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Tajikistan: Cotton Sector Restructuring (Financed by the Technical Assistance Special Fund)

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Asian Development Bank

TA-4958 (TAJ): Cotton Sector Restructuring

**Acid Delinting/Seed Cleaning Proposal for
Tajikistan**

November 2008

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Abbreviations

GoT	Government of Tajikistan
MoA	Ministry of Agriculture
ADB	Asian Development Bank
kg	kilogram
kw	Electric kilowatt
PMU	Project management unit
ha	hectare

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Introduction

1. This is an analysis of various configurations for cotton seed processing equipment (Including acid delinting, seed cleaning and accompanying gravity table, equipment to apply pesticides to the seed and bagging and weighing equipment), optimum number of facilities given the ADB financial resources and legal alternatives in establishing a legal base for the development.
2. Cotton has been a priority crop since the time of the Soviet Union. In recent years the crop has become unprofitable for producers and production has dropped because of both lower yields per hectare and because of fewer hectares being planted. The country's gins were built during the Soviet time with expectations that there was no end to the growth in production. Now, almost all are under utilized and in a deteriorating condition. New investment in the ginning sector has not matched annual depreciation of old equipment.
3. The farm production of cotton is dominated by women and teenagers since many men migrate annually to Russia for higher paying jobs. When possible, other more profitable crops are being planted in place of cotton. Fertilizer and fuel costs are high and in the past, most farmers had to rely on "cotton investors" for money with which to purchase supplies and to rent equipment. The market is dominated by only a few buyers and farmers believe that they are receiving prices below the true value of their cotton fiber. There are many factors that have reduced the profitability of growing cotton, but one of the biggest factors is the quality of the seed that is used for planting.

Improvement in Cotton Seed for Planting – A Need Universally Accepted

4. The formal cotton seed development program in Tajikistan stopped following the breakup of the Soviet Union. Seed reproduction programs to maintain seed quality/purity also ceased operating. The import of higher quality seed from neighboring countries has been very limited, and import of high quality seed from the international cotton seed breeding companies, until this year, has been non-existent.
5. People knowledgeable about the Tajik cotton industry believe that the net result is that poor seed quality is costing farmers at least 30% in the yield of fiber and technical seed which amount to more than \$20 million per annum on a national basis. Farmer surveys revealed that farmers first select the "fattest and largest" seed to send to the oil plants because they know that they will get more oil from that seed. The smaller, less robust seed is then selected for planting. Using these selection criteria contributes to a yearly decline in the genetic quality of the cotton being planted. The following points summarize the present situation and are the basis for the proposal:
 - There has been no cottonseed propagation program since independence. As a consequence, farmers presently save seed from their prior year's crop to plant. Plant phenotypes are not uniform in cotton stands and the seed is of poor genetic quality. This results in low yields and fiber of varying characteristics. Average cotton yields in Tajikistan by world standards are not profitable.

- The equipment used to prepare cotton seed for planting is worn out; there are no modern seed delinting and cleaning plants. This results in the use of 2 to 3 times the seed for planting per hectare than would be used with properly prepared seed. Cottonseed planters are unable to place the fuzzy seed evenly resulting in additional field work to root out stands that are too thick and there are places in rows where no seed is planted.
- Farmers believe that seed quality is a significant problem. In a survey of farmers taken October 23 – 24, 2008 the following responses were obtained:
 - 71% Used seed from previous year's crop for planting
 - 49% Have purchased some high quality seed in the past
 - 97% Want to purchase high quality seed for planting

Quantity of Seed Needed for Tajikistan

6. Cotton seed, as it is after being separated from the cotton fiber during ginning has "short stubble" remaining on the seed; hence the term "fuzzy seed" is commonly used. Sometimes cotton fiber is also referred to as "lint." So, cotton seed that has had the fuzz or lint removed is referred to as delinted seed.

7. Considerably less delinted seed is used in planting than with fuzzy seed. Fuzzy seed clings together in clumps while delinted seed is "flowable" which enables precision type planters to place seeds more accurately than is possible with fuzzy seed. It is estimated that when farmers first start planting the delinted seed, they will plant on the average of 35 kg per hectare and after several years of experience, on the average, they will reduce planting rates to 30 kg per hectare or less. Farmers with good equipment and good crop husbandry skills probably will be able to eventually reduce seeding rates below the 25 kg figure.

8. Using these factors, it is estimated that when high quality seed use is fully adopted that approximately 2,060 tons of high quality seed will be needed for Sugd Oblast, 4,200 tons for Khatlon Oblast and just over 360 tons for the RRS region.

The Cotton Seed Market

9. A successful seed business in Tajikistan must be built on honesty and professionalism. Bad seed costs farmers money and reduces the amount of raw cotton available for ginning. Parent seed stock that is proven through trials to be adapted to the conditions in Tajikistan must be the seed selected for propagation and processing by the seed company. Intellectual property rights of seed developers, whether they are domestic or international in nature, must be respected and observed. Processing contraband seed carries with it the danger of doing long term damage to the seed processing company and the farmers who depend on high quality seed for planting.

10. This technical report examines alternatives that would be technically, financially, and economically viable for a small country that exports its fiber in a highly competitive global market. The concept of several small seed processing plants located in each region was analyzed. ADB funds for this project are limited. The study worked at identifying the best scenario for the introduction of

genetically high quality acid-delinted cotton seed in Tajikistan recognizing that this project could only initiate the development of this important component to profitable cotton production,.

11. Tajikistan is a small country and even though cotton remains an important agricultural commodity compared to large producing countries such as Uzbekistan, the seed market is relatively small (which does not reduce the importance of a profitable cotton sector to Tajikistan). The mountain range that runs through the center of the country dividing the north from the southern region also creates 2 different areas in which cotton is grown. These regions are not easily accessible to each other necessitating the need to view each region separately and plan for seed processing accordingly.

12. One cotton seed processing plant located in the north and a somewhat larger one in the south can serve the cotton seed needs of the farmers in Tajikistan. Processing plants of these sizes can afford to install quality equipment and keep it in top operating condition. The presence of two companies in Tajikistan, in comparison with several small facilities in each region, will also more easily facilitate the coordination of licensing with seed developers who will provide the parent (known with cotton as "Elite") seed for propagation.

13. Here is a summary of the rationale for concentrating on the eventual development of only 2 regional facilities.

- Economies of scale advantages:
 - (i) The seed industry in Tajikistan needs access to the best genetics, management and equipment technology. Higher volumes of seed processing justify the investments required to achieve this. With four smaller seed cleaning plants, the volume of seed processed at each plant would not be enough to justify the employment of the skilled, knowledgeable specialists needed to support a reputable seed business.
 - (ii) A provision in the ADB agreement will be that the company must offer seeds on wholesale basis to other Sugd retailers.
 - (iii) Since a higher throughput will reduce the per unit cost of processing, seed prices to farmers will be lower and more stable.
- Linkages with international suppliers
 - (i) A competent business, with good governance, is essential to enter into the licensed international seed supply arrangements and manage the seed reproduction and wholesaling business;
 - (ii) A high level of specialization is required to achieve this, which would be difficult to achieve with four smaller plants.
- Workplace and environmental safety
 - (i) Limiting the number of places at which accidents can happen because of larger volumes of seed being processed permits more attention to be given to employee training that includes safety with handling caustic materials.

Needed Linkages with Farmers and with Gins

14. One important link that the seed processing company will need will be with farmers who will plant the elite (parent) seed that is secured through licensing agreements with domestic seed development organizations and from international cotton seed companies. The company will enter into a contractual agreement with farmers who will receive the elite seed from the processing company and agree to a list of stipulations that will include: seeding rate; fertilization and pest control; cooperation with field inspectors; and the harvesting of the crop and its delivery to a specific gin for processing. Also included in the contract will be the charge that farmers will pay for the elite seed and the amount that the seed processing company will pay the farmer for the seed obtained from the raw cotton.

15. The processing company will recruit these farmer cooperators from farmers who have demonstrated good management and whose farms are located in regions not subject to production problems such as a high incidence of disease or insect pests, unreliable sources of irrigation, or problem soil conditions.

16. The selection of a gin or, more likely, several gins to process the raw cotton will also be critical for the seed processing company. Management of the seed processing company will need to carefully evaluate various gins in regards to their ginning operations and again develop business relationships with those that are able to provide a high quality service and can offer assurances of maintaining separation from the time the raw cotton is delivered to the gin, during the ginning of the raw cotton, and during the collection and delivery of the seed to the cotton seed processing plant.

17. Again, a contractual agreement will be signed by both parties that clearly states the expectations of the seed processing company and the amount that the seed company will pay for services such as gin clean up before processing, the separation of the raw cotton, and the collection of the seed after ginning. The gins will know exactly which farmers will be delivering raw cotton to them and who will notify and when the gin will be notified of a delivery of this special cotton commodity.

