause considerable losses later in the storage process. There will be future institutional assistance and follow-up from university potato seed specialists who will be involved in both training in Ukraine and in the U.S.

#### b. U.S. training:

U.S. training for Ukrainian potato personnel is proposed in the following categories: storage, harvest equipment, and potato seed (disease control and certification) technology, and storage/ventilation facilities.

#### **Storage/Harvest Machinery/Seed Technology Training**

**The Problem:** The Potato Institute in Ukraine has specialists in the various disciplines of production, harvesting, storage, seed production, etc. throughout Ukraine. However, specialists have been under a system which has not kept them abreast of the latest methods and technologies of potato storage, handling equipment and other potato industry developments in the U.S. and other western countries. These specialists would benefit greatly from exposure to modern U.S. technologies of potato storage and harvesting methods, seed certification, and product handling. Collaboration could lead to commercial transactions in the future.

**Proposed Action:** Three specialists selected from the Potato Institute and from progressive cooperative type collective farms in the process of privatizing would visit

potato producing areas of Idaho and interact with specialists at the University of Idaho. On and off site storage facilities would be visited. The seed specialist would interact with specialists in Idaho's certified seed program to follow up on in-country training and technical assistance received previously by the Idaho specialist. The specialists would return to Ukraine and, by means of training seminars at the Potato Institute and various farms, inform other of what they had learned.

The potato specialists from Ukraine would visit the University of Idaho and PIP's extensive Information Center which could provide them with the latest research and data on all facets of postharvest potato disciplines on a continuing basis.

A translator will be provided from sources in the U.S.

### **Storage and Ventilation Facilities Training**

This part of the proposal concerns training of both Ukrainian and Russian storage engineers in 1) construction of potato storage facilities by a U.S. firm using the seamless metal type fabrication method, and 2) ventilation and air movement systems associated with storage facilities.

The U.S. firm selected to provide storage facilities by USAID and the sub-contractor installing the ventilation systems will offer some training on correct methods of installation during the construction phase. However, in order for Russians and Ukrainians to gain in-depth knowledge of how ventilation systems should be installed and thoroughly learn the operation of equipment to produce seamless metal quonset construction, it is proposed that a Russian and a Ukrainian construction engineering specialist be trained as trainers in the U.S.

The two storage specialists would visit the U.S. this winter season before construction begins on potato storage facilities in country. Through observations and training at the selected ventilation and storage firms, they will acquire a more extensive knowledge of the intricacies of construction and proper installation of storage and ventilation systems.

These two specialists would be on site as the potato storage facilities are erected and would be expected to ensure proper construction and installation of ventilation systems in potato storage facilities in Russia and Ukraine in the future.

**Expected Results:** The Ukrainian and Russian specialists who visit the U.S. for training will be asked to submit a brief plan on how they expect to transfer the knowledge they learned to other specialists who might benefit from it. They will be expected to give training seminars to other storage specialists on proper construction of these types of systems.

The storage and ventilation engineers will be involved in on-site construction of the two proposed potato storage facilities and ventilation systems.

c. Monitoring of potato storage facilities during the winter storage period:

**The Problem:** The large volume of potatoes stored in large base facilities and rural storage depots help feed the urban population in Ukraine. It is not known how adequately the storage facilities and their ventilation, cooling, and management systems hold up during the winter season or what happens to potatoes during storage. It is quite possible that the large base storage facilities, which now must make a profit, will develop into private distribution and wholesale centers in the future; however with reported large losses of potatoes, this may not be possible. This competitive process may already be starting as without price controls and budgets, the bases have to compete for product from state, collective and private farms, and without federal budgetary support, they have to put the operations on a profit basis.

**Proposed Action:** Representative storage sites will be selected for monitoring during a preliminary visit by the PIP market analyst. These sites will include on-farm storage facilities (state, collective, and private farms) and large base storage operations. A PIP storage specialist will visit the sites to monitor storage and handling operations approximately eight to ten weeks into the winter storage season. The storage specialist will collaborate with storage personnel from the Potato Institute and collective and state farms to complete this task.

The observations and recommendations of the storage specialist will be combined with the information obtained from previous visits of PIP potato specialists to form a more complete picture of storage problems and necessary improvements in Ukraine.

The PIP specialist will monitor: potatoes in storage, temperature control, humidity, and ventilation systems operations and the removal of potatoes from the storage areas. Recommendations will then be made in collaboration with Ukrainian specialists to improve the long-term storage environment of potatoes and reduce losses where feasible.

A training seminar will be organized with Ukrainian storage specialists at the end of the U.S. specialist's visit. Recommendations on improving the storage environment will be the topic of the seminar.

**Expected Results:** A more keen awareness of how to avoid losses in long-term storage of potatoes will be gained by Ukrainian (and Russian) potato storage specialists. The Potato Institute and Russian Potato Concern will be encouraged to prepare and disseminate bulletins to various storage sites on how to improve the future storage environment of potatoes.

d. Intermediate impact--utilizing U.S. agribusinesses to help design and/or produce a potato harvester for Ukraine:

**The Problem:** There is no potato harvester or combine manufactured either in Ukraine since the break-up of the former Soviet Union, or in East Germany where they were previously manufactured. This has left Ukraine without a local equipment

source. The harvesters presently in use are old and in poor repair with virtually no spare parts supply. The opportunity exists to provide inputs for the design of a potato harvester which could be manufactured locally by the equipment division of the Ministry of Agriculture, possibly in collaboration with a U.S. firm.

**Proposed Actions:** The services of a harvester engineer will be obtained from an interested U.S. potato harvester manufacturer. This engineer will collaborate with specialists in the Potato Institute and the Ministry of Agriculture to design and eventually manufacture a potato harvester suitable to production and harvest conditions in Ukraine. The engineer will make two trips to Ukraine.

**Expected Results:** The potato harvester engineer could assist the manufacturing entity to produce a harvester to meet Ukraine's needs. A joint venture or licensing mechanism could result from this activity whereby a U.S. potato harvester company could become involved in an agribusiness which has high potential for activity in Ukraine.

e. Processing of potatoes, fruits and vegetables:

**The Problem:** There is some processing of potatoes and vegetables in Ukraine, primarily on state and collective farms. Collective farms can joint venture with private companies, and, as privatization continues, will be able to process as private (or cooperative) ventures. Processing techniques are of very low quality: equipment is antiquated, jars and caps are not suitable and unsanitary conditions prevail. Some collective farms produce processed products from potatoes but not in large amounts.

**Proposed Action:** Two processing specialists will be sent to Ukraine, one vegetable/fruit processing specialist and one potato processing specialist. These specialists would ideally be from private U.S. processing firms. They will evaluate the present status of processing industries in Ukraine and recommend improved processing technologies and equipment to improve product quality. They will also investigate opportunities for U.S. investment and joint ventures with U.S. processors. Data on present product volume, and potential market demand will also be investigated.

**Expected Results:** Potential Ukrainian processors will be made aware of the complex nature of modern day processing techniques, and of the availability of equipment and expertise to meet their needs. It is expected that one to two U.S. processors will become interested in exploring joint venture or collaborative opportunities with Ukrainian sources through the two processing specialists' reports and the interaction with the U.S. processing industry.

## 2. Russia

### a. Potato seed improvements--training:

**The Problem:** Potato seed problems in Russia are much the same as in Ukraine. Diseases such as Late Blight and poor varieties increase the loss of potatoes in storage. Correcting these problems would considerably increase potato supplies.

**Proposed Action:** The U.S. certified potato seed specialist who is proposed for Ukraine will also train specialists in the Russian Potatoes Concern to set up a viable certified potato seed program in Russia. A collaborating Russian seed specialist will visit Idaho to study the state's seed certification program. Training seminars involving other Russian seed specialists will be organized by the Russian specialist visiting Idaho after his/her return to Russia.

**Expected Results:** Russian Potatoes Concern will be able to more quickly expedite the production and marketing of virus free potato seed and reduce the losses that show up in storage due to seed diseases. Future institutional collaboration and assistance from university seed specialists is expected to occur after in-country training and the visiting seed specialist to the U.S.

### b. U.S. training:

U.S. training for Russian potato personnel is proposed in the following categories: storage, processing, potato seed production, and storage and ventilation facilities.

#### **Storage/Processing/Potato Seed Certification**

**The Problem:** The situation in Russia is similar to that of Ukraine. Russian Potatoes Concern has specialists trained in various disciplines of potato production, handling, and storage, etc. They have been subject to the same research and development "black-out" prevalent in Ukraine and other NIS countries.

**Proposed Action:** Three Russian specialists selected by Russian Potatoes Concern would visit Idaho potato production areas and interact with specialists at the University of Idaho. The programs for the storage and potato seed certification specialists will be similar to those proposed for Ukraine. The processing specialists will visit a number of potato processing and equipment manufacturing firms and learn from them product manufacturing methods and the types of machinery available.

**Expected Results:** (Same as in Ukraine). The specialists who receive training will be asked to submit a brief plan on how they expect to transfer the knowledge they learned to others who might benefit from it.

c. Potato inputs training:

Six training visits are proposed to train specialists in Russia in plant protection, better use of harvest/handling equipment, storage facilities management and weed control.

**The Problem:** Storage losses of potatoes in Russia are intertwined with inadequate plant protection methods, harvesting, and handling processes, modern storage technology and storage facilities management. Trained personnel in these disciplines are lacking.

**Proposed Action:** U.S. specialists in the above disciplines will be sent to Russia to collaborate with the Russian Potatoes Concern to train trainers in these disciplines. Seminars and/or workshops will be organized by the Russian Potato Concern for in-country specialists.

**Expected Results:** Russian specialists who attend seminars/workshops to be trainers in the various disciplines will set up similar workshops for other specialists in the future. This will allow widespread dissemination of information throughout the potato industry.

d. Training Russian Potatoes Concern (RPC) in organizational planning:

Russian Potatoes Concern is a new organization composed of research organizations, collective and state farms which are privatizing and producing seed and consumption potatoes, and various private sector entities. The organization has plans to serve as a supplier of seed potatoes to growers, to carry out research on potato varieties, cultural practices and plant protection, and to process potatoes. In addition, it proposes to enter into joint venture operations with foreign processors of potatoes. Overall emphasis of all of RPC's proposed operations is on promoting privatization and working with the private sector.

**The Problem:** Russian Potatoes Concern personnel has little experience in organizing the ambitious operation planned although the people involved seem to be of the highest caliber. Because of the present mix of mostly technical personnel, more emphasis is being placed on technical problems and solutions and less on organizational and financial considerations of the organization. Organizational, management, and marketing assistance is needed in order to help RPC become a viable entity in potato development in Russia.

**Proposed Action:** A business organizational specialist with agricultural marketing experience is proposed to train RPC personnel to develop its organizational infrastructure to become a viable force in certified potato seed distribution and privatization of the potato industry in Russia. VOCA may be requested to provide additional consulting time within their contract where needed.

**Expected Results:** Russian Potatoes Concern will be able to develop its organizational capabilities so that it can accomplish the ambitious goals it has set forth.

This organization can go a long ways towards helping privatization and improving the potato industry in Russia.

e. Training for investment promotion and facilitation of U.S. investment in joint ventures with Russian private sector companies in the potato industry and other perishables:

Training is proposed for a Russian firm or organization which can assist in providing logistical support and commercial contacts for U.S. businesses interested in investigating opportunities in some facet of perishable commodities development.

**The Problem:** There is no viable Russian organization with agribusiness expertise to assist U.S. businesses in making contacts with prospective Russian counterparts and entities which might offer legitimate investment or commercial opportunities in potatoes and other perishable commodities. Because of the constant changing of legal ramifications of private foreign investment, property ownership and taxes, commercial opportunities in perishable commodities are difficult to assess.

**Proposed Action:** A Russian organization or group would be selected and trained to identify and collaborate with U.S. businesses seeking commercial opportunities in potatoes and other perishable commodities in Russia. The organization selected would be expected to have up to date translations of all current laws relevant to private investment, develop a list of contacts of Russian firms and organizations in perishable commodities, have access to high agricultural officials, and provide logistical support such as interpreters, drivers, travel arrangements, etc. U.S. companies would be expected to pay for costs associated with this service.

In addition to a business organizational specialist to train personnel to set up operations, some small office equipment, which is relatively inexpensive in Russia, will be provided by the project such as fax, copy machine, computer, etc.

**Expected Results:** U.S. agribusinesses will be able to make contacts with prospective joint venture or sales opportunities in Russia through this organization and be apprised of the latest laws and regulations regarding foreign business activities in Russia. This would save considerable time for U.S. firms and help them focus on their objectives in commercialization of perishable commodities.

f. Program to improve access to published information on potatoes:

**The Problem:** Russian potato specialists have had little access to published research reports and other information from the West where the potato industry is constantly undergoing positive change and improvement. Further, there is no extension program in Russia to assist private farmers who are attempting to go into business. AKKOR is partially sponsoring a newspaper which is sent to over 100,000 private farmers in Russia. Agricultural news items are included in the newspaper.