Comparison of Technical Features

18. In order to develop a profitable agricultural related product business, it is important to accurately estimate the amount of product that needs to be processed or produced, and then purchase the equipment that can get the job done in a timely, quality manner. Cotton seed delinting equipment is no different in these respects. Work on this project has resulted in estimates in which there is significant confidence about the amount of high quality acid-delinted seed that will be needed.

19. Cotton seed acid-delinting and cleaning equipment is available in different sizes and offers differing qualities of service. Batch systems process the seed in specific quantities, such as .5 ton, 1 ton and 1.5 tons. The "batch" moves from one part of the equipment to another. As soon as the piece of equipment that initiates the process is emptied, another batch may be started. Larger systems, mainly those of 3 tons per hour or more, process the seed in a continuous flow

type of operation. Seed is continuously moving from one step in the process to another from the beginning of the processing until it is collected at the end of the processing.

20. Batch systems can be purchased with capacities starting at about 500 kg per batch and continuous flow systems are on the market that process as much as 10 tons of fuzzy seed per hour. In the past, evaluations of the different types of delinters have noted problems in controlling quality with the smaller batch systems.

21. In communications with vendors while gathering information for this analysis there was a recognition of problems with past systems; but, all maintain that present generation equipment has effectively solved quality control problems. These same vendors also state firmly that quality control with some of the smaller volume continuous flow systems is actually more difficult to maintain. These problems result from relatively small amounts of seed being processed with small amounts of the diluted mixture of acid and soap, variations in the flow rate of seed coming into the processing equipment, sudden differences in moisture content of seed as well as the influence of other factors.

22. Equipment of various sizes was evaluated on its total tons per season processing capabilities. Discussions within the team and with MOA officials centered on equipment that had rated capacities of processing .5, 1.0, 1.5 and 2 tons of fuzzy seed per hour. A comparison was carried out on these sizes and the amount of fuzzy seed projected to be processed. Two different manufacturers from two different continents responded with the same information: Reducing size does not proportionately reduce the cost of equipment. Or conversely, increasing the processing rate does not increase costs proportionately.

23. Vendors say that the 500 kg system is designed for Lab use and Foundation Seed which normally consists of a few tons of seed. The savings for this system compared to the 1 ton/hr system are less than \$50,000 and significantly more time is required to process the seed. The 500 Kg unit also costs more in acid and is not expandable. Equipment cost estimates that have been gathered also show that the 2 ton per hour system can be installed for about 45% more than the 1 ton per hour system and the 1.5 ton per hour system will cost about 10% more than a 1 ton set-up. As larger capacity equipment is purchased, the cost per ton of processing capacity decreases. A comparison is in the tables that follow.

24. Seed processing normally begins near the completion of the harvest of the raw cotton. This provides time for the gins to complete processing the raw cotton and seed will be collected by variety. When processing seed, to reduce down time to clean equipment, it is best to process the seed one variety at a time until all of the seed is processed and ready for distribution to farmers for planting. Seed processing usually begins about the 1st of November and should be completed in this region by March 1st. This "seed processing period" is 120 days. Our calculations assume that there will be no down time due to electrical outages or holiday closures. In reality there will be both depending on the year and the weather.

25. By the 2nd year, the .5 ton capacity set-up would not be able to complete the processing of the amount of fuzzy seed that needs to be processed in either the northern or southern districts.

Comparing Capacities of 4 Different Sizes of Seed Processing Equipment

	Days in Month	Hours of work - 10 hour work days	Hours of work - 12 hour work days	Hours of work - 18 hour work days
November	30	300	360	540
December	31	310	372	558
January	31	310	372	558
February	28	280	336	504
Total Days	120	1200	1440	2160
.5 ton/hr	Processed Fuzzy Seed*	600	720	1080
1.0 ton/hr	Processed Fuzzy Seed*	1200	1440	2160
1.5 ton/hr	Processed Fuzzy Seed*	1800	2160	3240
2.0 ton/hr	Processed Fuzzy Seed*	2400	2880	4320
<u>Fuzzy Seed to Be Processed</u>		<u>Sugd</u>		<u>Khatlon</u>
2010		308		744
2011		1289		2974
2012		1823		2974
2013		1657		4206
2014		1657		3824

*Assumes no days off for holidays or time lost due to power outages.

26. In evaluating the information above, it should be noted that it is unlikely that there will be no down time due to holidays or due to power outages. And there will be some down time during the time that processing is changing from one lot of seed to another.

27. While a generator can be used to complete a batch in process or to complete a workday, the cost of running the generator to provide electric power to the plant on a continuous basis would add significant cost to the processed seed. The following table provides additional information useful in equipment selection. It would be advisable to select equipment that has the capability for expansion as each oblast will likely encounter demand for processed seed that is greater than the practical capacity of the equipment being recommended. Some equipment can be upgraded more cost effectively than others. The .5 ton/hr unit is not expandable; the others are and expected costs of increasing the size of the equipment are listed on the following table.

28. One advantage of the smaller 1 ton/hr equipment over the 2 ton/hr equipment is the amount of KW (electric kilowatt hours) needed to operate the plant. The larger plant would need electric service of at least 300 KW; the 1 ton/hr sized equipment would need a little more than half that amount and the 1.5 ton/hr needs an amount between the large and small units. This requirement expands the options in locating the smaller processing equipment or increases the possibility that a given building has adequate electrical service. This is not to say that the smaller equipment is more energy efficient; what it says is that the smaller sized equipment uses fewer KW per hour.

Size Comparison Done on Basis of 4th year of Operation

ton/hr	.5 ton/hr	1.0 ton/hr	1.5 ton/hr	2.0
Hours of work needed per day to process seed ¹	Unable to process needed amount of seed during 120 day processing period	Work completed with 18 hour work days during entire period	Work completed with 10 hour work days during most of the period	Work completed early with 10 hour work days
Hours of work needed per day to process seed ²	Unable to process needed amount of seed during 120 day processing period	Unable to process needed amount of seed during 120 day processing period	Unable to process needed amount of seed during 120 day processing period	Work completed with 18 hour work days during entire period
How many days working 12 hour days to process seed tonnage expected? ¹	349 days - not possible in the processing period	138 days – not possible in the processing period; will need to work some 18 hr. days	92 days	82 days
How many days working 12 hour days to process seed tonnage expected? ²	No possible	Not possible even if entire year was spent processing seed	237 days – not possible in the processing period even working 18 hour days	Fully used.
Expandable	Equipment is designed for small lots; foundation seed processing; not easily expanded	Logical pathway for expansion	Logical pathway for expansion	Logical pathway for expansion
KW/hr Requirements	200 kw/hr	200 kw/hr	250 kw/hr	300 kw/hr
Automation	Mostly Hand Controlled	Process automated with hand control override	Process automated with hand control override	Process automated with hand control override
Workers needed to operate plant/shift	8	12	12 – 14 depending on facilities to supply plant with fuzzy seed and handle processed seed	14 – 15 depending on facilities to supply plant with fuzzy seed and handle processed seed
Safety Features	Varies by Manufacturer	Varies by Manufacturer	Varies by Manufacturer	Varies by Manufacturer
Cost as a percent	80%	1.0	110%	150%

of 1.0 ton/hr equipment				
Cost of Farmer Company Contributions as a percent of 1.0 ton/hr equipment	80%	1.0	125%	125%

¹Based on projection of needs for Sugd Oblast

²Based on projection of needs for Khatlon Oblast

29. The selection process needs to define the task that needs to be carried out in terms of time, quantity, and quality and then purchase equipment that comes closest to meeting the needs (demand). If the business expects to expand after the initial implementation period, then equipment should be selected that provides the user with a logical expansion path.

For Sugd Oblast

30. The 1.0 ton set-up would process the needed amount of seed working 10 hour days the first year and a few 12 hour shifts the second year. The 3rd through the 5th year would require some time with 2 – 10 hour shifts (referred to in table as 18 hour work days). The 1.5/hr equipment has the capacity to process the needed seed on 10 hour work days through the 5 year projection period with the exception of the 3rd year that would require a few 12 hour shifts. The 2 tons/hr equipment has significant excess capacity through the 5 year project period.

31. For Sugd, the .5 ton/hr unit will not have the capacity to get the job done and it is unlikely that the 2 ton unit would ever need to be expanded; although it can be expanded in 500kg increments. The 1 ton/hr equipment can get the job done by working a few 18 hour days which translates into 2 - 10 hour shifts including breaks and clean-up. The 1.5 ton equipment would handle the task easier, but since the 1.0 ton/hr can do the task, for this project situation, it is preferable.

For Khatlon Oblast

32. The only size of seed processing unit that will have the capacity to meet expected 4th year processing needs is the 2.0 ton/hr equipment. And this will be required to work 18 hour days in order to complete the task. However, budget limitations mandate that the maximum sized unit in this oblast can be the 1.5 ton/hr set-up.

Other Factors to Consider

33. Delinting equipment from different vendors varies significantly in the ease of operation and in the presence of safety devices. The 10 percent dilute solution of sulfuric acid, if spilled on skin will cause little or no damage if neutralized immediately with a neutralizing agent. This material will be readily available near the equipment where the acid solution is used. Employee training and care are of importance along with the selection of equipment that has adequate safeguards.

34. Vendors vary in whether local contractors are used to install the equipment or whether an installation crew is sent from the factory to install the

equipment. Also, terms for training management and those working in the seed processing plant vary and should be carefully evaluated.

Management of Linkages

35. Linkages that will be needed for successful operation of the seed processing company were identified earlier in this report. This section addresses these linkages in term of management.

36. The establishment of successful linkages with farmers who will be propagating seed and with gin managers and owners who will be in charge of processing the raw cotton which also contains the seed that will be used for seed processing is of utmost importance. Less than a serious effort by either the growers or the ginners has the potential of damaging the seed processing business.

37. And as early as the winter of 2009-2010 sources of parent seed will need to be identified and contractual agreements culminated. Farmers who will propagate the seed will need to be identified and contractual agreements also signed with them in order for there to be seed available for processing the winter of 2010-2011.

38. Since farmers growing cotton for the propagation of seed will need to deliver their raw cotton to a gin that has agreed to process it under an agreement of the seed company, it would also be beneficial to have identified the gin(s) that will process the crop. Farmers with land in a relatively close proximity to the gin would then be selected to grow the elite seed. Fortunately, only a little over 300 tons of raw cotton will be needed the first year to meet the needs of the processing company which translates into about 130 hectares of cotton for seed propagation.

39. While none of these tasks are difficult, they do require time. So, time will be of essence as the new company starts its work in early 2010. This consultant believes that developing working contractual agreements with gins to process the raw cotton will be the most difficult. An adherence to a strict set of operational procedures will be a new experience for the gins' management. This consultant believes that it would be best to select only 1 gin to process the cotton the first year. As the amount of raw cotton produced for the seed processing company increases, contracts can then be written for an additional gin(s).

Financial and Economic Viability of Processing Facility by Capacity

40. Modern acid-delinting, cleaning, treating and bagging plants have the potential of being quite profitable. The financial models for Sugd and Khatlon Oblasts show negative cash flow situations until the sale of the 2nd year's processed seed after which the cash flow situation becomes positive. The seed processing facilities in both Sugd and Khatlon are projected to accumulate funds that can be used for expansion of facilities if demand meets or exceeds expectations. The cash flow summary is in the following table. (Detailed budgets in Appendix A. "Seed Processing Business Development Budget")

Projected Cash Flow for Seed Processing Companies in Sugd & Khatlon Oblasts

Sugd	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
Income		\$1,142,115	\$6,227,182	\$5,297,880	\$5,297,880
Expenses	\$276,335	\$1,191,278	\$2,385,172	\$2,385,144	\$2,388,917
Year's Cash Flow	-\$241,380	-\$49,163	\$3,842,010	\$2,912,736	\$2,908,963
Cumulative Cash Flow	-\$241,380	-\$290,543	\$3,551,467	\$6,464,203	\$9,373,166
Khatlon					
Income		\$2,352,951	\$8,509,141	\$12,005,987	\$10,914,534
Expenses	\$522,602	\$2,450,195	\$3,667,023	\$5,123,912	\$4,567,363
Year's Cash Flow	-\$447,380	-\$97,244	\$4,842,118	\$6,882,075	\$6,347,170
Cumulative Cash Flow	-\$447,380	-\$544,624	\$4,297,494	\$11,179,569	\$17,526,739

41. The profit margin above variable expenses is adequate so that equipment costs are re-couped by the 3rd year of operation. Additionally, there should be enough surplus cash generated to cover initial development costs incurred by the farmer owned seed processing company. The Profitability of the company will be improved if the size of set-up matches the amount of seed to be processed.

42. It is easy to eliminate the .5 ton/hr equipment. By the 2nd year of operation, it will be unable operating 18 hours/day to process the amount of seed needing processing in either oblast. The equipment is not adaptable to expansion and is 80 percent of the cost of a 1 ton/hr installation. The 2 ton/hr sized equipment has excess capacity through the first 5 years of the project in Sugd Oblast, but would be efficiently utilized in Khatlon Oblast. While the cost is only 45 percent more than the 1 ton/hr equipment, there is no compelling reason to consider its use in Sugd Oblast and budget constraints eliminate it from consideration in Khatlon Oblast. If an increase in profits from cotton production increase, and the number of hectares planted to cotton using processed seed increases substantially, then both seed processing plants will need to be expanded.

43. Considering the goal of constructing 2 acid-delinting seed cleaning, treating, weighing and bagging plants along with expected processing needs in each oblast and with existing budgetary constraints, the optimum decision will be to develop a 1.0 ton/hr capacity plant in Sugd Oblast and a 1.5 ton/hr capacity plant in the southern Khatlon Oblast. Projections show that by the 4th year it will be desirable to increase the processing capacity of each plant which, if the correct equipment is selected, can be economically facilitated.

Environmental Assessment of Seed Processing Plant

44. Working at capacity, the seed processing plant will collect and process approximately 2,000 tons of fuzzy seed per year. The fuzzy seed will be trucked from nearby cotton gins starting in September until harvest is completed about the end of November and stored in covered bins. Processing will start about the 1st of December (or when the ginning of the raw cotton that was raised to propagate seeds is completed) and continue to near the end of February. Processed seed will be stored in 25 kg bags stacked on wooden pallets until it is distributed to farmers before planting starts in late March.

45. The process of acid delinting uses diluted sulfuric acid (a 9% solution of acid, soap, and water). Concentrated sulfuric acid (98% H₂SO₄) will be

purchased and stored in a special tank that will be part of the cotton delinting equipment that is installed. An earthen bank will be constructed around the tank to contain any spill or leakage that might occur.

46. The diluted acid solution is sprayed on the fuzzy cotton seeds. The soap serves as a surfactant enabling the mixture to thoroughly “wet” the fuzz on the cotton seeds. During the drying process, the fuzz becomes brittle and breaks away from the seed. The fuzz turns into minute black crystals or a powder like substance. There is no liquid waste.

47. The chemical reaction that takes place changes the cotton fiber to a carbon based compound that causes the black color. The Hydrogen (H_2) is given off as a gas and the sulfate ion (SO_4) is held in the crystalline powder by the carbon. This black powder has a low pH and can safely be applied directly to alkaline soils (prevalent in Central Asia) to lower the pH thus increasing their productivity.

48. The carbon/sulfate mixture is not much different than the aluminum sulfate that gardeners purchase to lower the pH in their landscapes for acid loving plants. When applied to soil, the sulfate ion (which has a negative charge) immediately attaches to a calcium molecule (which is an integral part of clay and has a positive charge) with the result of lowering the pH of that particle of clay.

49. The black crystals are collected in the dust collector that is attached to the delinting drum. The small amount that filters on the working floor around the machine can be safely vacuumed into the collection bin.

Selecting or Establishing Seed Processing Company

50. The cotton business, as it exists today in Tajikistan, is a jungle of disconnected groups with special interests operating in an environment lacking good technical information, using antiquated tools and practices, and with the industry’s vision concentrating on grander days of the past rather than preparing the cotton sector for challenges and opportunities of the future. Gin managers say, without hesitation, that farmers have lost interest in producing cotton; and, farmers retort that gins are old and inefficient and that management is poor and corrupt.

51. Farmers in many parts of the world have responded to similar situations by forming cooperatives; they have become involved in the ownership and, through representation, they are involved in the management of the company. The connection between the private farmer and the supplier or processor of his products is strengthened with each group working to improve areas where there is common interest. The relationship becomes symbiotic; not adversarial.

52. The introduction of farmer ownership of a seed processing plant is logical and has the potential to improve the cotton sector beyond the direct financial benefits of better seed and returns to farmers from the business’s profits. The open sharing of information between the company and its shareholders will provide a new paradigm for the cotton sector. The mutual benefits gained from information sharing will provide energy for a growth in the understanding of basic business practices among farmer-shareholders. A modern seed processing

facility will become a source of pride for its farmer-owners. The concept of developing a farmer owned seed processing company in Tajikistan has strong merits.

53. The private partner in this public-private partner modality can be either from an existing farmer owned company or a farmer owned company can be established. In recent surveys in Sugd Oblast, Khatlon Oblast and the RRS Districts most of the respondents expressed an interest in cooperating or becoming a partner in a modern seed processing facility; and, want to become shareholders in that company. It was also found that a significant amount of interest exists in the development of an acid-delinting, cleaning, treating, weighing and bagging plant. Complete information is listed in Appendix B.

54. An extensive analysis of legal options for the establishment of the legal framework for the company has been completed. Please refer to the "Legal Analysis" appendix at the end of this report.

55. The technology of the acid delinting, cleaning, treating, weighing and bagging of cotton seed is well developed if equipment is selected from a reputable company. The business aspects of operating a successful seed processing business in Tajikistan is still untested which places importance of high magnitude on this action. The following criteria address important issues in the selection process. Some address ADB priorities; others relate directly to the unique demands of the seed business; and others are important in order for the company to meet financial needs as the company goes through the start-up period and becomes profitable. All are important.