**Proposed Action:** The PIP Information Center (PIPIC) will provide a steady flow of potato research information and other documents on potatoes to specialists in Russia.

This will include comprehensive publications such as the University of Idaho Potato Handbook, applicable videos, and journals on potatoes.

This project will collaborate with AKKOR to include in its monthly publication more news items to small farmers such as plans for small potato storage facilities of two to five tons, methods to counter Late Blight, and other information on improving potato practices and reducing losses.

**Expected Results:** Important information which would normally be provided by an agricultural extension service (not available in Russia) will be published and sent to thousands of new private Russian farmers through AKKOR. The technical information provided will address deficiencies and inadequacies prevalent with private producers in Russia.

#### D. Demonstration Potato Storage Facilities

PIP was asked also to make recommendations on the location of demonstration storages in Russia and Ukraine.

There are two factors to consider in the decision where to locate a demonstration potato storage in Russia and Ukraine (1) the organization which will be the owner and manager of the facility, and (2) the location where it will be built; that is, on which farm or in which community. The actual building site can be selected later.

The owner/manager should be an organization already in the potato business, have a rational plan for the use of the storage, provide the necessary expertise to use it properly, and contribute in a substantial way to the cost of construction, such as labor, site preparation, locally-available materials (including concrete and re-bar) and the use of a crane. This is essential so that the user has a vested interest in using the storage facility profitably.

The storage location should be readily accessible to other potato producers who are considering purchasing similar storages and wish to see it in operation, so that it can serve as a conveniently-located training center for other operators of potato storages. Ideally, the user would be equipped with personnel and facilities to extend knowledge of improved storage practices to others throughout the country.

A related and important question is which construction company would serve as local partner for the U.S. supplier in the erection of the storage. The company should preferably be in the private sector and be prepared and motivated to enter into a joint venture with a U.S. supplier. If the technology selected for the storage makes use of "mobile factories" (panel forming machines), this equipment will be available for fabrication of many additional storages. Since the local company could become the owner, or joint owner, of this equipment with the potential to sell and erect these storages throughout the country, it needs to be equipped to go into this kind of business. The company should have some experience dealing with fairly sophisticated instrumentation, such as the storage air systems potatoes require.

Several alternatives for location of demonstration storages are reviewed below.

1. Alternative owner-managers and locations in Russia

a. **"Russian Potatoes Concern" (ROSCAR the Russian acronym)**

This organization, established in Moscow in January 1992 is a consortium of some 150 potato producers, including state and collective farms in the process of privatization, private farms, a potato research institute, and a construction company. Immediate plans are to enter into the seed potato business, while future plans call for investment in a potato processing complex. ROSCAR, the only organization of its kind in potatoes, has government support to serve as the developer of a modern potato industry, and has the authority to approve government credits being made available through banks to potato producers for the purchase of seed potatoes.

Advantages: ROSCAR is in a position to influence the rational development of potato production and marketing due to the government support it receives. It will operate on a large enough scale to make an impact on the market for seed and market potatoes and could eventually serve as a partner for a U.S. potato processor. A demonstration potato storage could be owned by ROSCAR and operated by one of its members, or owned and operated by a member organization, but in either case could receive technical assistance from the research and extension arm of ROSCAR. This also provides a vehicle through which U.S. technical assistance and training activities could be carried out.

Disadvantages: ROSCAR is a new organization without business experience and needs help in the areas of technical assistance and training, as well as in business planning and organization, in order to survive. ROSCAR is not wholly in the private sector at this point, although it is chartered as a private company. Its principal members are state and collective farms still in the process of privatization (though some private farmers are also members). It receives government support for its research activities, and plays a role in approving government credits for seed potato purchases.

b. **Iowa Farmer-to-Farmer Project near Stavropol**

The Iowa International Development Foundation (IIDF) is working on two state farms in the Stavropol area and has full-time American personnel on site. The focus is on feed grains and livestock. This information was provided by Philip Stanhope of IIDF on 16 and 17 September, 1991. More information could be sent to the team but it could not be obtained in time for this memo.

Advantages: The full-time American personnel on site could provide some degree of oversight on the usage of the storage, as well as logistic support to visiting potato experts from the U.S. IIDF has indicated that some funds could also be available to cover travel costs of potato experts. The farm might become more viable through the addition of a potato project, if properly managed.

Disadvantages: This is a feed grain and livestock project, and there would be no potato expertise available from Iowa personnel. The farms are not currently members of ROSCAR, which would make it difficult to draw on the resources of that organization. The farms could, of course, become members at some time if they chose to do so.

c. **Proposed Land O'Lakes (LOL) Project, Tula Oblast**

LOL has an unsolicited proposal before USAID for a long-term project through AKKOR to support private dairy farmers in the Venev Rayon of Tula Oblast. An Agribusiness Center will be created within AKKOR and staffed by three LOL people and their Russian counterparts. Assistance will be provided to establish farmer-controlled farm supply companies and small-scale milk processing operations. The focus is on livestock because the newly-emerging private farmers do not as yet have sufficient land to profitably farm crops.

Advantages: The project focuses on private farmers, as distinguished from privatizing state and collective farms. The eventual creation of an Agribusiness Center could make services available to potato farmers as well as dairy farmers.

Disadvantages: The LOL project has not yet started and in our opinion, it will take some time before there is a sufficient degree of farmer organization to support a modern potato storage serving the fresh seed market or a processing facility. In any case, the focus is on livestock and the staff will have its hands full for some time getting this activity started without considering getting into potatoes.

PIP recommends that the demonstration storage be owned and operated by Russian Potatoes Concern. It could be located at any one of a number of sites controlled by members of ROSCAR. Two sites have been discussed by PIP with ROSCAR staff: (1) the New Life Collective Farm near Tula, which is part of the Tula Seed Potato Company, a consortium of nine state and collective farms, and (2) Galitzina, near Moscow, on land to be obtained by the construction company "Galitzina 2" (also known as G-2). The firm is a member of ROSCAR and in fact the President of Galitzina 2, Vladimir Chebotaryov, is also the Vice President of ROSCAR. Discussions with ROSCAR in Moscow indicated that the consortium was willing to contribute labor and materials to the project. We understand that K-Span, through its associated firm Global Steel, has signed a letter of intent to cooperate on a long-term basis with Galitzina 2. ROSCAR staff favors the Galitzina site due to its convenient access to Moscow and because it could serve as a sales point for seed potatoes to the numerous potato-producing farms around Moscow. ROSCAR would also like to sell fresh market potatoes later on, and this would be a good location for shipments directly to stores in Moscow. PIP did not visit Galitzina, but on the basis of the above information, the team concurs with the selection of the Galitzina site.

## 2. Alternative owner-managers and locations in Ukraine

### a. **Ukraine Potato Institute**

The Ukraine Potato Institute is a government supported research organization located about 30 km south of Kiev, where it has a 1,600 ha experimental farm. Separate research stations are operated near Chernigov in the north (3,000 ha) and near Zitomir, west of Kiev (1,000 ha). Seed multiplication takes place at 21 stations in various parts of the country. Last year the Institute produced and sold 4,000 tons of "elite" potato seed. The Institute carries out research on potato varieties, disease protection, storage technology and cultivation practices; provides extension services to small farmers growing potatoes; and serves as an information center on potato production and processing. It has plans to build a number of potato storage and processing complexes around Kiev, producing snack foods which would be sold directly to retail stores. Potatoes would be obtained through contracts with producers, including private farms and cooperatives.

Advantages: The Ukraine Potato Institute, like ROSCAR in Russia, plans to serve as an umbrella organization uniting a number of potato producing state and collective farms, thus assuring the raw material supply for planned potato storage units and processing plants. It also has an extension service for private farmers. The availability of trained potato experts would strongly support technical assistance and training programs which might be offered through USAID.

Disadvantages: Institute plans for the new company to store and process potatoes were still at an early stage during the team's visit, so details are not known. Like many other groups of this kind, it is a quasi-private sector entity in that it does receive government support for its research activities.

### b. **Iowa Farmer-to-Farmer Project at Cherson**

The Iowa International Development Foundation has two full-time persons at two collective farms near Cherson. Like the Stavropol location, the focus is on feed grains and livestock. No information was available when this memo was drafted on potato production at these locations, but potatoes are grown throughout the general area.

Advantages: Like Stavropol, local Iowa staff could provide oversight on the use of the demonstration storage, as well as logistic support for visiting potato specialists. Funds are also available to cover travel costs of specialists.

Disadvantages: The location is remote from Kiev (though reachable by air) and would not be as convenient as a training or demonstration site for other potential purchasers of storages. Iowa personnel have no expertise in potatoes and could not provide any substantive support. The involvement of the Ukraine Potato Institute would be problematic since the teams knows of no Institute activities in that part of the country.

PIP recommends that the owner-manager of the demonstration storage be the Ukraine Potato Institute because of the available technical resources. This is both in the form of potato specialists who can assure proper operation of the unit, and because it can provide the necessary logistic support to visiting potato specialists, including training sites at any of their three locations. Although plans for a processing complex are not far advanced at this time, the Institute can make immediate use of a storage to improve the quality of seed potatoes and train farm operators in improved storage techniques. Two sites are possible: (1) the "Renaissance" collective farm, not far from the Institute, an enterprise which is already manufacturing a potato snack food on a small scale, and which could form the nucleus of a larger processing operation, and (2) a site in the Mensk District, near Chernigov, owned jointly by two progressive collective farms, the "Ivan Sederenka" and "Svitanuk" collectives. It is suggested that the choice be left to the Institute.

#### E. Auxiliary Equipment

Performance of the demonstration storages would be greatly enhanced if improved harvesting and handling equipment were also available at the storages. Without this equipment, there is a risk that damaged and diseased potatoes will be loaded into the storages and the desired results will not be achieved. The proposed technical assistance and training will help by improving handling practices but they cannot substitute for equipment which handles the potatoes more gently, or for plant protection chemicals which are not available.

PIP accordingly recommends that each storage be complemented by the following equipment obtained from the U.S.:

- potato harvester, two-row, pull type, equipped to operate with 70 cm. row width,
- self-unloading truck bodies,
- soil eliminator,
- conveyor to piler, 150 ft. long,
- potato piler, 36", telescoping, and
- potato scooper (loader).

PIP specialists can provide recommendations on the trial use of several plant protection chemicals in different combinations which might give better results.

#### F. Small Farm and Cooperative Storages

There is undoubtedly a need for improved potato storages for individual farms of one to ten metric tons and for groups of farmers operating as a cooperative of perhaps 100 to 1,000 metric tons. While private production of potatoes accounts for perhaps two-thirds of the total, almost all of it is on plots of less than one hectare and is sold to state and collective farms or marketed privately. As farmer marketing cooperatives develop there will be an increasing need for storages of medium size, as noted above. PIP technicians could provide advice and designs for such storages under the proposed program. Designs also exist for improved storages of the smallest size with either passive or active air systems. The University of Idaho has prepared such a design. Drawings of these small, low cost storages are included in Appendix D.

#### G. Retrofitting of Existing Storages

The PIP team noted the existence of a large number of existing storages in the 1,000 to 2,000 ton range throughout Russia and Ukraine, primarily used for seed potato storage on state and collective farms. While many of the structures are structurally sound, they are poorly insulated and the air systems are not adequate. Unfortunately it was not possible at the time of the visit to assess the performance of these units. PIP technicians could, however, provide such an assessment under the proposed program and make recommendations for a series of retrofit designs for some of the most common types, wherever feasible.

### III. TRADE AND INVESTMENT POTENTIAL

#### A. Investment Opportunities

The attractions of the former Soviet Union as a site for U.S. investors and exporters are frequently reported: an enormous, virtually untapped market for consumer goods, a high demand for quality industrial products, low cost labor, and a wealth of natural resources. Food processing and marketing are extremely underdeveloped and offer many opportunities for profitable business opportunities over the medium to long term.

Since Russia's capacity to import finished products is very restricted due to the shortage of hard currency, U.S. equipment manufacturers should consider joint ventures or licensing arrangements with Russian enterprises. Processors likewise should seek to establish joint ventures with qualified potato producers in order to assure a reliable supply of potatoes.

During the month the PIP team spent in Russia and Ukraine, the team identified a number of trade and investment opportunities in potatoes which should be available to U.S. companies during the next one to five years.

##### 1. Potato storages

There are no on-farm potato storages in Russia and Ukraine of the U.S. type, that is, buildings with air systems incorporating humidification and refrigeration. State and collective farms growing potatoes have 1,000 to 2,000 metric ton storages for seed potatoes but air systems are inadequate and losses are high. If the farms had modern storages, they could not only store their seed under better conditions, but could engage in marketing of fresh potatoes over the winter months. USAID is considering the donation of one fully-equipped 5,000 ton storage each to Russia and Ukraine. These facilities would serve as training sites for storage operators and a demonstration of U.S. technology, which it is hoped will induce future purchases of U.S. equipment. In the short term, U.S. exporters will need to seek ExIm or other guarantees in order to assure payment. Over the long term, as noted above, it is advisable to seek to form a joint venture with a Russian partner and to source the maximum amount of components locally.