Technical Component:

- Must be a farmer owned (stockholders) company with the possibility of expanding farmer shareholders in the acid delinting/seed cleaning company.
- Must demonstrate an interest in the integrity and importance of the seed industry and the ability of the company to develop regional and international relationships with seed developers.
- Must show evidence that the company has the management capacity to develop a working knowledge of the operations involved in seed processing.
- Strategically located to serve farmers in project raions in either Khatlon or Sugd Oblasts
- Business site and business needs to be separate and identifiable
- Requirement under the contractual arrangements to install and operate equipment meeting following criteria:
 - Acid delinting, sorting, cleaning & bagging equipment capable of producing seed to international planting seed standards and capable of processing 1 ton/hr of fuzzy seed.
- Must be willing to comply with the terms as developed for the project: an adherence to the intellectual property rights of seed developers; and, annually, 70% of the seed processed will be sold wholesale to area retailers.
- Must provide Audit and financial reports verifying financial capacity, and annual audit reports from an auditor approved by ADB.
- Must not have debts or financing through a cotton investor
- Must have an established relationship with a bank
- Must provide a letter of credit from a bank stating that the company is capable of borrowing \$400,000 for working capital on an intermediate term basis.

Financial Component:

- Based on value that the company responding to the tender offers for inclusion in the project
- Will only be considered if all of technical requirements are met

56. The factors listed above tend to be objective or easily answered. There are additional factors that tend to be more subjective, but are also important. Does the manager have an active board of directors who have real input into decision-making that guides management? Has the scope and activities of the business expanded over the past 3 years or is the company, as a business either basking in past glories or seemingly going nowhere? Are there young farmers on the board of directors or are all of the board members of retirement age? Are there women on the board?

57. Developing an accurate estimate of the overall leadership and management profile of these farmer organizations need to be part of the due diligence that is conducted before final selection of a company. Some information can be obtained through short conversations or telephone surveys, but the best information can be obtained and confirmed best through lengthy on site visits with representatives of the farmer organization.

58. A survey of larger farms in Khatlon Oblast, the RRS Districts and Sugd Oblast in the north was conducted in order to identify potential farms with which a partnership could be developed. The results of the 10 farms that were surveyed are recorded in Appendix C.

59. None of the farm companies were using international standards bookkeeping for their farm records. This is a concern for this project that has a short timetable. While some seemed to have updated their legal structure in recent years, only closer scrutiny would enable a determination of whether the present structure would be acceptable for the introduction of a modern business such as a cotton seed processing plant. Several do not have working relationships with banks that might present barriers. It would appear that all have many more employees than needed for an economically competitive business.

60. Each of the farmer owned companies report as having an active Board of Directors; however, only additional examination would indicate to what extent the board is involved in the business affairs of the company. Only 1 of the companies surveyed reported expanding their operations during the past 3 years. It is known that at least 1 one of the companies is technically bankrupt and another of the farmer companies that seems to be a contender has very close political ties. Several have experience in propagating seed and 2 of the companies report operating gins.

61. In conversations, most of the companies reported an interest in being part of a seed processing company. However, their eligibility can only be determined by additional due diligence. It is fair to say, however, that all of the companies would require a significant amount of supervision during their first 3 to 5 years of operation. Operating a modern seed processing business that requires attention to details by management and problem solving based on business principles is a skill that only a few boards and managers have mastered in Tajikistan.

62. It is likely that some work with one or more of these farmer companies could result in its readiness to take on the responsibilities of owning and operating a seed processing business. But the preparation work and the continuing project supervision or technical assistance needed are beyond both the time frame of this project and its budget.

The Public Partner – Role

63. In order to support the present seed development efforts in Tajikistan and enable cotton farmers in Tajikistan to increase profits from growing cotton, ADB, under the Public-Private Partnership modality, is supporting the development of an acid delinting/seed cleaning, treating and bagging facility which farmers will own and manage through an elected board of directors. The Public Partner will be the Minister of Agriculture through one of its state enterprises.

64. The PMU will prepare and issue tenders soliciting bids on equipment and needed civil works. It will also issue tenders soliciting responses from farmer owned companies that are interested in being considered as the private partner in this project.

Summary Comments

65. There is broad agreement that the cotton sector is in trouble and has become unprofitable. There is also awareness that fiber quality is a contributor to the problem, that gins are poorly managed and technically outdated and that farmers are losing their interest in producing cotton. Introducing seed with better genetic capability and developing services to process that seed will provide the foundation needed for improved yields and fiber quality. . . .a start in reversing the downward spiral in profitability in which the cotton finds itself.

66. Sizing equipment to the need is important. The analysis clearly shows that both 1.0 ton/hr (Sugd Oblast) and 1.5 ton/hr (Khatlon Oblast) processing capability equipment can process the amount of seed that is projected will be needed during the first 3 years of operation projecting an adoption rate of 60% of hectares of cotton. After the 3rd year it is likely that an expansion in equipment will be needed, especially in Khatlon Oblast. However, at that point, cash flow should be sufficient to enable the seed processing company to invest in the needed expansion.

67. The projected need to expand facilities makes the initial equipment selection of utmost importance. Equipment should be selected that can be efficiently and economically expanded. This is important to protect the interests of all partners involved in the development of these seed processing facilities.

Summary of Farmer Survey and Interviews in Sugd & Khatlon Oblasts*

1. Meetings were conducted in Zafarabad, Spitamen, Mastcha, Kanibadam and Asht districts with about 200 farmers participating. The aim of the meetings was to determine the opinion of farmers on creating and being shareholders in a Joint Stock Company for seed and cotton processing.

Profile

2. The average size of farms among those farmers surveyed was 128 ha (data from surveyed farms). The survey was conducted among small and large farms that reported irrigated land ranging from 1, 5 ha to 4275 ha. The survey revealed that one land sharer has on the average 1.7 ha of land according to the land certificate. The average number of land shareholders according to the certificate is 117 people (57 men and 60 women). The average number of working members on the farms is 58 people (23 men and 35 women). The average number of shareholders on the surveyed Farms is shown in Table 1 below:

Table 1 Summary of Farm Workers

	<u>Average Total</u>	<u>Average No. Men</u>	<u>Average No. Women</u>
Recorded in Certificate	117	57	60
Those who really working from the recorded data in Certificate.	58	23	35
Total really working farmers (together with hired workers)	65	26	39

Farm Labor

3. Most of the farm labor is done by women since more women are available. The migration survey showed that 89% of surveyed people believe that this year, compared to last year, more men migrated abroad for work.

Cotton Production

4. The survey revealed that the area planted to cotton area is becoming smaller on a year-to-year basis as farmers are planting other crops. Farmers have increased the area planted to other crop because of low profits from growing cotton. This past year cotton planting area decreased 46 percent of total production to 37 percent. Farmers say that the main reasons for the decrease in cotton plantings is unreliable water supplies, poor quality seeds and fertilizers, lack of agricultural equipment and fuel. Today, farmers reported, only 30% of agriculture equipment is available compared to 1991. This complicates work for farmers as cotton production requires the extensive use of equipment. Below is a table, where the average planting area for each crop is indicated according to surveyed farms.

Table 2 Percent of Total Hectare Planted

<u>Crop</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>
Cotton	46%	37%	35%
Wheat	12%	13%	11%
Lucerne	6%	7%	8%
Cereals	12%	16%	16%
Onion	2%	2%	2%
Other	22%	26%	27%
<u>Total Hectares Planted</u>	135.3	119.7	116.4

5. Most farmers (more than 97%) are interested in purchasing good quality cotton seed because they have experienced problems caused by poor quality seed. Many dekhon farms in Sugd Oblast are growing the old variety "Fergana 3." This year 71 % of surveyed farmers planted seed from their last year's harvest. Also, 51% of surveyed farmers indicated that they could not buy good quality seeds because neither seed nor financing was available at planting time.

6. Because good quality seed is an important contributor to high yields, about 80 % of surveyed farmers answered that they would pay \$4/kg for seed that had the capacity to improve their yields 25-30 percent. About 77% of surveyed farmers would pay \$5.50/kg for seed that would increase cotton yields 40-45 percent.

Financing

7. This year banks increased financing offered to farms. However, for a number of reasons, there remained farms which were unable to obtain bank credit. These farms were mostly financed by cotton investors and microfinance organizations. Some farms also report being financed by relatives who migrated to Russia for employment. Forty three percent of dekhon farms are self financed and cotton investors provide about 35% of dekhon farm financing. The survey showed, that compared with 2007, this year there is a less financing of farms by investors. This reflects the change to banks for credit which provided about 45%. In 2007, about 61% of Dehkan Farms were financed by investors; this year only 35% were financed by cotton investors. Microfinance organizations provided only about 6% of needed credit in 2007 and 4.5% in 2008.