##### 2. Potato harvesters

Russian and East German potato harvesters currently in use cause substantial damage to potatoes due to rough handling. There is a great need for harvesters of an improved design (and possibly windrowers as well), but they must be adapted to the 70 cm (27.3 in) row width and various soil types in Russia and Ukraine. One government official stated that 5,000 new harvesters were needed immediately and 3,000 per year thereafter. The hard currency to import this no doubt exaggerated amount of machines or a lesser number is simply not available. Other options are to license the manufacture of a U.S. machine suitably adapted to local conditions, or to form a joint venture with a Russian firm to jointly design and build an improved machine. While Russia has a large agricultural machine building plant at Ryazan, Ukraine has none and is now dependent on uncertain deliveries

of Russian harvesters. Opportunities in both countries should be explored. Repatriation of projects in dollars remains a problem for the time being, which might however be resolved if a portion of production were exported for hard currency. USAID is considering funding the purchase of U.S. harvesters for testing in Russia and Ukraine.

### 3. Potato handling equipment

The remarks above apply equally to potato handling equipment such as self-unloading bulk bed trucks (or bodies which can be fitted to Russian truck chassis), pilers, scoopers, and dirt eliminators. Sorting equipment which damage potatoes due to rough handling can probably be locally modified with some technical assistance from U.S. potato experts.

### 4. Potato processing and processing equipment

There is a huge potential for development of potato processing in the former Soviet Union. With the exception of a few small-scale operations (one of which the team visited in Ukraine), there are no potato-based snack foods. Outside of McDonalds, there is no production of frozen french fries. Dehydrated potato flakes and granules are produced in limited quantities. We know of one American company, a major potato dehydrator, which has visited Russia and is exploring a possible joint venture to make a dehydrated product. McDonald's is interested in "spinning off" its frozen french fry operation. With its plans to open two new restaurants in the near future, and more later, the demand is beginning to develop. Potato chips are a natural new snack food for these countries and would be greatly in demand, based on the experience of the few small existing operations. Many potato producers are looking for foreign partners to get into this business, including a group of collective and state farms near Kiev of which the Ukraine Potato Institute is a part.

A number of questions affecting foreign investment remain to be clarified, however, before any substantial capital flows can be expected. The investment climate in Russia and Ukraine is discussed below.

## B. Investment Climate

Russia and Ukraine are in the midst of a process of privatization of the food and agriculture sectors, the final outcome of which is not yet clear. (See following section.) Nonetheless, the Russian government recognizes the urgent need for new investment in these sectors and is actively encouraging foreign investment during this time of transition. Increased exports to hard-currency areas is a high priority. The well-worn adage applies here--those who get in first will eventually reap the benefits. What factors are affecting the investment climate at this time?

The Russian law governing foreign investment, passed in July 1991, provides for the establishment of 100 percent owned foreign companies as well as joint ventures with Russian partners. The law directs the Ministry of Finance to register foreign enterprises no later than 21 days from date of application. The import of capital goods and production inputs by manufacturers for their own use is duty free. Foreign-owned companies and joint ventures with at least 30 percent foreign ownership may export commodities without export licenses and may retain full control of all hard currency generated. Reduced income taxes are levied for certain sectors, including food and agriculture.

American companies seeking to do business in the former Soviet Union have long argued that the U.S. government has a major role to play in reducing barriers to doing business there, and in reducing the risks that have thus far restricted trade and investment. After many delays, U.S. trade agreements were signed with Ukraine in May 1992 and with Russia in June 1992. The Russian agreements provides for Most Favored Nation treatment for Russian exports to the U.S. and assures non-discriminatory treatment of U.S. products and protects patents and copyrights. A tax treaty signed at the same time avoids double taxation of U.S. businesses operating in Russia. A bilateral investment treaty allows U.S. investors to bring ruble profits home in hard currency, guarantees prompt compensation if property is expropriated and provides for international arbitration of disputes. Ukraine agreements are similar. With the signing of these agreements the financing facilities of ExIm Bank and the political risk insurance facilities of OPIC are now available to U.S. companies. World Bank credits are also being made available through commercial banks to borrowers in the NIS.

Currency convertibility problems appear to have been greatly eased since July 1992. Currency exchanges and auctions now operate freely in Russia. Transfers of hard currency abroad can now be effected through foreign trade banks in Russia, although charges and taxes may be as much as ten percent of the amount transferred.

While it is too early to assess the effect of these new agreements on the investment climate, foreign companies operating in the former Soviet Union have noted a wide disparity between theory and practice in the past. During this period of transition and the declining influence of the central governments over local authorities, it may prove difficult to enforce all the terms of international agreements. Allocation of scarce hard currency is likely to be a particularly difficult problem area.

A recent Department of Commerce publication<sup>3</sup> summarizes the views of U.S. companies who have done business or investigated business opportunities in Russia. Much of the following discussion is drawn from this document. In general, Western businessmen do not regard the investment climate in the states of the former Soviet Union for food and agriculture as favorable at the present time but are monitoring the situation while continuing to investigate opportunities. Activity by U.S. companies has been quite limited thus far; West European companies have been more active than U.S. ones, especially German companies. As of mid-1991, more than 3,000 joint ventures were registered in Russia, of which about ten percent were American. However, only about 20 percent of these ventures were operational.

### C. Constraints to Investment

#### **Uncertainty about policies:**

The major deterrent at this time is uncertainty about the pace and direction of economic reforms. A struggle continues within the government between those who want to move quickly on reform and those who see dangers in this course and advocate a slower pace. With regard

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<sup>3</sup> "Obstacles to Trade and Investment in the New Republics of the Former Soviet Union: A Review of Impediments as Seen by the U.S. Business Community", U.S. Department of Commerce, International Trade Administration, March 1992.

to food and agriculture, we have already noted the differences of opinion on policy, such as the ownership of food processing enterprises. The situation bears close watching, as it is possible that the urgency of these issues and their effect of foreign investment flows will force a fairly early resolution.

#### **Uneven enforcement of laws and regulations:**

Laws governing foreign investment are not being uniformly enforced, often being subject to ad hoc interpretation by local officials. New directives which attempt to clarify the rules for these officials may conflict with previous edicts. There is no equivalent of the U.S. Federal Register in Russia to aid the investor in understanding what regulations are in force. In the absence of a commonly accepted commercial code, negotiations on export sales from the U.S. and on direct investment may become quite complex. New laws and decrees may not be "grandfathered", negatively affecting agreements already made. Sudden and arbitrary changes in tax regimes have been particularly troubling. Import duties are sometimes imposed, despite government decrees to the contrary. In short, this lack of information on regulations and inconsistency in their enforcement are serious deterrents to investment.

#### **Lack of commercial, market and legal information:**

Foreign companies experience difficulty in accessing information about customers and potential business partners, especially their credit-worthiness. Likewise, information is lacking on market size and characteristics, consumption trends, per capita income figures by region, infrastructure, and availability of goods for countertrade. Information about laws and regulations affecting business is also difficult to come by. Without any central point of contact or information clearinghouse, a considerable investment of time and money is required by a foreign investor to be adequately informed.

#### **Difficulty in enforcing contracts:**

Contracts are legally enforceable in Russia but difficult to do so in practice. This problem may take some time to resolve while the legal system is undergoing change.

#### **Infrastructure problems:**

U.S. companies report that a weak transportation and telecommunications infrastructure hampers foreign investment. The protection of intellectual property rights, such as patents, copyrights and trademarks, was also cited, although these problems should be on their way to resolution with the recent signing of trade agreements with Russia and Ukraine. One of the most profound problems is the lack of understanding by people in the former Soviet Union on business decision-making. There is little appreciation of the preparation and planning that goes into an investment decision, or of the importance of the return on investment calculation.

Having enumerated some of the constraints to investment as they existed in mid-1992, it is worth reiterating that economic and political conditions in the former Soviet Union are changing almost daily and interested U.S. companies would be well advised to keep themselves informed on the considerable investment potential of these countries. The recently signed trade

#### **IV. STATUS OF ECONOMIC AND AGRARIAN REFORM**

Economic reforms are currently under way in both Russia and Ukraine, but as the process is more advanced in Russia, most of the following discussion concerns that country. A concluding section deals with Ukraine. In Russia, the pace and direction of reform is affected by conflicting views within the government. This is particularly true in agriculture, as will be demonstrated below.

##### **A. Privatization Policies in Russia**

Legislation governing privatization of state and municipal enterprises was adopted in July 1991 and amended in July 1992. According to its provisions, privatization of these enterprises was to have reached the 50 percent level in the food processing, food catering, construction, and building materials industries, and 60 percent in the agricultural services, transportation services, retail trade, wholesale trade, and textile sectors. As of September 1992, it appears doubtful that these privatization goals will be met.

Among the many laws affecting privatization is one on enterprises and entrepreneurial activity. Several different forms of private enterprise are provided for: individual or family-owned enterprise, partnership, mixed company, limited responsibility company, and joint stock company. The limited responsibility company is a type of closed share company, whereas the joint stock company is similar to the corporation in the U.S., with shares sold on the market. The latter form is preferred; special governing legislation governing was issued in December 1990.

Under privatization procedures, 25 percent of the value of assets may be transferred to the workers in the form of preferred stock (which does not carry the right to vote). In addition, 10 percent of the common stock may be sold to workers at a price 30 percent below the book value, the worker having one year to pay for the shares. Managers of the enterprises have the right to buy shares with a value not exceeding five percent of the value of capital assets. In October 1992, the Russian government plans to issue vouchers to every citizen which can be used to buy shares in privatized enterprises.

There are some differences of views within the government on privatization of food processing enterprises. The Ministry of Agriculture position is that ownership of these enterprises should be limited to producers of the raw material supplied to these processing plants, which is contrary to existing legislation and is opposed by the State Property Committee.

##### **B. Privatization of State and Collective Farms**

The legislation described above is not applicable to agriculture because state and collective farms are not considered as state or municipal enterprises. Instead, special legislation was adopted in December 1991 to "reorganize" these farms. By the end of 1992, each farm must choose a new organizational form and re-register. Options were to (1) break up into associations of individual private farms serviced by a central service cooperative, (2) remain intact and form closed joint stock companies (shares held only by members of employees) or open joint stock companies (shares available to anyone), or (3) form production cooperatives,

open joint stock companies (shares available to anyone), or (3) form production cooperatives, which would be similar to existing collectives in that members would contribute their shares to the centrally-managed cooperative. Later, the government decided that a fourth option was possible--remaining just as they were with no changes at all. The first three options required farm management to assign shares of land and of capital assets to members (collectives) and employees (state farms) in proportion to their years of service.

This process began in the spring of 1992, so only preliminary conclusions may be drawn at this time. As of April 1992, only 15 percent of collective farms and six percent of state farms had re-registered, roughly one-third having elected the first option above, one-third the joint stock company and one-third "other". In the majority of cases, however, little has changed but the name of the enterprise. Managers face numerous problems. To attain profitability, they will have to reduce the number of paid workers, which will be difficult to do without creating social problems. They are also carrying the costs of social services (hospitals, schools, etc.) which must eventually be assumed by the local municipalities. New investment capital will be required to replace antiquated equipment with more modern efficient equipment.

In Russia and Ukraine there is a movement toward grouping of state and collective farms in the form of associations or consortia. To manage these farms, a pooling of interests and resources appears to be the key to survival. Vertical integration into processing is an integral part of these plans. Basically, the objective is to form viable enterprises which will benefit from economies of scale and have easier access to credit and foreign capital.

### C. Growth of Private Farming in Russia

Following the adoption of "agrarian reform" legislation in Russia in late 1990, there has been a rapid growth in the number of private, independent farms. By this term we mean full-time farmers as distinguished from rural residents with "household plots" (some of them with as much as one hectare plots, but who farm only part time), and city dwellers who are receiving small plots outside the cities for summer gardens and houses (dacha plots).

The legislation provided for the creation of a category of new independent private farm enterprises known as "peasant farms" by re-allocation of state-controlled land. These farms may be created in two ways.

One way is for a member or worker of a collective or state farm to withdraw his/her share of capital assets and land and start his/her own farm. However, a typical land share is 12 to 20 acres in size, too small for a viable commercial farm. An individual may, however, be able to acquire enough shares from other members who do not desire to farm, or to lease unused land from the collective, in order to reach a viable size. In Nizhny Novgorod Province, for example, workers who have withdrawn their shares have no intention of farming but have taken the money and gone to work elsewhere.

A second way to organize a private farm is to draw on the "land reserve" created by the Russian government in 1991. Authorities in each province are required to establish such reserves by withdrawing "poorly farmed" land from state and collective farms, amounting to about 10 percent of the total area of these farms. Each province is to determine the maximum area which an applicant can receive, corresponding generally to the area which could be farmed by

a family. The actual area varies according to location and type of agriculture. Under this "homestead" act, the land is theoretically available to anyone who agrees to farm it.

The following table indicates the rapid pace at which private farms are being created in Russia.

	1991			1992		
	January 1	July 1	December 1	January 1	March 1	July 1
Number of farms (000)	4.5	25	41	49	75	130
Average size (acres)	101	104	99	104	101	?

Analysis of available data at this early stage of land reform indicates that land occupied by private farms does not exceed five percent of the total agricultural land. These farmers face numerous obstacles and must operate in a relatively hostile environment. First, they lack access to agricultural inputs (tractors, fertilizer, plant protection chemicals, seeds). Second, market access is difficult as there are few traders and wholesalers operating outside the centralized commodity purchasing apparatus with whom they can deal. Finally, they face resentment on the part of members and employees who remain within the farm organizations.

The most successful of these private farmers are former managers and officials of state and collective farms who have the requisite experience and who are able to use their influence to gain access to the inputs. Less successful are those farms established by persons with little or no agricultural background but who have accumulated some capital, including city dwellers and former army officers.

One trend which bodes well for the future of private farming is the increasing interest in the formation of cooperatives on the U.S. model; that is, joint ownership of storage, processing or marketing facilities.

Holding back the full development of private farming in Russia is the lack of legislation specifically authorizing private ownership of land. Private land is currently held under rights of proprietorship or on long-term lease only. There is strong support for private ownership and for the creation of "land banks" which could lend money to farmers against mortgages on land.

#### D. Emerging Policies on Agro-industrial Reform

Primary responsibility for agriculture lies with the Minister of Agriculture, Mr. Hlistun. In January 1992, President Yeltsin gave responsibility for the agro-industrial sector to Alexander Rutskoy. Mr. Rutskoy has already taken a number of significant actions, one of which was the creation in June of the Federal Center of Land and Agroindustrial Reform. The center has a wide scope of action and has been labeled by some a "super ministry". It coordinates the work of the Russian Corporation for Agrifood Processing (ROKAP), which is planning the creation of 915,000 private farms complete with processing and service facilities. A separate

organization, the International Financial Foundation of Land and Agroindustrial Reform, is supposed to attract financial resources, including foreign capital.

Mr. Ruskoy is a firm advocate of private ownership of land and is promoting the concept of a land bank which will lend money against mortgages on agricultural land. Local authorities in the Nizhny Novgorod Province have already begun planning to establish a bank of this type.

Most reformers in Russia believe that privatization procedures should in many respects be the same for agricultural enterprises as for others. Joint stock companies established by the large state and collective farms should be of the open type, permitting outside investment and management, giving them the chance to become profitable. It may be necessary to split up some of the unprofitable farms into smaller enterprises. Smaller agricultural enterprises should be of the limited responsibility type.

In Ukraine, the government has passed economic reform legislation very similar to that in Russia. The pace of reform is slower; targets for privatization of state enterprises range from 15 to 30 percent by the end of 1992, as compared to 50 to 60 percent in Russia. The central government continues to play a dominant role in the economy, though there are differences of opinion within the government on reform policies.

**APPENDIX A**  
**REPORT ON CONTACTS IN RUSSIA**

**1. MOSCOW REGION**

Russian Potatoes Concern

Mr. Jury V. Moiseev, President

Mr. Vladimir I. Chebotaryov, Vice President

The "Russian Potatoes Concern" (RPC) is a newly-created consortium of organizations involved in seed and market potato production, processing and supply. It was organized in January 1992 with the objective of "creating a system to increase the supply of potatoes and potato products in Russia through increased crop production, improved quality, reduced losses, and processing".

There are about 150 members of RPC, most of them potato-producing state, collective and private farmers, plus research institutes, associations of producers, joint stock companies, and manufacturing entities. RPC operates "under free market conditions", though support is received from the state budget for "basic and applied research of national importance". Administrative costs and other research costs are to be covered out of membership payments. The intention is to receive only 15 percent of its income from member contributions, and 85 percent from commercial activities.

RPC's charter is very broad, allowing it to: engage in research; manufacture potato equipment; process potatoes; produce and certify potato seed; establish standards for potato production, storage, and processing equipment; participate in commodity exchanges; and engage in retail trade. It will conduct research, technical assistance, and training activities for the benefit of its members. Revenue-producing activities include the sale of potato seed and market potatoes produced on member farms, the sale of processed potato products to remote non-potato producing regions of the RFR, and the sale of "eco-safe" plant protection chemicals.

The RPC membership agreement calls for member contribution of material and financial resources according to arrangements worked out individually with RPC and member organizations, and to share proportionately in the profits. RPC will purchase for its members local or imported goods, such as machinery, fertilizer, plant protection chemicals, and laboratory equipment, and sell them to members at 10 to 50 percent below local market prices. Members will have access to credits through RPC for purchase of goods "in short supply". RPC can also conclude export contracts for goods produced jointly. In the non-commercial sphere, RPC will help members get access to modern potato technology, carry out research, conduct training activities, and generally help members to make the transition to a market economy.

RPC has on its immediate agenda the carrying out of nine research projects funded by the government.

1. Marketing: Determine total potato demand by region, taking into account consumption patterns in each region.

2. Varieties: Carry out a potato breeding program to develop varieties suitable to conditions in each growing area, including varieties appropriate for processing.
3. Seed production and selection: Reduce losses in seed production at the elite level due to viruses and other diseases. Produce and/or import foundation seed as necessary.
4. Production: Increase average yields to 15 ton/ha by adopting new technologies appropriate to each producing region.
5. Research and extension: Create potato research and extension stations in each region where potatoes are produced.
6. Plant protection: Develop ecologically sound plant protection methods, including the use of natural substances, and the use of special plants into crop rotation schemes.
7. Storage: Investigate losses during storage, including weight loss due to drying (respiration) of potatoes.
8. Storage improvement: Support the improvement of existing storages, such as improving the "microclimate" (temperature and humidity control).
9. Introduce new storage designs: A competition is currently underway to submit the best design for storages of different sizes.
10. Develop a seed certification system for the RPC and act as certifying agent.

RPC is in the very beginning stages of establishing a viable organization and needs help in many areas. Assistance from PIP would be welcome in these specific areas:

- supply of scientific documents on potato technology,
- consultation and recommendations on how to make the transition to a market economy, and
- management and administration of its own central organization.

The EBRD and the World Bank are funding a feasibility study for RPC on the development of seed potato production. The implementing firm is Agrar und Hydrotechnik GmbH of Germany.

One of RPC's first tasks is to come to an understanding with local agricultural authorities as to what its relationship will be to oblast (state) and raion-level (district or county) officials. This is a hold-over from the old bureaucratic system which must still be observed, at least for the time being. RPC seeks to have the freedom to deal directly with state and collective farms on all technical and scientific matters.

### Agroindustrial Union

Evgeny M. Grinyev, President

Michael Y. Vesolovsky, Vice President

This recently formed organization (AIU) has a very broad mandate to assist in privatization of agroindustry in Russia. It is affiliated with Vice President Roskoy's "Agroindustrial Reform Center"; the AIU Director serves on Roskoy's "Consultative Council" on agroindustrial reform. Members are agricultural "kombinats" (cooperatives) and collective farms, state ag machinery building enterprises, banks, and state fertilizer and plant protection chemical plants, a total of about 15,000 enterprises. Among its functions are the following:

- coordinate reform measures for its members,
- help foreign companies find Russian partner firms and assist in developing investment projects,
- provide legal assistance to privatizing enterprises,
- assist in developing legislation on agroindustrial reform

Specific activities include:

- creation of a consulting firm within AIU which would be supported by British aid,
- formation of an international insurance company to guarantee loans and investments by foreign companies,
- coordination of a program of erection of manufactured buildings for private farmers and agroindustrial complexes, including a woodworking factory and a brick works,
- assistance in putting into operation of equipment at meat processing plants and milk plants, and the building and putting into operation of storage buildings, greenhouses, fish ponds, etc.,
- assistance in formation of a network of enterprises in the south and center parts of Russia growing beans, grains, herbs, water-plants, and in setting up feed processing plants,
- assistance in financing of projects through private banks,
- participation in the conversion of military plants to produce ag machinery and food processing equipment,
- creation of a mass media center on agroindustrial reform, including a television company, publishing house.

### Dept. of Food Resources, Moscow

Oleg A. Virichev, Director

This organization formerly coordinated all food procurement for Moscow, under the direction of the Ministry of Agriculture. This included management of wholesale (the distribution bases) and 400 retail stores. This arrangement was cancelled in January 1992. Retail stores are being privatized into "worker collectives" or joint stock companies, though ownership of the premises is still not possible. The new companies or collectives have to pay the state for the premises in the form of a 30 percent down payment and the rest over one to two years. According to Virichev, there is not control over these stores. The mode of operation is changing; many are now selling other goods, such as VCRs and tape recorders.

Privatization of the 25 distribution bases, on the other hand, must be open to others outside the present organization, such as producers, manufacturers, or government bodies. So far 10 have privatized, four in the form of joint stock companies. In one case, two distribution bases formed a company with four or five state farms, called the Agroindustrial Complex "Ramenskaya". (The farms are in the Ramenska Oblast.)

The EBRD has agreed to fund construction of a large public wholesale market in Moscow. The city is to come up with a site by August.

The KOLOS firm is the largest potato processor. They are going through a difficult period--suppliers are not delivering. They produce frozen potatoes and a kind of potato chip.

#### Volgograd Distribution Base

Jan Sukenick, Manager

This distribution base handles 25,000 to 30,000 tons of potatoes annually between September and June. Normally 22,000 tons are received in the fall, and another 5,000 to 6,000 tons are received in April/May from storages operated by producers. In July/August they receive 100 to 1,500 tons of early potatoes.

Storage is at 2 to 4 C, in 450 kg containers stacked 4 high. The base also operates a below ground storage (mechanical ventilation only) at Serpuchov with a 50,000 ton capacity, of which 22,000 tons is for potatoes. The base supplies two districts of Moscow (Volgograd, Sevastipol) with a population of 750,000. Consumer packaging done at the base is in 1 1/2 and 3 kg paper or plastic bags. Losses experienced during storage are from 3.5 to 8 percent (this year 4.7 percent). Loss rates depend on the source of potatoes. Sources include Smolensk (fair quality), Ryazan, Bryansk (not very good), and the Moscow area (worst) in Russia, Belarus (not very good), and Poland (best quality). Moscow consumes about 500,000 tons of potatoes annually.

The Manager estimates total losses of potatoes from field to consumer at 40 percent. Harvesting causes 8 to 10 percent loss, 10 percent are damaged in handling, 3 to 5 percent during transport, and 10 to 15 percent during storage.

Prices: Last year the base bought potatoes at R. 0.8 to 1.4/kg and sold at R. 2.5 to 4/kg with some as high as R. 7 to 10/kg. So far this year new potatoes were bought at R. 20/kg and sold at R. 32/kg. Prices are lower to state stores than to private. Retail prices for early potatoes are R. 30 to 50/kg in private stores and R. 18 to 30/kg in state stores.

The base is being privatized. Ownership will be 45 to 50 percent employees, 30 percent city of Moscow, and the rest of the shares will be auctioned off.

#### Association of Peasant Farmers and Cooperatives (AKKOR)

Victor F. Bashmachnikov, President

Konstantin A. Mezentsev, Public Relations

Nikolay S. Charitonov, Director

This organization claims membership of 85,000 to 90,000 private farmers, about 80 percent of the total of 130,000 at present. Two thousand ag coops are also members, 500 of which are

involved in joint marketing or sharing of ag equipment. AKKOR members cultivate about 4 million ha in total.

Official members of AKKOR include the Ministry of Agriculture, the Committee for Land Reform, and the Russian Agricultural Bank. It has a 24 member board, of which half are farmers and half government officials. AKKOR is set up on a territorial basis in 76 oblasts, and is represented in 1,300 rayons (out of 1,800) total.

AKKOR acts like the Farm Bureau in the U.S. It administers a government credit program through commercial banks to small farmers and coops going into farming. Fifty to sixty percent of the total is deposited in special accounts to be used as loan guarantees, the intention being to leverage commercial banks by a factor of five. Some direct loans are also made. AKKOR-subsidized interest rates charged by the banks is eight percent compared to current rates of 80 percent. In 1991, total funds of R. 30 billion were available to AKKOR. On the average each of 25,000 to 30,000 farmers received credits of R. 400,000. AKKOR management states that award of credits is based on a combination of three factors: the number of farmers applying in a given rayon, the quantity of available land, and the productivity of the land. Awards are published in a farmers' newspaper.