Table 3 Source of Financing for Farms

	2007	2008
Self financing	42,3%	42,5%
Banks	18,9%	45,0%
Investors	60,7%	35,0%

Micro financing	6,1%	4,5%
Other	12,2%	8,0%

Processing Raw Cotton

8. Eighty three percent of surveyed farmers report that they were free to select the gin to process their raw cotton. Many farmers reported that there is competition between cotton gins. Farmers also believe that their participation in gin ownership would help to improve ginning services.

9. The survey shows that most the farmers are not satisfied with the quality raw cotton processing. Farmers are also not satisfied with the timeliness of ginning service. Most of the surveyed farmers reported that the processing of their raw cotton was completed after the first of January with some saying processing was not completed until April or May. In table 4 below cotton fiber output and seed output is shown by plants.

Table 4 Selected Gin Reported Fiber and Seed Production

Plants (districts)	Fiber outturn	Seed output
219 " H Abdulov" (Mastcha)	33.1%	54,5%
229"Habib" (Kanibadam)	32,3%	53,7%
231"Pahtai Proletar" (J Rasulov)	33,2%	56,2%
239 "Komron" (B Gafurov)	33%	57,5%
240 " Dehkon" (Spitamen)	32,5%	54,7%
251"Guliston" (Spitamen)	33,5%	56,1%
259"Avaz" (Asht)	33,1%	55,5%
263"Dangin" (Zafarabad)	34,4%	55,6%
267"Amir Shukur" (Mastcha)	32,9%	55,2%
270"Dehkon"(Zafarabad)	33%	53,7%
274"E Boimatova" (Kanibadam)	33.1%	57,1%
282"Pahtai Asht" (Asht)	33%	54,3%
285"Hubjam I K" (Zafarabad)	34,1%	55,9%

10. More than 86% of farmers surveyed would like to process their cotton in a modern plant with honest management and improved quality of processing. They are ready to pay extra for the transportation of their raw cotton in order to have an increase in fiber outturn. They believe this would increase their profits.

Marketing

11. The survey showed that in spite of the difficult economic times, more than 90% of farmers have mobile phones and would like to receive information on marketing through their mobile phones. They also wish to have an opportunity to sell their cotton as fiber through the internet and participate in live cotton auctions with the use of their mobile phones.

12. Information obtained from surveys conducted both last year and this year reported that farmers believe that the few number of cotton buyers is having a negative impact on their profits because of an absence of competition in the marketplace. More than 90 % of farmers would like for there to be an increase in the number of buyers and the further development of honest competition between gins. About 32% of farmers said that they would like to have more than 5 buyers to bid on their free cotton in 2008.

Needed Services

13. Farmers are interested in an expansion of the service specter that in the past has been provided by ginneries. The following table lists responses from farmers regarding the services for which an expansion is needed.

Table 5 Farmers' Responses on Needed Services

1	Ploughing	64,3%
2	Planting	46,2%
3	Cultivation	41,7%
4	Fertilizer application	49,2%
5	Transport	49,2%
6	Other	4,2%

14. The majority of the farmers, about 87%, are interested in being shareholders of a Joint Stock Company offering ginning or seed processing services. However, 62 % having no financial recourses with which to buy stocks and said that they would need credit for stock purchase.

15. From the results of survey, we can conclude that farmers are interested in owning a share of a seed delinting plant and ginnery. They are very interested in the development of gins that have new technology that will improve outturn and fiber quality. They understand the benefits obtained from planting high quality seeds and would like to have access to this seed for the next years planting in order to improve their yields and increase their profits.

Survey of Large Farms in Sugd and Khatlon Oblasts

16. Fourteen large farms were identified and were interviewed either with face-to-face meetings and with follow-up telephone conversations or by telephone to obtain needed information. The results of this effort can be found in appendix A of this report.

17. It shows that even though the farms are larger than average and sometimes involved in specialty aspects of cotton production such as ginning or seed propagation, that they have not taken the needed steps to become modern for-profit organizations. None have changed to an internationally accepted accounting system. Most are the remnants of collective farms from the past and have multiples of the number of employees needed for an economically competitive business.

While some seemed to have updated their legal structure in recent years, only closer scrutiny would enable a determination of whether the present structure would be acceptable for the introduction of a modern business such as a cotton seed processing plant. Several do not have working relationships with banks that might present barriers. 18. The abilities and understanding of modern principles of management of almost all of those interviewed is questionable. While a couple seem to have potential, it is obvious that there are also major questions in regards to the companies' status as businesses and with their existing relationships.

Additional Information Obtained from Interviews with Farms in Khatlon

Oblast

19. On November 28th and 29th, this consultant visited farms in Kulyab, Vose and Kabodiyon regions. Totally 6 farms were surveyed. The irrigated areas of surveyed farms range from 220 to 2400 ha. The farms which were surveyed differ by size and by the number of shareholders.

20. The consultant met with the leader of the farm Hamadoni, Mr. Zardiev Abdujabbor. The farm was established in 1932 and after reorganization in 2000, was registered in the Ministry of Justice as a production cooperative. The farm is a seed breeding farm with 2000 shareholders, with the area of 2400 ha and has enough experience in the sphere of cotton seed multiplication. Also the farm owns the cotton gin "Zarham." The territory of plant is 22 ha. The average fiber outturn is 33%. The farm manager indicated that the farm is mainly self-financed, but this year they received 3 million somoni credit from Agroinvestbank. They will repay the loan following sale of the processed fiber. From the conversation with leader of farm, we could come to the conclusion, that the farm is well managed and that they have a willingness to cooperate with project.

21. A meeting was held with the leader of the Agriculture Department in Khatlon Oblast, Mr Saidov Saidhomid, who suggested that we meet with farms "Hoja Mumin, Hulbuk and Mahmataliev which are the larger farms in the district.

22. This consultant met with the leader of the farm "Hoja Mumin" (Vose district), Mr Nematov Mirzodavlat. The Farm was established in 1936 and after reorganization (reform) in 2006 was registered in the Ministry of Justice as a production cooperative. The farm has 680 shareholders and 380 ha of irrigative land mainly for cotton. They said that for several years they can not purchase good quality seeds and plant the same own seeds of last year. The leader was very glad to hear about our project and added that not only Vose district, but the whole Khatlon oblast needs such plant.

23. Further there was a meeting with leader of the farm Hulbuk. This farm was established in 2000 and after reorganization was also registered in the Ministry of Justice as a Production Cooperative. There are 500 shareholders in farm. It is also a seed breeding farm and has 220 ha. The dehkan farm has one gin for cotton processing and the seeds are used for planting. The farm would be able to offer land needed for the seed cleaning plant building.

24. The meeting with the leader of the farm “Avesto” in Kabodiyon district of Khatlon oblast, Mr Abdullaev Rahmatullo, was very interesting and fruitful. The farm, which was established in 1930, was reorganized in 2001 and was registered in the Ministry of Justice as a Production Cooperative. The farm is a seed breeding Farm with 2400 shareholders and 2100 ha of land of which 1600 ha is planted to cotton. Since they had experience with seed propagation, this year he obtained 12 tons of Turkish seeds “Flora” and “Karmen” from the Turkish company “Bayer.” These seeds were planted on 400ha of land. From my evaluation and observation of cotton condition, I can say, that this farm does an above average job of growing cotton. The Farm also owns the gin Oriyon which potentially could be an asset to the new seed processing plant in Khatlon oblast.

25. During conversation, the farm manager reported that the farm is financed by investor XXI Century and for the current moment has debt of \$2,000,000, of which they plan to repay \$1,000,000 when the crops in storage are sold. The farm manager said that the farm was preparing documents and had planned to start doing their financing business with “Agroinvestbank.” However, the National Bank instructed “Agroinvestbank” in Kabodiyon district to not give credit. According to the farm manager, the manager of “Agroinvestbank” in Kabodiyon district explained the reason and said that he didn’t want to lose his job.

26. At this time, only about 60 to 65 percent of the cotton has been harvested. The remainder is rotting in the field because the “cotton investor” had refused credit with which to hire workers to pick the cotton. According to the farm manager, the average yield this year was about 24 centners per hectare, but there still is about 1000 tons in the field. In addition, during the last three months the investor did not provide the diesel fuel needed for transporting the cotton to the gin for processing. Even though the government decreed that starting in 2008 farmers should be able to receive bank financing, farms in Kabodiyon, Shahrituz, Kolhozabad and N. Husravv districts needed to continue working with their traditional cotton investor. As in past years, farmers reported that inputs purchased through the cotton investor were priced very high and farmers were required to deliver their raw cotton to gins owned by the cotton investor, XXI Century. At the end of conversation, the farm manager expressed his thanks and added that he wishes success for the ADB work in Khatlon Oblast. He added that Khatlon Oblast needs a modern seed processing facility and they are ready to support the project.