Farm credit programs have been hampered by the lack of mortgage lending on land. AKKOR is helping to establish a "Farmers Cooperative Land Bank", modeled on the U.S. land banks. ACDI and British consultants are helping set up the bank.

AKKOR is cooperating with Land O'Lakes on a dairy project for small farmers in the Venv Rayon, Tula Oblast. They also have plans for a cooperative potato production project involving 25 to 30 farms cultivating 500-600 ha of potatoes. Of the 15,000 tons produced, 5,000 would go to market and 10,000 tons to seed. Eventually a processing plant would be constructed.

#### Rzhev Association of Peasant Farmers

Ivan P. Alekseev, Director

Lubov V. Ivanova, Deputy Director (former agronomist on collective farm)

This association was formed 18 months ago in the Rzhev rayon, near Moscow, under the auspices of AKKOR. Thirty-two private farmers and 1,200 ha are involved. The PIP team met with four families from this association who are jointly farming 102 ha of which 72 is owned by members and 30 is leased. This group, which started in January 1992, consists of former members of collective farms who left the collectives to go out on their own. They received an AKKOR loan of R. 2 million through the local branch of the Russian Agricultural Bank. This was used to buy some used farm equipment, to plant grain, potatoes and flax, and to buy cattle. Shortage of funds made it impossible to plant an additional 20 ha of potatoes as planned. The group has no potato harvester or storage building. A Moscow businessman (who was present at the meeting) is helping the group to locate equipment and building materials.

### Agrarian Institute

Dr. Alexander A. Nikonov, Director

Dr. Elmira N. Krylatyh

This newly formed institute is part of the Academy of Agricultural Sciences. The director is a well-known academician who was with the academy for many years. The institute, with a staff of 40, does studies, analyses and monitoring of agricultural reform in Russia. One project involves monitoring the socio-economic aspects of reform in five oblasts (Pskov, Orlov, Seratov, Rostov, and Novo Sibirsk). Three rayons are selected in each oblast and ten private farm enterprises within each rayon are surveyed to collect information on performance of these farms, including market demand for their output and market prices.

The institute foresees a great future for private farming in Russia. They expect that within the next ten years 16 to 17 percent of all ag production will be on private farms. To realize this it will be necessary to create the proper conditions for private farmer cooperatives engaged in marketing, supply, and processing. On the other hand, some experts are pessimistic regarding the future of individual private farmers, who face daunting problems acquiring farm inputs and credit. The institute believes that the state should be active in this early stage of reform by providing subsidized credits, tax allowances and anti-monopoly legislation.

### Yuri Krasnov, Private Farmer

Mr. Krasnov is a member of a group of five individuals formed in 1987 to farm 108 ha at Zalugy, near Moscow. He is 54 years old and formerly worked in the Soviet space program. Each member contributed five acres of land they owned plus 16 ha of land leased from the state. The leased land could have been purchased from the pool of land available for homesteading, but the group preferred not to complicate their relationship with the nearby state farms by doing so. There is still resentment by employees of these state farms toward those who go off on their own.

Mr. Krasnov says that the past 4 1/2 years have been difficult because he realized practically no income, yet had to meet lease payments on his land. He overcame that problem by striking a deal with the collective farm manager under which the collective grazed cattle on his land in exchange for lease payments. Earlier he says there were also political problems--the local Communist Party secretary investigated him (the "economic police") and tried to "choke" him. During the last two years, nobody has prevented him from operating, but have they not helped him. He has been able to buy some farm equipment from the state with money earned on potatoes. He dealt mainly in new potatoes, hiring labor to sort, pack, wash, and load the crop, and taking advantage of high prices for the early crop. He sold half in the market and half to the state. He has one 500 cubic meter storage for seed potatoes, and is building two new ones to be ready by September. He also has 90 head of beef cattle, 100 pigs, bee hives, and trout ponds. Each of the five members is responsible for his own operations.

Krasnov stated that the Ministry of Agriculture is to organize an "international farmers school" on his farm, giving him an additional 350 ha for the purpose. In this connection, Vice President Ruskov is to visit his farm on August 14.

Krasnov does not have much confidence in AKKOR because of reputed fraud and mismanagement. Its real value, he says, lies in the publicity it generated in favor of private farming. He also cited difficulties he encountered with the "Mafia" when he tried marketing his potatoes. He says they are bright people and have understood the importance of controlling the distribution system for food. Krasnov tried to deliver five tons of potatoes directly to state retail stores in Moscow, offering them at 50 percent of the retail price, but the stores bought only 200 kg., forcing him to go to other cities. He says that these stores must be privatized if the system is to open up, but is concerned that the Mafia can influence legislation through its contacts in parliament.

In the potato sector, the greatest need is new technology and equipment in storage and handling (controlled atmosphere storage, trucks, loaders, sorting lines, packing equipment). Other needs are quality foundation seed, and training. If U.S. experts are to do training, they need to come here and stay, not simply come in to do lectures and then leave. Adaptation of U.S. technology will only work if long-term assistance is provided. The other need is the guarantee of land ownership and the right to do business as a private enterprise.

#### McDonalds

Dave Schmitzer, Technical Manager, Processing and Distribution Center  
Victor Saienko, Assistant Purchasing Manager

The McDonalds "McComplex" is a \$45 million investment in meat, potato, bakery, dairy and condiment processing. McDonalds would like to spin off the potato and condiment processing to suppliers. So far no U.S. companies have been willing to spend the time and money it takes to get into these markets by forming joint ventures with Russian firms. McDonalds would like to see U.S. companies come in, but their position is that they will not contract in advance with suppliers. U.S. firms would have to set up operations and establish themselves before McDonalds would contract with them.

McDonalds has been able to gradually reduce the percentage of supplies it imports. At first, 90 percent was imported; they expect to be at 10 percent in 3 years. The company contracts with state and collective farms within 150 km of Moscow for 8,000 tons of potatoes annually. The main variety is "Agria", a hardy yellow-flesh potato. Seeds are imported from Poland. They accept only sizes larger than 6 cm. in diameter. They are not yet satisfied with the quality of their french fries, and have had to accept "B" and "C" quality rather than "A" quality as in the U.S. The biggest problem has been the lack of good quality cooking oil.

McDonalds serves about 45,000 meals daily in its one Moscow restaurant. The company will open a second and third restaurant in June 1993. Two more are planned for 1995. The french fry line and the bakery are sufficient in size to handle five restaurants. In the meantime, McDonalds earns hard currency exporting apple pies to its Polish company.

## 2. TULA REGION

#### Tula Seed Potato Company (TSPC)

Alexander P. Mescheryakov, Director General  
Michail I. Ananiev, Deputy DG

First created as "cooperative and state enterprise", now a share company--a "scientific and production enterprise" of closed type. Initial capital of R. 1,105,000. Has 11 shareholders, holdings ranging from R. 5,000 to R. 100,000. Nine are state and collective farms, one is a construction company and one is AKKOR. Initial capital of R. 1,105,000.

DG was formerly First Deputy of rayon executive committee and chairman of Tula Agroprom Union (which no longer exists). Agroprom formerly served as the middleman between producers, service providers, and processors. TSPC sells potato seed to state, collective, and private farms in Tula Oblast, as well as to some buyers outside. Problems with (1) disease/plant protection (phytophthora), (2) storages - existing ones need reconstruction, (3) lack of processing. Now concluding a contract with Hoechst to take responsibility for providing all ag chemicals, payment in additional seed potatoes produced compared to present (export?).

Group of nine headed by Jeff Feld of Royal Russet (RR) visited, studied existing situation, and signed a "protocol of intention". This calls for delivery by RR of all equipment for dehydration of 20,000 to 25,000 tons of potatoes into granules at the "New Life" Collective Farm. Later, Don Everingham of RR visited and proposed to increase processing to 80,000 tons, of which 40,000 tons would be peeled potatoes and 40,000 tons for dehydration. The TSPC people thought they could not market this much product and said that they preferred the original proposal. The oblast consumption of stored potatoes over the winter is about 85,000 tons. If small farmer production is added, total production of potatoes in the oblast is estimated at 900,000 tons.

TSPC prefers to produce 20,000 to 25,000 tons of potato granules plant plus about 5,000 ton of peeled potatoes. Of the 2,500 to 3,000 tons of granules produced, about 1,500 tons would be marketed in Tula Oblast and the rest elsewhere. The main use would be as an ingredient in soups for the institutional catering business and for mashed potatoes. TSPC would expand to 14 or 15 farms to assure the supply of this much potatoes. The New Life Collective Farm now grows 160 ha of potatoes but this could be expanded to 500-600 ha. At claimed yields of 35-40 tons/ha, this would produce around 15,000 tons. Yields would be more like 20-25 tons/ha if the "Reserv" variety (round, shallow eyes) is grown - which is a high-solids variety better for processing.

TSPC says that Feld proposed to finance the \$20 million project cost by a U.S. bank credit extended to the customer through the "Russian Foreign Bank" at eight percent interest. (We understood from others that ExIm Bank guarantees would be sought to cover this loan.) However, TSPC prefers the barter arrangement which had been discussed as an alternative.

Also met Nikolay Korolev, Deputy Chief of the Tula Region Administration. He heads the oblast Dept. of Agric. and gets involved in all discussions. Says there have been many delegations visiting but little happens. Now we need action. Are we serious?

Following are reports of visits to three farms in the Tula Region which are members of Tula Seed Potato Co.

New Life (Novaya Zhizn) Collective Farm

Valerie Danilin, Chairman

Arkady Dobrin, Deputy Chairman

Danilin appears to be very progressive and reform minded. They are in the process of establishing share values for assets and land. Any member can sell his shares to another member and withdraw. He thinks all members should have a chance for ownership of land, but for now he favors an employee-owned cooperative form and feels it can succeed if it is well managed. The collective gave plots of land to members requesting it, but returns from potatoes were not good due to poor seed, wrong plant spacing, poor weed control. Danilin said he did not have the resources to help these farmers overcome their problems.

Biggest problem is marketing--they are still at mercy of state (municipal) procurement system. In Tula, the city is the only large buyer and is able to dictate the price. Currently there is an excess supply of early potatoes in the oblast. They would like to sell in neighboring oblasts but there are no large buyers.

Schyokinsky State Farm

Vasily Kanyous, Director

This farm produces "elite" potato seed on 300 hectares, with yields of 22 tons/ha. There is also a large pig production operation. Potato problems cited were lack of effectiveness of plant protection chemicals against the Colorado Potato Beetle, poor quality harvesters, and lack of potato storage space, especially absence of refrigerated storage. They harvest about 7,000 tons of potatoes but have space for only 3,500 tons. Harvesters produced by the Ryazan plant damage potatoes - the Fortschritt model from the former East Germany are better as they have more rubber-covered surfaces and are made of better steel, but can not be imported due to lack of hard currency.

Gorky State Farm

Mr. Kanavya, Director

This farm produces foundation potato seed (by maristem culture) and grows them out in peat pots in greenhouses. The seed is multiplied by other member farms of the TSPC. A German company plans to build a large potato seed production operation at the farm, according to the Director (IMF funding?). In support of the processing unit proposed by Royal Russet, the Director thinks there should be 10,000 tons of new storage built at the New Life Collective Farm and another 10,000 tons at the Schyokinsky State Farm. At his farm, they have a 5,000 ton storage used for seed which needs upgrading, and could use an additional new 1,000 ton storage for seed.

3. NIZHNY NOVGOROD REGION

Department of Agriculture and Land Reform

Vladimir V. Victorovich, Head, Department of Agriculture & Land Reform

Professor V.E. Friedman, Economist

Michael V. Gaponov, Director RIC "Novoe Selo"

Vladimir Leontiev, Land Bank Head

Victorovich is head of the Department of Agriculture in the Nizhny Novgorod Region. He stated that:

- Area needs millions of tons of potatoes
- Needs storage close to production areas
- Processing, or lack of, a problem in the N.N. Region
- Specialists in area not skilled in potato storage
- Potatoes are low yielding (seeds)
- Insufficient availability of credit

Victorovich said the following in regard to losses:

- Too many entities involved in planting to processing activities
- Lack of potato growing technology
- Lack of storage
- Low yields

Regarding the privatization process:

- 65 percent of potatoes produced by private sector
- 53 percent of all vegetables produced by private farms
- There are 1,700 state stores in region; 350 have become private

Victorovich and Friedman mentioned two ideas they were developing. These are:

- Agro Investment Co.--to be established in Ghorki area
- Mortgage Bank

The **Agro Invest Co.** would be an entity to promote foreign investments in agriculture in the Nizhny Novgorod area. The **Mortgage or Land Bank** would loan money for agricultural development projects. The bank would be able to sell and lease land to foreign investors (as facilitators) or perhaps loan against it. None of the above have been realized as yet but are in development stages.