27. This consultant also met with the leader of the farm “Bobogulov” in Kabodiyon district, Mr. Bobogulov Muzaffar. The Farm was established in 1923 and was reorganization in 2002 at which time it was registered in the Ministry of Justice as a Production Cooperative. The Farm has 2140 shareholders and 834 ha of Land. This year 580 ha was planted to cotton. Each land shareholder has a share of 0, 48 ha of land. The farm is financed by investor «XXI Century». During the conversation, the manager said that he is not satisfied with the quality of seeds and even though he tried, he was unable to purchase high quality seeds this year. The average of the yield this year is 18 centners/ha. They are ready to cooperate with project and purchase high quality seeds.

28. I met also with the leader of the farm «Rudaki» in Kabodiyon district Mr Jumaev Holmon. The Farm was established in 2008 from the lands of DF “Kambarova” and registered in the Ministry of Justice as a Dehkan Farm. The Farm has 861 shareholders. . Total area of Farm is 316 ha and out of it 203 ha is cotton field. The average of yield is about 20 centners/ha. The leader strongly asserted that they are interested in the development of a new seed processing plant.

29. Each surveyed farm has Annual report for 2007 and internal financial controls. Most of the surveyed farms are interested in the project and are also interested in becoming shareholders of a new seed delinting facility and are ready to cooperate.

*Detailed information in Appendix C “Survey of Large Farms 11-08”

Acid Delinting, Seed Cleaning Equipment Manufacturers

Handen Golden Lion Cotton Machinery Co. Ltd.
21 Tievi Street
Handan
Hebei, China 056009
Fx: 86-310-404-1328
Tel: 86-310-404-2465

Shangai Sfeco Trading Co.

Continental-Eagle Corporation
Prattsville, Alabama U.S.A.

L. T. Kincer Co.
Lubbock, TX U.S.A.

TOR – Construction Engineer

Tasks:

1. Become familiar with the basic requirements of the equipment that will be installed in relation to electric usage, weight and load bearing requirements of the floor on which the equipment is placed.
2. Work with seed processing company management to determine site layout, location of driveways, storage facilities, office, restroom, etc.
3. Develop and file plans to fill requirements of the government of Tajikistan
4. If electric service is already in the structure; verify that the service is adequate to meet the needs of the equipment that will be installed. If new service needs to be acquired, work with electricians to assure the proper placement and capabilities.

5. Identify and chart underground gas and water lines; plan for their utilization in the developed seed processing plant.
6. Provide information to workers installing seed processing equipment.

Deliverables:

1. Develop a comprehensive site plan showing location of buildings, utilities and roads.
2. Prepare needed paperwork to procure needed permits
3. Prepare for management of the seed company a written evaluation of the existing building, floor and electrical capabilities and other utilities.
4. Develop plans for improvements that will be needed, discuss these plans with contractors and supervise the work needed.
5. Develop plans for the construction of the storage bins for fuzzy seed. Discuss these plans with contractors and supervise the work needed.
6. Provide information to workers installing seed processing equipment. Coordinate the work of other contractors, i.e. electricians, with that of the crew installing the processing equipment.

TOR – Cotton Seed Sector Specialist

Tasks:

1. Develop a working knowledge of domestic efforts in Tajikistan in identifying varieties of cotton that demonstrate high performance, domestic varieties that are being developed, and an understanding of the fledgling domestic cotton seed production industry.
2. Introduce the new seed processing company to international cotton seed producing companies. Explore the possible development of business relationships. Gather information on the cost of the seed plus royalties that must be paid.
3. Collaborate with the personnel in the seed company on identifying varieties with which to establish demonstration plots, on the company's seed marketing strategy and on the most effective method of advertising the seed company's products.
4. Collaborate with the legal expert in designing contracts so that they are consistent with similar contracts in other cotton producing countries.
5. Develop an understanding among seed company staff and among farmers propagating seed for the company on factors of importance in the production of quality seed.
6. Orientate the managers and operators of the seed plant so that a "quality first" attitude exists from the collection of the fuzzy seed at the gins to the delivery of the processed seed to the buyers.

7. Help seed company management select gins with which to develop contractual arrangements for the processing of raw cotton that is produced for seed propagation.

Deliverables:

1. Help the management of the seed company become knowledgeable of the international cotton seed business.
2. Develop a good working relationship with the country's Seed Producers Association and its members. Be a representative of the seed company at field days and other special events.
3. Identify 5 varieties that the seed company selects for propagation and help seed company management develop the business relationships needed to secure the elite seed.
4. Identify an additional 5 varieties from domestic and international sources that will be grown in demonstration plots along with the varieties being propagated for comparison and possible future propagation.
5. Develop a "Production Manual on Achieving Top Cotton Seed Quality" manual specific to the conditions in Tajikistan and the seed processing plant including the transport of fuzzy seed, its storage, processing and handling and storage of processed seed. Conduct training for seed company staff and for workers in the seed processing plant.
6. Develop a list of expectations for gins that will be selected to process raw cotton that is produced for seed propagation. Before the ginning season, conduct a training session for gin managers. Along with seed company personnel, monitor the ginning of raw cotton.

TOR – Legal Counsel

Tasks:

1. Study the report material from the desktop study of ways to establish a cotton seed processing business in Tajikistan. Thoroughly understand the economic rationale for the establishment of this business.
2. Conduct additional legal analysis as needed as it pertains to the development of a farmer owned seed processing company.
3. In consultation with the selected farmers group (from those responding to the tender), ADB and PIU, determine the form or basis on which to establish the seed processing company.
4. If the farmer group being granted the tender already represents an existing farmers company, then the legal counsel will analyze alternative courses of action to meet the requirements of the project and interests of the existing company.
5. Conduct regional farmer meetings as needed to meet the legal requirements of forming the company.

6. Work with raion, oblast and national governmental officials informing them of the formation of the farmer owned seed processing company.

Deliverables:

1. Provide all needed juridical advice and consultation in the areas of commercial, civil, land, labor and tax legislation in Tajikistan.
2. Serve as a key member of the team that will be assembled to form the farmer owned seed processing company.
3. Assure that all deadlines are met; all papers filed in a timely manner; and all needed public announcements performed on time which include the following tasks:
 - Define framework and process for determining shareholder qualifications
 - Conduct shareholder pre-formation orientation meetings
 - Collect data on qualified shareholders
 - Assess shareholder qualifications using data collected
 - Determine who will be shareholders, how many shares, and share price (if not defined before)
 - Prepare letter to Dekhon farmers on eligibility and terms for share subscription, including date of Foundation Meeting
 - Prepare Charter and founding documents
 - Select Organizational Committee for Foundation meeting
 - Organizational Committee reviews founding documents and prepares recommendations for Foundation Meeting
 - Select Founding Directors
 - Conduct Farmers' company Formation Meeting and nomination of directors
 - Open bank special account for approval payments not less than 50% shares
 - Start process of Company registration at appropriate legal body (It takes approx. 20-30 days)
 - Finalize registration process
 - After registration, open bank account, registration in the tax, statistics office, pension organs and in the Ministry of Finance

TOR – Legal Specialist

Tasks

1. Develop contract format for farmers involved in propagating seed for the seed processing company.
2. Along with seed company management, develop contractual agreements with international seed producing companies for the use of elite (or parent) seed from varieties adapted for growing in Tajikistan.
3. Along with seed company management, develop contractual agreements with domestic seed producing companies for the use of elite (or parent) seed.
4. Along with seed company management, develop contractual agreements with gins for processing raw cotton that is produced by farmers for the seed company. The contracts will include preparation of the gin for ginning the raw cotton, the collection of the seed from this cotton and its transport to the seed cleaning company.

5. Along with seed company management, develop contractual agreements with companies to which processed seed will be sold on a wholesale price basis.
6. Development of contract format for sale of seed to private farmers by the seed cleaning company.
7. Development of service contracts for specialized service providers, i.e. driver with car; trucks transporting fuzzy cotton from gins to seed cleaning company, by-product removal, other as needed.
8. Development of purchase contracts for supplies used by the seed cleaning company, i.e. sulfuric acid, soap, bags, and others as needed.
9. Participate in management's monitoring and evaluation of legal and financial progress and the company's contribution to the cotton sector.
10. Provide seed company management with advice in the event of contract disputes with the MOA or other entities.

Deliverables

1. Contract to be used with farmers that receive elite or parent seed from the seed development company for the propagation of seed.
2. Either the provision of a contract to be used with international and domestic seed producing companies or the review and written opinion regarding contracts that may be presented by international or domestic seed producing companies in regards to responsibilities of each party, restrictions on the use of the seed, royalties, amount purchased, terms of payment and shipment.
3. Provide and/or review contracts that are developed for use between the seed company and gins that will process raw cotton produced by farmers propagating seed for the seed development company. Assist seed company management in negotiations with gins and help resolve disputes that may arise.
4. Provide contracts to be used with companies purchasing seed to be sold on a wholesale basis that list restrictions on the sale and use of the processed seed, price, terms of payment and place where the seed can be picked or in some cases the place to which the seed should be shipped.
5. Provide service contracts as needed.
6. Provide purchase contracts for obtaining supplies for the business as needed.
7. Contribute on legal aspect of management reports that will be made to MOA and to ADB.