The agriculture head, Victorovich, asked the PIP team if they were acquainted with Jeff Feld and knew anything of his background. He said they were concluding deals on \$27 million of investments in Nizhny Novgorod. They need to determine how to guarantee these investments by foreign firms.

At a second meeting, the group presented a proposal to the PIP team, consisting of the following:

- Participating in September 11 Seminar with U.S. agribusinesses in Washington, D.C. They would pay for international airline tickets, and it was proposed that this project

would pay for dollar costs in the states. They proposed three people, two with a translator.

- Training for the personnel to work in credit land bank they are establishing and assistance for establishing information systems software for banking operations. May be some dollar cost for software pertinent to banking operations.
- Advisor needed to establish land bank in the first year of operations--work with the groups to set up the bank in Ghorki--(perhaps a person from VOCA).

PIP offered to pay for the dollar expenses of a two person group with a translator for a five day visit to Washington and set up meetings with land bank personnel at USDA. They would also attend the seminar on September 11. PIP told them that consideration would be given to further assistance that they have requested.

Joint Stock Company "Novoye Likeevo"  
Victor Alexandrovia Fedeyev, Manager

The transformation of the former state farm into the so-called joint stock company took place right after the issue of the presidential decree on the reorganization of collective and state farms in spring 1992.

As a result of this transformation, the former state farm has become the ownership of 320 shareholders, former managers, and workers of this state farm. Fifteen former workers of this state farm in the process of transformation have withdrawn the land and capital asset shares to use privately their corresponding parts of the state farm property. One hundred thirty five workers of the state farm have not been given the right to become shareholders. They didn't meet the requirements to work on this state farm for more than three years to obtain this right. They keep on working on the reorganized state farm as hired workers. Employees who worked on this farm for more than three years but less than five years have received land shares of 3.2 ha. Those who worked more than ten years got more than 5 ha. Capital assets shares excluding land were dependent on the total amount of salaries received during the years they worked for the farm. Average capital assets share is equal to approximately 20,000 rubles (\$130 U.S. dollars).

This joint stock company was of the closed form, that is, shares of both types could be exchanged or sold only to other shareholders among former employees of the state farm. The evaluation of the efficiency of such changes could be analyzed from the point of view of increasing the motivation of the managers and workers of this farm. It might be very easy to conclude that neither the management nor the workers of a big enterprise will ever notice this change.

On the land of the former state farm at the present time, 16 small private family farms exist. Fifteen of them were created during the reorganization of the state farms. The size of these farms does not exceed six ha each. One of them was established before the reorganization of the state farm. The owner of this private farm has benefitted from the situation that existed two years ago by getting more than 30 ha of land and purchasing necessary machinery, equipment and other resources at low prices. It is clear that only the people acquiring land

during this period could be fully employed on their farms. The other 15 are part-time farmers. The main reason for their leaving the state farm was insufficient salary of the state farm workers (at present the average salary is 1,500 rubles per month when lunch at state farm canteens cost 30 rubles).

Joint Stock Company " Zaprudnoye"

Alexander Isaykin, Manager

This former collective farm is well managed and is 6,300 ha in size. Most of the land is collective ownership by the employees of the farm. There are 600 ha leased from the local municipality (this will be discussed later). Fourteen private farms have been created. Some of their sizes are: 9.4 ha, 50 ha, 55 ha, 31.3 ha, 25.6 ha, 31.3 ha, 29 ha, 25.6 ha, 25.6 ha, 25.6 ha. All of the private farms together occupy approximately 400 ha. Practically all these farmers possess sufficient amounts of land to run commercial activities. The private farms are closely connected to the former state farms. They use facilities such as cleaning and drying equipment of the former state farms.

The private farms are cooperating amongst themselves in the use of machinery and jointly doing agricultural operations on fields. They do not, however, unite their land in one parcel as they keep their crops separately.

The farmers also cooperate with the joint stock company or former state farm. For example, a farmer uses his own truck to deliver potatoes from the state farm to storage. Fuel is provided by the joint stock company in exchange for cleaning and drying operations of the farmer's future grain crop. The manager of the Joint Stock Company is supposed to go to Idaho in September.

Zaprudnoye is a closed share holding company in which only the share holders can only be actual employees of the company. Each employee has his own land and capital assets shares. According to the present Director of the Joint Stock Company (former state farm head), the transformation of the former state farm into a joint stock company may represent a return to the initial model of a collective farm. The Director said that the actual share holders do not yet fully realize that they are co-owners of the enterprise. He has confirmed the existence of some tension between the shareholders and private farms. Share holders are envious of private farms who possess more land than they have--less than five ha compared to 20-30 ha each for farmers.

Indications are that privatization or distribution of land has come to an end in this area. Six hundred ha of land of the former state farm (ten percent of total) taken into district reserve fund for distribution to future farmers has been given back to the joint stock company on lease for ten years. Since shareholders do not want to withdraw their land shares and they cannot sell their shares outside of shareholder circles, then the situation will not change.

Dismissal of the redundant personnel (actual share holders) could be accompanied by the return of their shares in monetary form (20,000 rubles) or further payment of dividends to the dismissed employees (share holders).

**APPENDIX B**  
**REPORT ON CONTACTS IN UKRAINE**

**1. KIEV AREA**

Potato Institute of Ukraine

Andrij A. Osypchuk, Vice Director  
Petro V. Overchuk, Head, Economics Laboratory  
Valerij V. Kononuchenko, Head, Technology Dept.  
Grigorij M. Kolontaj, General Director

The Ukraine Potato Institute is a government supported research organization founded in 1968. It is located about 30 km. south of Kiev, where it has a 1,600 ha experimental farm. Separate research stations are operated near Chernigov in the north (3,000 ha) and near Zitomir, west of Kiev (1,000 ha). Seed multiplication takes place at 21 stations in various parts of the country. Last year the Institute produced and sold 4,000 tons of "elite" potato seed. The institute carries out research on potato varieties, disease protection, storage technology and cultivation practices; provides extension services to farmers; and serves as an information center on potato production and processing. Particular attention is given to reducing potato losses through improved storage and improved harvesting equipment. It has a staff of 250, including 60 professionals.

The Institute has a program to help private farmers with less than ten ha improve their production of potatoes. Training of farmers is carried out at a nearby technical school, and includes a farmer exchange program with Germany. A number of farmers have been re-located on to model farms, and the formation of cooperatives who would jointly purchase small tractors and implements is being promoted.

The Institute told the PIP team of plans to build a ten potato storage and processing complexes around Kiev, each processing 10,000 tons of potatoes annually into snack foods which would be sold directly to retail stores. Potatoes would be obtained through contracts with producers, including private farms and cooperatives.

PIP and the Ukraine Potato Institute signed a protocol on 23 July 1987 calling for cooperation on a program of technical assistance and training in potato harvesting, post-harvest handling, storage and marketing of potato products.

Collective Farm "Renaissance" (formerly Lenin)

Anatoly Ignatou, Director

Located in Borodyansky District near (and associated with) Potato Institute. 1800 ha arable land. Have dairy and swine operation. Grow elite seed potatoes, plus wheat and rye. They would like to sell seed potatoes and buy back production for chip plant (see below). Also plan sausage and canned meat plant. Only potato storage is temporary trench in ground covered with straw. Potato yields from 20 to 32 tons/ha.

has small plant producing a type of potato chip from potato flour. Production is 600 kg per eight hour shift (2400 packages of 1/4 kg). Process requires 22 kg of potatoes to produce 1 kg of dried product. Finished requires 22 kg of potatoes to produce 1 kg of dried product. Finished product is 37 percent of oil content (cottonseed oil). Plant operates year round and requires 10,000 tons of potatoes to make flakes. 30 percent of output is sold in their own stores (2) and the rest is sold in Kiev at price of four coupons per box. Profit is said to be 50 percent. Plant can also dry carrots and beets.

Of the 700,000 to 900,000 tons of potatoes produced in this district, about 50 percent will be lost.

Collective farm members are given plots of 0.4 ha; a total of 1,200 has been given out. About half this is used for potatoes. However, they have no harvesting or planting equipment and no ag. chemicals. About 50 ha is considered minimum viable farm size.

State Farm "Gogolevskiy"

(Brovary District, Kiev Province)

Anatoliy Tikhonovich, Director

6,500 ha arable land. Grows 700 ha potatoes using elite seed obtained from a state farm. Two storages--one 1,000 ton and two 2,000 tons, plus "clamp" type storage--produce 12,000 to 13,000 tons annually with yields of 18 to 20 tons/ha. Experience about 20 percent less. Most production goes to Kiev storage base, part to potato chip plant (see above).

"Agromashsystema"

Vitaliy I. Polonets, Director

Mr. Kikot, Engineer in Chief

This organization is under the Ministry of Agriculture and is responsible for the manufacturing and maintenance of smaller ag equipment, excluding tractors and large harvesters. It has one large agricultural machinery plant, "Lepsa" near Kiev, producing cultivators, planters, etc. Cultivators were copied from a Dutch design. All potato harvesters came from Russia or Europe - no production in Ukraine. They are considered too heavy, too complicated to repair, and they damage the potatoes. An improved harvester is needed--a joint venture with a foreign company is desired. They would like to test an American machine at the three experiment stations in each of the three zones (steppe, forest/steppe, forest). Mr. Polonets estimates Ukraine's needs at 5,000 harvesters now and 3,000 per year thereafter.

There are some 50 other smaller plants under the control of the Ministry producing agricultural machinery, but about half mainly do repair work. Small tractors (18-20 hp) are also produced. The Ministry of Machine Building produces large tractors, and beet and corn harvesters.

The Ministry of Agriculture also produces metal storage buildings. Ventilation equipment is bought from another ministry. They would like to collaborate on storages. Polonets estimates that only 30 percent of the vegetable storages in the country have "acceptable technology".

Association of Private Farmers of Ukraine  
Mikhaylo Biskupsky, Director  
Natalya Sukhodolska, Secretary of Presidium

Founded in February 1991. 1,500 "associate" members. (10,000 private farmers total in Ukraine.) Size of farms range from 2 or 3 ha up to 50 ha.

The director is member of Ukrainian Democratic Party and a parliamentarian.

Two classes of private farmers: (1) those who started with nothing, except a desire to work for themselves (mostly from cities and towns and with no agricultural background), and (2) those with access to equipment, inputs and loans (mostly former Communist party officials) who hire others to work for them. The association prefers the first group but thinks that eventually they will merge. The association receives help from the Ukrainian Diaspora Foundation (45 farmers being trained in Canada this year), and from VOCA. They would like to develop other relationships with foreign aid agencies. They also publish a newspaper.

Benefits of membership include special allocations by the government of ag equipment--but prices are too high for members to afford. Special credits were to be made available to private farmers through the association--like AKKOR in Russia--but the association claims that the Ministry of Agriculture is using the money for other purposes. This year the fund amounted to 600 million rubles. The association does not expect dissolution of state and collective farms "for several generations". In the meantime, they would like to use the examples of successful private farmers to promote private farming in Ukraine.

A farmer who is a member of the association told the team in a separate meeting that the initial emphasis is on vegetable and meat production/processing. A commercial department has been set up and has contracted for purchase of sausage making equipment. They are negotiating with collective farms in three oblasts to buy 3 x 150 hectares plots, each of which would be farmed by two or three families. So far 6 farmers have been helped and they are working with four more. In September it is expected that a new law on privatization will be passed which allows the outright sale of land.

## 2. CHERNIGOV AREA

### Chernigov Agricultural Office

Anatoliy Chaika, Director, Agricultural Office/Vice-Director, President's Rep.

Jakov Sokolsky, Director, Crop Production Dept.

Aleksei Khmarmiy, Vice Director, Crop Production Dept.

Peter Tkachenko, Director, Food and Processing Industries Dept.

Victor Ilynych, Chief Specialist on Potatoes

Vladimir Dudko, Chief Specialist, External Economic Relations

Valoriy Kovlinich, Vice Director, Chernigov Fruit and Vegetable Union

Georiy Chervinsky, Director, Vegetable Dehydration Plant

Peter Tyshkun, Vice Director, Oblast Consumer Office

This oblast is the largest grower of potatoes in Ukraine. 1.5 million ha of land, of which 700,000 in grain, 160,000 in potatoes, 100,000 in vegetable and industrial crops, and the rest in forage crops. At about 16 tons per ha, total potato production would be 2.6 million tons. State and collective farms plant 100,000 hectares of potatoes and there is about 60,000 ha in private farms and plots.

There are 600 state and collective farms in the oblast, of which all but 76 are collectives. 500 of these farms grow potatoes for market and of these 150 are specialized potato farms with greater than 200 ha.

Weather was generally favorable this year, though potatoes could have used more rain. Yields are about the same as last year.

It was reported that private farmers sold 600,000 tons of their potatoes to state and collective farms, and another 100,000 tons through cooperatives or privately. (If correct, this would leave about 300,000 tons for self consumption or animal feed.)

Problems with potatoes were reported as (1) plant protection, (2) shortage of storage space, (3) losses during harvesting, and (4) lack of processing facilities.

#### Chernigov Storage Base and Processing Complex

Existing storage capacity is 7,000 tons, divided into seven compartments of 1,000 ton capacity each. An additional 9,000 tons of storage will be available when the processing complex is completed. The complex has 9,700 sq. meters under roof, of which 4,500 is for processing equipment and 5,200 for storage. There are no funds available for purchase of processing equipment, though three bays in the building are reserved, one each for production of dehydrated, frozen, and fried (chips). The only other equipment in place are compressors for the refrigeration system and a waste water recovery system (20 cubic meters/hr.) The manager states that preparation equipment is available locally but not chippers for the chip line.

#### "Pratzya" (Labor) Collective Farm

Mensky District, Stolmeya Village, Chernigov Oblast  
A. Krasnogoloviy, Senior Agronomist

Farm has three 2,000 ton storages. Buildings have in-floor air ducts. Storage is mostly in bins, sometimes in bulk. Sorting sheds have East German lines (100 tons/7 hr shift) and Russian lines (2x 80 tons/shift).

#### Collective Farms, Chernigov Oblast

Mensk District, Chernigiv Oblast  
Collective Farm "Ivan Sederenka", Michael P. Kot, Manager  
Collective Farm "Svitanuk", Sergei Kostuchok, Manager

First of above two farms created in 1932. "Medium size", with 2,280 ha of which 1,670 is arable. Produce wheat, milk (650 head) and potatoes. Swine operation being constructed. 52 percent of arable land in wheat--4.2 tons/ha normally, though down to 3.5 to 3.7 this year because of drought. 130 ha of corn for animal feed. 230 ha of potatoes producing 6,000 to 7,000 tons (25

to 33 tons/ha). One third of potatoes marketed through consumer cooperatives and also bartered with industrial plants in southern Ukraine for steel, cement, etc. Remaining 2/3 for seed.

Potato prices were stable until liberalization last year when they went from R 0.4/kg. to R 1.2/kg. This year farm has negotiated prices of 15-20 "coupons"/kg with state procurement agencies. (Coupons have been substituted for rubles in Ukraine).

Potato storage facilities consist of one 1,000 ton unit for seed potatoes built 20 years ago. This unit has a series of bins for bulk storage which are loaded from a central truckway. Between the two halves of the building is a central chamber with ventilation fans which blow outside air through channels in the floor. There are some fans with heaters mounted on the ceiling to reduce condensation on cold days.

The collective is in the process of privatization. The value of equipment and buildings has been divided into shares based on the total earnings of members since 1950 (when record keeping started). Land is also divided on this basis, though a portion is retained by the central collective. Members can sell their shares of assets or land to other members. Land may also be leased (to anyone?). The swine operation is already being privatized. Six members are buying the unit (about 2 percent of total assets) and paying for it out of earnings over a period of years.

There are 300 members in the collective. The largest land share to which any member is entitled is about 100 ha, of which 25 to 30 ha is arable.

Management has already developed a scheme by which the collective supplies services (equipment, chemicals) to members farming small blocks of land. Previously, 240 ha were allocated, plus another 96 ha this year. The manager is ready to expand this concept to encourage members to farm larger economic-sized units (100 to 200 ha) and to supply services to them on a contract basis.

The two collective farms plan a joint investment in a potato storage. They claim to have two million rubles (coupons) available (about \$100,000) and can borrow additional amounts from a bank. There are also credits available from the government at 30 percent interest. However they lack the hard currency for imported components.

### 3. RIVNO PROVINCE

650,000 ha arable land. There are 300 collective farms and 30 state farms with about 24,000 ha potatoes. Yields of 15 to 16 tons/ha. Said to be another 54,000 ha of potatoes on private plots. 100 private farms in province with total of 800 ha. Reported that more than 20 percent of collective farm members don't want to go into farming--they are used to life on the collective, where "they don't have to work hard", and they lack farm machinery to go it alone.

There are 165 potato storages in province, all in need of modernization. Estimated 27 percent loss in storage, mainly due to damage during handling and to poor storage conditions.

Collective Farm "Ukraine"  
(Mlyniv District)  
Arkady Revenko, Director

Collective farm has 135 ha potatoes. Has substantial seed sorting and grading facility.

Storage Base, Rivno

300 ton capacity, 30 x 60 ft. Concrete prefab panels shipped in by rail. Refrigeration equipment from Germany. Store onions at 0C, also potatoes and vegetables.

**4. LVIV PROVINCE**

Agriculture Office, Kamyanka District  
Bogdain Kurtyak, Director

2400 ha of potatoes in district, half of private and half state/collectives. Average yields 20 tons/ha. Losses of 30 to 40 percent in harvest and storage. Two private farmers each with 40 ha.

Kurtyak is responsible for development of a new and large processing facility to produce canned fruit, juices, puree and other products.

**5 TERNOPIL PROVINCE**

Ivan Goloviti, Chairman, Agroindustry Dept.

60,000 ha of potatoes in province, of which 15,000 is on large farms and 45,000 private plots. Losses during storage 20 to 25 percent.

Several years ago, construction was begun on a processing plant to process 35,000 tons of potatoes annually. Funding was cut off at independence. Local authorities would like a study done to recommend new processing technology. They would be interested in a joint venture with a foreign partner.

**APPENDIX C  
LIST OF CONTACTS**

Russia

Ministry of Agriculture:

Alexander G. Efremov, Deputy Minister (208-72-57)  
Eugenia V. Serova, Director of Economics (207-89-05)

Moscow Department of Food Resources:

Oleg A. Virichev, Deputy Director (924-61-62)

Russian Potatoes Concern:

Jury V. Moiseev, President (Moscow, 272-20-71)  
Vladimir I. Chebotarev, Vice President

Russian Association of Farmers' Enterprises and Agricultural Cooperative Societies (AKKOR)

Vladimir F. Bashmachnikov, President (Moscow, 204-4027)  
Konstantin A. Mezentshev, Public Relations (208-5817)  
Nikolay S. Charitonov, Director, Research Center "Selo"

Agroindustrial Union of Russia:

Evgeny M. Grinyev, President (Moscow, 265-90-48)  
Michael Y. Vesolovsky, Vice President

The Agrarian Institute:

Dr. Alexander A. Nikonov, Director (Moscow, 921-59-01)  
Dr. Elmira N. Krylatyh

Tula Seed Potato Company:

Alexander P. Mescheryakov, Director General  
Michail I. Ananiev, Deputy Director General  
Valerie Danilin, Chairman, New Life Collective Farm  
Vasily Kanyous, Director, Schyokinsky State Farm

Tula Region Administration:

Nickolay V. Korolev, Deputy Chief (Tula 27-71-38)

Nizhny Novgorod Administration:

Vladimir V. Victorovich, Head, Dept. of Agriculture & Land Reform  
Professor V.E. Friedman, Economist  
Michael V. Gaponov, Director RIC Novoe Selo  
Vladimir Leontiev, Head, Land Bank

Volgograd Distribution Base:

Jan Sukenick, Manager

Rzhev Association of Peasant Farmers:  
Ivan P. Alekseev, Director  
Lubov V. Ivanova, Deputy Director

McDonalds:  
Dave Schmitzer, Technical Manager  
Victor Saienko, Assistant Purchasing Manager

### Ukraine

Ministry of Agriculture:  
Vasiliy Tkachuck, Minister  
Alexander V. Shashkov, Dept. of Foreign Economic Relations (Kiev, 228-3488)  
Vladimir Doudko, External Economic Affairs Dept.

Potato Institute of Ukraine:  
A. Osypchuk, Vice Director (Kiev region, 41-1-94)  
Petro V. Overchuk, Head, Economics Laboratory  
Valerij V. Kononuchenko, Head, Technology Dept.  
Grigoriy M. Kolontaj, Director, Chernigov Station

Agriculture Department (Volin Province)  
Petro Makhovykov, Chairman, Agriculture Dept.  
Valentina Kharehenko, Director of Produce Association

Agromashsystema: (Agricultural machine building)  
Vitaliy I. Polonets, President (Kiev, 226-30-62)

Collective Farm "Ivan Sederenka":  
Michael P. Kot, Manager (Chernigov region, 2-11-09)

Collective Farm "Svitanuk"  
Sergei Kostuchok, Manager

Collective Farm "Pratzya":  
A. Krasnogoloviy, Senior Agronomist

Collective Farm "Renaissance" (formerly Lenin)  
Anatoly Ignatou, Director

Collective Farm "Ukraine" (Mlyniv District)  
Arkady Revenko, Director

State Farm "Gogolevskiy" (Brovary District, Kiev Province)  
Anatoliy Tikhonovich, Director

Association of Private Farmers of Ukraine:  
Mikhaylo Biskupsky, Director  
Natalya Sukhodolska, Secretary of Presidium

Chernigov Agricultural Office:  
Anatoliy Chaika, Director, Agricultural Office/Vice-Director, President's Rep.  
Jakov Sokolsky, Director, Crop Production Dept.  
Aleksi Khmarmiy, Vice Director, Crop Production Dept.  
Peter Tkachenko, Director, Food and Processing Industries Dept.  
Victor Ilynych, Chief Specialist on Potatoes  
Vladimir Dudko, Chief Specialist, External Economic Relations  
Valoriy Kovlinich, Vice Director, Chernigov Fruit and Vegetable Union  
Georgiy Chervinsky, Director, Vegetable Dehydration Plant  
Peter Tyshkun, Vice Director, Oblast Consumer Office

Agriculture Office (Kamyanka District)  
Bogdain Kurtyak, Director

Agroindustry Dept. (Ternopil Province)  
Ivan Goloviti, Chairman, Agroindustry Dept.

#### Other Contacts

Volunteers in Overseas Cooperative Assistance (VOCA)  
Donald L. Mooers, Jr., Deputy Regional Director, European Programs  
Brian M. Foster, Regional Rep., Russia  
Richard Selby, Program Development Specialist  
Gary Hinegardner, Manager, Service and Supply Cooperative  
Ted Gashler, Agribusiness Consultant  
Martin C. Robinson, Country Rep., Ukraine

U.S. Embassy, Moscow  
S. Roderick McSherry, Agricultural Attache  
Karen Jo McIsaac, Second Secretary

USDA  
Thomas Pomeroy, Coordinator, Eastern Europe and Soviet Secretariat, FAS

U.S. Embassy, Kiev  
Ambassador Papaduik

USAID/Moscow  
Fred Zobrist, USAID Representative

USAID/Kiev  
Leticia Diaz, USAID Representative

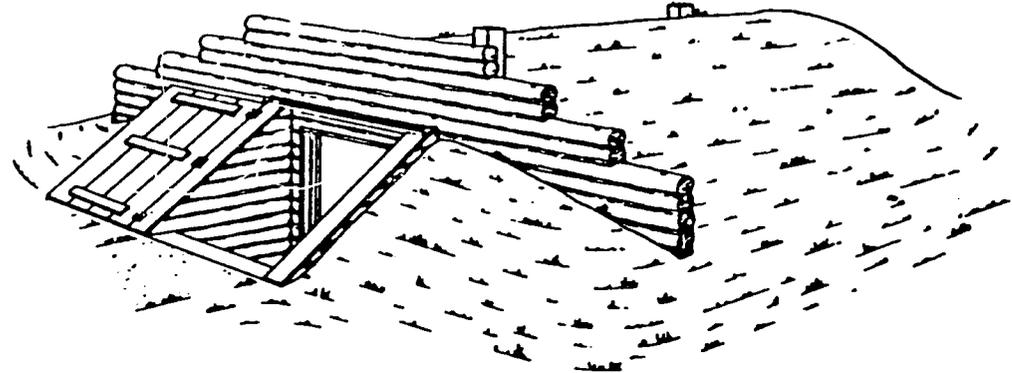
**International Executive Service Corps**  
**Wynnychok Bordan, Kiev**

**European Community**  
**Mihail Korovyakov**

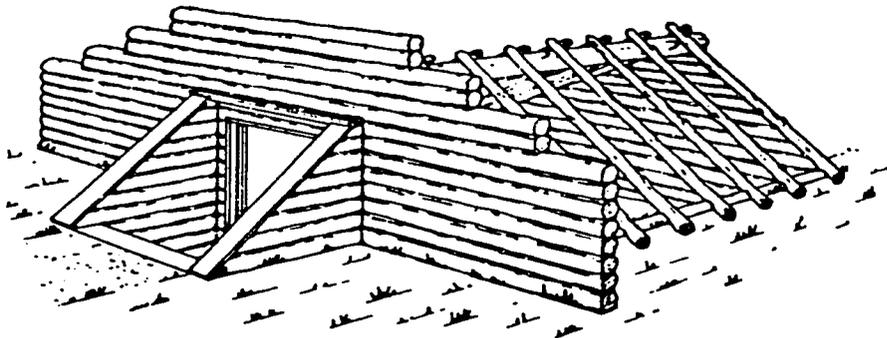
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**APPENDIX D  
INFORMATION ON LOW COST STORAGES**