List of contacts

1. Gulmahmadov Davlatsho – 1st Deputy of Chairman Sogd region Hukumat, Khujand
2. Khaydarov Abdusattor – Executive director of SAS, Khujand.
3. ааааааа Азимджон – Executive director of SAS-MicroFinance, Khujand.
4. Uzoqov Boymahmad – Chief accountant SAS, Khujand.

5. Kasimov Kasim – Ministry of Agriculture, Dushanbe.
6. Soliev Bakhriddin – Head of farm “L.Murodov” Gissar district.
7. Zardiev Abdujabbor – Head of farm “Hamadoni” Kulyab district.
8. Abdulloev Rakhmatullo – Head of farm “Avesto” Kabodiyon district.
9. Mamayusupov Abdurashid – Chief economist of farm “J.Rasulov” B.Gafurov district.
10. Soliev Farkhod - worker of processing department Agroprom Sogd region, Khujand.
11. Bobojonov Mubinjon – Chief accountant of farm “Urunhodjaev” B.Gafurov district.
12. Jumaev Gulomjon - Chief accountant of farm “A.Jumaev” B.Gafurov district.
13. Boturov Bakhtiyor – Head of farm “R.Nabiev” B.gafurov district.
14. Juraev Juraboy - Chief accountant of farm “R.Nabiev” B.Gafurov district.
15. Akhmedov Abdugarim – Deputy chief accountant of farm “A.Samadov” J.Rasulov district.
16. Nurboev Mumin - Chief accountant of farm “Bobokalonov” B.Gafurov district.
17. Yakhekhojaev Ayubkhuja – 1st deputy head of farm “Mukarramov” Isfara district.
18. Ibragimov Usmon - Chief accountant of farm “Chilgazi” Isfara district.
19. Maksudov Akmal - Chief accountant of farm “Saidkurgan” Spitamen district.
20. Muminjanov Khafiz – Coordinator “Sida” project, Dushanbe.
21. Saidov Saykhomid - Head of Agroprom Vose district, Vose district.
22. Negmatov Mirzodavlat – Head of farm “Hoja Mumin” Vose district.
23. Saidov Muhtorbek – Head of farm “Hulbuk” Vose district.
24. Quvvatov Amonullo – Head of farm “M.Makhmadaliev” Vose district.
25. Bobogulov Muzaffar – Head of farm “Bobogulov” Kabodiyon district.
26. Jumaev Holmon – head of farm “Rudaki” Kabodiyon district.
27. Daniyarov Tillomurod – Head of Sector management external communications, Ministry of Agriculture, Dushanbe.
28. Karimbaev Farrukh – Agrolanding specialist IFC, Kulyab district.

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10. Soliev Farkhod - worker of processing department Agroprom Sogd region, Khujand.
11. Bobojonov Mubinjon – Chief accountant of farm “Urunhodjaev” B.Gafurov district.
12. Jumaev Gulomjon - Chief accountant of farm “A.Jumaev” B.Gafurov district.
13. Boturov Bakhtiyor – Head of farm “R.Nabiev” B.gafurov district.
14. Juraev Juraboy - Chief accountant of farm “R.Nabiev” B.Gafurov district.
15. Akhmedov Abdukarim – Deputy chief accountant of farm “A.Samadov” J.Rasulov district.
16. Nurboev Mumin - Chief accountant of farm “Bobokalonov” B.Gafurov district.
17. Yakhekhajev Ayubkhuja – 1st deputy head of farm “Mukarramov” Isfara district.
18. Ibragimov Usmon - Chief accountant of farm “Chilgazi” Isfara district.
19. Maksudov Akmal - Chief accountant of farm “Saidkurgan” Spitamen district.
20. Muminjanov Khafiz – Coordinator “Sida” project, Dushanbe.
21. Saidov Saykhomid - Head of Agroprom Vose district, Vose district.
22. Negmatov Mirzodavlat – Head of farm “Hoja Mumin” Vose district.
23. Saidov Muhtorbek – Head of farm “Hulbuk” Vose district.
24. Quvvatov Amonullo – Head of farm “M.Makhmadaliev” Vose district.
25. Bobogulov Muzaffar – Head of farm “Bobogulov” Kabodiyon district.
26. Jumaev Holmon – head of farm “Rudaki” Kabodiyon district.
27. Daniyarov Tillomurod – Head of Sector management external communications, Ministry of Agriculture, Dushanbe.
28. Karimbaev Farrukh – Agrolanding specialist IFC, Kulyab district.

Acid Delinting, Seed Cleaning Equipment Manufacturers

- Handen Golden Lion Cotton Machinery Co. Ltd.
21 Tievi Street
Handan
Hebei, China 056009
Fx: 86-310-404-1328
Tel: 86-310-404-2465

- Shangai Sfecco Trading Co.
- Continental-Eagle Corporation
- Prattsville, Alabama U.S.A.

Sugh Seed Processing Business Development Budget

Project contributions	Value	Contributions of Farmer Company	Value
<u>Civil works:</u>			
Preparation of Building for Equipment		Building - approx. approx. 24 m x 30 m x 8 m side wall height	
Storage Bins for Fuzzy Seed		Electric Service 380 V 300 kw	
		Water	
		Office	
		Telephone	
		Security	
		Working Capital	
<u>Equipment</u>			
Seed Processing Plant Equipment			
Shipping & Installation			
Tank for Compressed Natural Gas			
Management & training for 30 days			
Extended Management for 4 months			

Technical Assistance

<u>Number Personnel to Operate plant per Shift</u>	
Receiving Fuzzy Seed	2 men
Delinting Operation	3 men
Seed Cleaning and Treating	3 men
Bagging Delinted Seed	2 men
Lab Technician	1 man
Maintenance	1 man

Assumptions for Budget

Percent of Seed Sold Wholesale	70%
Percent of Seed sold Retail	30%
Cost of Fuzzy Seed Purchased from Farmers/Ton	\$250
Cost of Acid, Soap, Neutralizer & Fungicide per ton of Fuzzy Seed	\$200
Cost of Bags - each	\$1.25
Compressed Natural Gas Usage/Ton	200
CHG cost/cubic meter	\$0.206
KWH Used per Ton of Fuzzy Seed	200
Cost/KWH	\$0.041
Royalty Fees for production seed/kg	\$0.5
Wholesale value of seed	\$3.50
Retail value of seed	\$4.25
Lease Payment to MOA (from 2012)	\$100,000
Cost Contingency based on Expenses - less Lease Payment to MOA	15%

Calculations for Parent Seed Propagation

	2010	2011	2012	2013	2014
Area/% of Hectors Planted to HQ Seed*		10%	40%	60%	60%
Seed Required - kg/Hector		35	35	33	30
Total High Quality Seed Needed for Planting the Following Year (tons)	551	2,204	2,204	3,116	2,833
Fuzzy Cotton Needed to Process Needed Seed for Planting - 17% Waste	664	2,655	2,655	3,755	3,413
Hectors Needed to Propagate Needed Fuzzy Seed - yield = 2.5 t/h; Fuzzy Seed = 45% of Seed Cotton	590	2,360	2,360	3338	3,034
Parent Seed Obtained from Domestic Seed Development Organizations or International Seed Companies (Kg)	17,699	70,797	70,797	93,452	84,956
Cost of Parent Seed @ \$7/kg	\$123,895	\$495,579	\$495,579	\$654,165	\$594,695

*Hectors of Cotton in Khatlon Oblast 157,397

Calculations of Cost of Cleaning Gins for Seed Processing

	Number of Gins	Number of Varieties Grown	Total Number of "Cleanings"	Cost Per Cleaning	Total Cost Per Year
Year "2010"	2	3	6	\$2,000	\$12,000
Year "2011"	2	3	6	\$2,000	\$12,000
Year "2012"	2	4	8	\$2,000	\$16,000
Year "2013"	2	4	8	\$2,000	\$16,000
Year "2014"	2	4	8	\$2,000	\$16,000

1) Use of high quality processed seed is staged to increase over 4 years to 80 percent. It is estimated that due to poor soils and a lack of irrigation water, that increases above the 80 percent level are questionable.

2) Farmers accustomed to planting processed seed use seeding rates of 15 kg to 23 kg per hectore. Higher rates have been budgeted because it will take farmers several years to learn about the germination characteristics, soil preparation and the planting of high quality seed. As farmers learn, seeding rates will gradually decline.

It is recognized that it is likely that yields will be significantly higher than this because farmers with better quality soil and those that have demonstrated better management will be selected to propagate seed.