**PLEASE CONTACT THE POSTHARVEST INSTITUTE FOR PERISHABLES  
FOR COMPLETE DETAILS ON THE PLANS**



BIRD'S EYE VIEW OF SHELTER

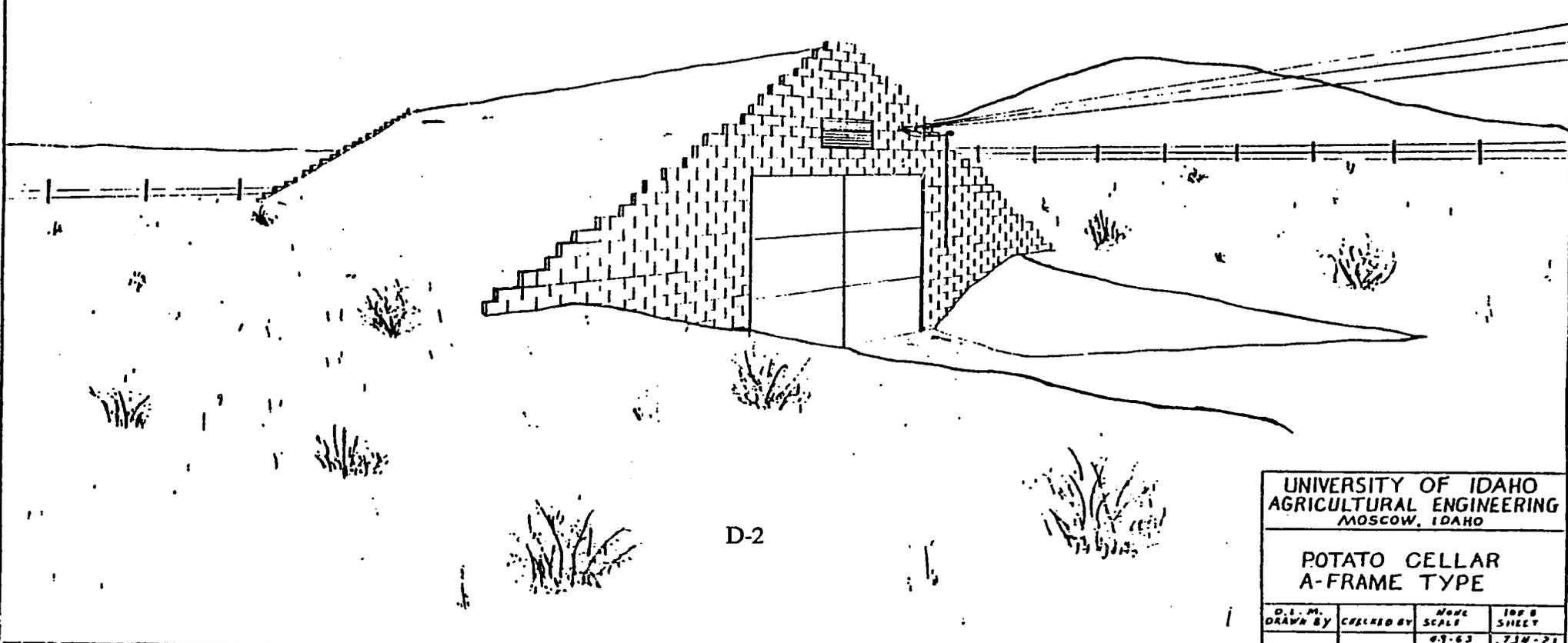


BIRD'S EYE VIEW OF FRAMING

<b>UNIVERSITY of IDAHO</b> <b>AGRICULTURAL ENGINEERING</b> MOSCOW, IDAHO			
<b>STORAGE SHELTER</b> <small>Revised from U.S. DEPARTMENT OF INTERIOR OFFICE OF WILDLIFE AFFAIRS EXTENSION DIVISION</small>			
DR BY <i>KB</i>	CR BY <i>1"</i>	SCALE	SHEET 1 of 2
TR BY	APP BY	DATE Sept 15, 75	FILE NO. 7E-1

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PLEASE CONTACT THE POSTHARVEST INSTITUTE FOR PERISHABLES  
FOR COMPLETE DETAILS ON THE PLANS



D-2

UNIVERSITY OF IDAHO  
AGRICULTURAL ENGINEERING  
MOSCOW, IDAHO

POTATO CELLAR  
A-FRAME TYPE

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APPENDIX E

SCOPE OF WORK

SCOPE OF WORK: STORAGE OF POTATOES IN THE NIS  
UNIVERSITY OF IDAHO POSTHARVEST INSTITUTE FOR PERISHABLES (PIP)

**Objective:** To improve upon the storage of potatoes in the New Independent States (NIS) giving emphasis to the emerging private sector and need for low cost storage in agricultural producing regions.

**Background:** There is considerable concern over food availability for the next couple of years given the dramatic political and economic changes that have taken place over the last year in the former USSR, and the significant reduction in agricultural productivity in 1991 (down 10% overall; grain production down 25%). The current collapse of the centralized command input and output distribution systems, while viewed favorably for the long run, is also expected to further reduce food availability in the short-term. All of these pressures argue strongly to try to reduce postharvest losses of potatoes which are estimated to be 20 to 40% of total production.

Attention in this scope of work will be given to storage since substantial losses occur while agricultural outputs are in storage, and because private on-farm storage and nearby facilities are generally rudimentary to the extent they exist. The development of private low-cost on-farm and/or nearby private storage and the provision of technical assistance and training in the producing areas have been cited as important ways to reduce storage losses. In addition, losses in existing potato storage facilities, which, in general, have been larger facilities controlled and operated by the government could be reduced significantly by providing some technical assistance and training.

In carrying out this scope of work, the team will work mainly with potato storage since this crop accounts for a substantial share of the food diet in the NIS. In addition, as time permits the team will work with other crops using the same or similar storage facilities. The team will focus on Russia and Ukraine since they are large producers and consumers of perishables.

**Tasks:**

1. Identify storage constraints (e.g., technical, facilities, equipment, policy, training, management practices) at farm level through regional and urban storage centers to retail outlets. Develop recommendations to address constraints, including how to better utilize existing storage facilities. Particular attention will be given to the need for private low-cost on-farm or nearby storage facilities. Provide A.I.D. with recommendations on potential support, e.g., technical assistance, training, facilities and equipment, that A.I.D. or other donors could provide to assist with potato storage to help increase food availability for the 1992/93 and 1993/94 winters.
2. If private low-cost on-farm or nearby storage facilities should prove to be a feasible priority, provide recommendations on type of facilities, equipment and training needed. Identify and make recommendations on issues that may arise, e.g., ownership, management, maintenance and operational responsibility for the facilities and equipment.
3. Provide technical assistance to host-country counterparts on technical aspects of establishing, operating and maintaining storage facilities that will minimize food losses. This will include a review of not only facilities but storage equipment, e.g., dryers, aerators, handling/moving equipment, temperature/humidity measuring equipment, etc.
4. Identify training and technical assistance needs at all levels related to storage and develop a short-term training and technical assistance plan focused on in-country training and which can be implemented in time to benefit the fall harvest. This in-country training and technical assistance program should take advantage of in-country organizations and relevant training institutes in order to train trainers where possible to increase the spread effect. This follow-on training and technical assistance will be funded and contracted separately. (A decision has not been made on what U.S. organization will do this follow-on activity.) Provide recommendations on how any longer term training and technical assistance needs could be met.

5. Identify potential marketing and investment opportunities for U.S. manufacturers and suppliers of storage facilities, equipment and technology. In this regard, interact with U.S. businesses already established in the areas to be visited to learn from their experience and to help strengthen U.S. investments.

6. Prepare a report on storage facility and other agribusiness opportunities for U.S. business and present the findings at a one day workshop with U.S. agribusiness in or near Washington D.C.

7. Coordinate with the USDA Wholesale Market Program and identify areas where close collaboration will be mutually beneficial.

**Contacts:** Contacts in Russia and Ukraine will include U.S. Mission representatives, private and public sector individuals and entities, including farmers, farmer associations (e.g., the Association of Peasant Farms and Agricultural Cooperatives of Russia, AKKOR), middlemen, wholesalers, retailers, the Academy of Agricultural Sciences, and the League of Entrepreneurs and Cooperatives.

**Team composition:** The PIP team will consist of four to five specialists (e.g., storage, economics, marketing, engineering and training). PIP will attempt to recruit as team members technically qualified individuals with private sector business experience in the NIS, and experts who participated on the World Bank food systems review conducted in late 1992 and early 1992.

**Tentative Schedule:** A tentative schedule of activities which PIP is requested to follow to the extent possible is:

- July 7 - Team starts preparatory work at PIP.
- July 9-10 - Team briefing workshop to be held in Washington.
- July 13 - Arrival in Kiev (for two weeks).
- July 25 - Arrival in Moscow (for three weeks).
- August 16 - Return to the U.S.
- August 17 - Brief AID/W.
- August 31 - Submit draft reports to AID/W.
- Sept. - Submit final reports within five working days of written comments from AID on draft reports.
- Sept. 11 - Participate in conduct of private sector workshop.

**NIS Travel Agenda:** PIP is to develop its own agenda for work in the NIS. This agenda and site visits must be approved by AID/W before being finalized. Site visits will be based on a matrix of factors which will include:

- priority to those urban centers tentatively identified as potentially food-scarce. These include:

Ukraine: Kiev, Kharkov and Lvov, and

Russia: Moscow, St. Petersburg, Rostov, Chita and Irkutsk;

- presence of host-country private and public sector personnel to work with at different levels; and,

- presence of relevant U.S. agribusiness firms/investments (in order that the team could benefit from the experience of these entities and, in turn, could further strengthen U.S. investment in the area).

**Private Sector Workshop:** The PIP is to take the lead in the organization of this workshop for agribusinesses interested in marketing facilities, equipment and, or technology for the storage of potatoes and grains. It is to be held in the Washington D.C. area and up to 150 participants from the U.S. private and public sectors can be expected. PIP will budget for all workshop costs, with the exception of the participation of Kansas State University (KSU) team under a separate Grant No. CCS-0006-G-00-2027-00 and the preparation and reproduction of the KSU report for the workshop. PIP will arrange the workshop agenda, facilities, and other overall requirements, including developing an invitation list and sending out invitations. KSU will be consulted by PIP on these matters in order to contribute in the planning and conduct of the workshop. Each institute will prepare and reproduce adequate copies of their report for distribution at the workshop. Invitations and other workshop materials will show that this is an A.I.D. supported activity carried out jointly by PIP and KSU. In addition, KSU and PIP reports for the private sector will reflect the standard A.I.D. disclaimer.

**Written Reports:** The team will prepare two reports: one will include their observations, conclusions, recommendations and list of principal contacts, and is intended for use within the USG. The other report will include major findings of interest to U.S. agribusinesses and will be distributed at the

agribusiness workshop noted in element 6 of the above tasks. The team will submit the reports in draft to AID/W within ten working days of its return. The team will finalize the reports within five working days of receipt of written comments from AID/W. The team will provide twenty copies of its report to the NIS Task Force and two copies to R&D/AGR/AP. In addition, the team will make available copies of the agribusiness report to all agribusiness workshop participants.

**Specific Deliverables:**

1. An oral debriefing and draft written summary of observations, conclusions and recommendations for A.I.D. and U.S. Embassy representatives prior to departure from Kiev and Moscow.
2. An oral debriefing and draft written summary of observations, conclusions and recommendations for AID/W immediately upon return to the U.S.
3. A report to AID/W which is to include observations, recommendations, conclusions, and a list of principal contacts. In addition, the report will provide, if not presented in a separate document, a short-term technical assistance and training program, per No. 4 of the above tasks.
4. A report for the private sector which would include major observations of interest to the private sector. Report to be presented in standard report format and standard quality.
5. A one day workshop in Washington for the U.S. private sector upon completion of the work in Russia and Ukraine.

**Coordination:** PIP should coordinate with KSU in carrying out this scope of work since KSU is to carry out a similar scope of work related to the storage of grains, mainly wheat. The work of the two institutes would benefit by coordination, e.g., in scheduling, in identifying contacts in the NIS, in exchanging technical and country specific (Ukraine and Russia) information, and in preparing for the private sector workshop.

**Direction and Guidance:** PIP is responsible to the NIS Task Force in carrying out the tasks specified in this scope of work. The Task Force will provide overall direction and guidance on the scope of work. The Office of Agriculture in the Bureau for Research and Development will liaise with PIP, will provide technical support to the Task Force and will arrange/conduct the two day predeparture workshop.