Implementation Budget

	<u>Sugd Oblast</u>			<u>Khatlon</u>		
	<u>Quantity</u>	<u>Unit Cost</u>	<u>Amount</u>	<u>Quantity</u>	<u>Unit Cost</u>	<u>Amount</u>
<u>Equipment Purchase Tender</u>						
Purchase Equipment including installation, management training for first 30 days of operation			\$930,747			\$930,748
Expand Equipment to 1.5 ton/hr capacity					\$28,000	\$28,000
Tank for Compressed Natural Gas	1	\$31,000	\$31,000	1	\$31,000	\$31,000
Generator 380V200kw	1	\$33,000	\$33,000	1	\$33,000	\$33,000
Installation of Generator	1	\$1,000	\$1,000	1	\$1,000	\$1,000
Skid-type 1 ton loader - equipped to use GNG	1	\$35,000	\$35,000	1	\$35,000	\$35,000
Freight	9	\$9,500	\$85,500	10	\$9,500	\$95,000
Extended management training	2	\$12,000	\$24,000	2	\$12,000	\$24,000
Total Equipment Tender			\$1,140,247			\$1,177,748
<u>Civil Works</u>			<u>Amount</u>			<u>Amount</u>
Preparation of Building for Equipment			\$50,000			\$54,000
Storage Bins for Fuzzy Seed	4	\$10,000	\$40,000	5	\$10,000	\$50,000
Equipping Office; desks, computers, etc.			\$12,000			\$12,000
Total Civil Works			\$102,000			\$116,000
<u>Technical Assistance</u>						
Due Dilligence needed to select partner			\$6,000			\$6,000
Legal Council			\$21,000			\$21,000
Direct related fees and advertising costs			\$4,000			\$4,000
Country Ground and Air Transportation			\$20,000			\$20,000
Communications			\$5,000			\$5,000
Supplies, copy services, printing			\$1,600			\$1,600
Temporary Secretarial Services			\$500			\$500
Pre-Engineering, Design and Construction			\$5,000			\$5,000
Seed Sector Specialist to build linkages between farmers company and international seed suppliers;						
prepare quality assurance system and program manual	4.5	\$13,740	\$61,830	4.5	\$13,740	\$61,830
Per diem	\$101	135	\$13,635	\$101	135	\$13,635
Travel - international			\$4,060			\$4,060
Travel - regional	4.5	\$1,500	\$6,750	4.5	\$1,500	\$6,750
Communications	4.5	\$300	\$1,350	4.5	\$300	\$1,350
Visa			\$200			\$200
Interpreter - Translator	4.5	\$650	\$2,925	4.5	\$650	\$2,925
Legal Specialist - Tajik National to assist with contractual matters	2	\$1,000	\$2,000	2	\$1,000	\$2,000
Contingency		10%	\$15,585		10%	\$15,585
Total			\$171,435	Total		\$171,435

Financial Summary

	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
Income		\$2,352,951	\$8,509,141	\$12,005,987	\$10,914,534
Expenses	\$522,602	\$2,450,195	\$3,667,023	\$5,123,912	\$4,567,363
Year's Cash Flow	-\$447,380	-\$97,244	\$4,842,118	\$6,882,075	\$6,347,170
Cummulative Cash Flow	-\$447,380	-\$544,624	\$4,297,494	\$11,179,569	\$17,526,739

Comparing Capacities of 4 Different Sizes of Seed Processing Equipment

		Hours of work - 10 hour work days	Hours of work - 12 hour work days	Hours of work - 18 hour work days
November	30	300	360	540
December	31	310	372	558
January	31	310	372	558
February	28	280	336	504
Total Days	120	1200	1440	2160
.5 ton/hr	Processed Fuzzy Seed*	600	720	1080
1.0 ton/hr	Processed Fuzzy Seed*	1200	1440	2160
1.5 ton/hr	Processed Fuzzy Seed*	1800	2160	3240
2.0 ton/hr	Processed Fuzzy Seed*	2400	2880	4320

<u>Fuzzy Seed to Be Processed</u>	<u>Khatlon & RRS</u>
2010	664
2011	2655
2012	2655
2013	3755
2014	3413

*Assumes no days off for holidays or time lost due to power outages.

Analysis: By the 2nd year of operation, the .5 ton per hour equipment will not be able to process the amount of fuzzy cotton needed without working more than 12 hour days and by the 3rd year of operation operating the plant 18 hours will not be sufficient to process the amount of fuzzy seed needed.

Even equipment designed to process 1 ton per hour will need to work 18 hours per day by the 3rd year to process all of the seed needing processing. Eighteen hours of operation is amounts to 2 shifts each working 10 hours with 1 hour off for lunch.

Equipment rated at 1.5 tons per hour will be able to process the seed in 12 hour work days through the 5 years of the project.

2.0 ton per hour equipment has excess capacity through the 5 project year period.

Seed Production cash flow 2010

	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Annual revenue seed sales	0	0	0	0	0	0	0	0	0	0	0	0
Wholesale Seed Sales Income	0	0	0	0	0	0	0	0	0	0	0	0
Retail Seed Sales Income	0	0	0	0	0	0	0	0	0	0	0	0
Farmer payment for planting seed	\$75,222	0	0	\$75,222	0	0	0	0	0	0	0	0
Monthly Total Income	0	0	0	\$75,222	0	0	0	0	0	0	0	0

Income \$75,222
 Net Income -\$447,380

Expenses	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Fuzzy Seed Produced for Seed - tons	744										350	
Seed for Planting Processed - tons	267										100	167
Cost of Purchase of Fuzzy Seed from Growers	\$186,000								\$18,500	\$80,000	\$87,500	\$1,000
Company Manager	\$11,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
Office Secretary & Bookkeeper	\$3,850	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350
Cotton Seed Specialist employees @\$150 / month	\$4,000	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400
Taxes on Employees Payroll	\$3,600								\$600	\$600	\$600	\$1,800
Taxes on Car and Fuel	\$5,837	\$351	\$455	\$455	\$455	\$455	\$455	\$455	\$611	\$611	\$611	\$923
Driver, Car and Fuel	\$11,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
Cost of Acid, Soap, Neutralizer & Fungicide per ton of Fuzzy Seed	\$40,241											\$40,241
Compressed Natural Gas	\$8,300											\$6,880
Electric	\$1,419	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$1,369
Bags	\$27,544											\$27,544
Elite seed import	\$123,895											
Royalty Fees for reproduction seed	\$0											
field insp growing	\$7,000		\$700	\$700	\$700	\$700	\$700	\$700	\$700	\$700	\$700	\$700
gov inspection costs	\$600							\$600				
Total Marketing Costs	\$3,400								\$800	\$800	\$800	\$1,000
demonstration plot	\$4,050		\$2,000	\$300	\$300	\$300	\$300	\$250	\$600	\$800	\$800	\$1,000
Cost of Cleaning Gin before processing Seed	\$12,000									\$12,000		
Lease on Factory site	\$2,750	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250
Rental Payment to MOA	\$0											
Cost Contingency	\$66,115	\$413	\$19,477	\$638	\$638	\$638	\$638	\$721	\$3,692	\$12,827	\$13,952	\$12,481
Total Expenses	\$522,602	\$0	\$3,414	\$149,577	\$5,143	\$5,143	\$5,143	\$5,776	\$28,553	\$110,588	\$107,213	\$95,939
Monthly cashflow	\$0	-\$3,414	-\$149,577	\$70,079	-\$5,143	-\$5,143	-\$5,143	-\$5,776	-\$28,553	-\$110,588	-\$107,213	-\$95,939
Cummulative expenses	\$0	-\$3,414	-\$152,991	-\$82,912	-\$88,056	-\$93,199	-\$98,342	-\$104,118	-\$132,670	-\$243,258	-\$350,471	-\$446,410

Seed Production Cash Flow 2011

	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Annual revenue seed sales												
Sales - tons	551	220	220	110								
Wholesale Seed Sales Income \$	\$1,349,679	\$539,872	\$539,872	\$269,936								
Retail Seed Sales Income	\$702,384	\$280,954	\$280,954	\$140,477								
Farmer payment for planting seed	\$300,887			\$300,887								
Monthly income	\$0	\$820,825	\$820,825	\$410,413	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Income	\$2,352,951											
Net Income	-\$97,244											
Fuzzy Seed Produced for Seed - tons	2974								1400	1500	74	
Seed for Planting Processed - tons	1719	150							250	250	550	569
Cost of Purchase of Fuzzy Seed from Growers	\$743,500								\$350,000	\$375,000	\$18,500	
Company Manager	\$12,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
Office Secretary & Bookkeeper	\$4,200	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350
Cotton Seed Specialist	\$4,800	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400
employees @ \$150/month	\$10,800	\$1,800	\$1,800	\$300	\$150	\$150	\$150	\$150	\$450	\$1,800	\$1,800	\$1,800
Taxes on Employees Payroll	\$8,268	\$923	\$572	\$533	\$494	\$494	\$494	\$494	\$572	\$923	\$923	\$923
Driver, Car and Fuel	\$12,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
Cost of Acid, Soap, Neutralizer & Fungicide per ton of Fuzzy Seed	\$343,800	\$30,000								\$50,000	\$110,000	\$113,800
Compressed Natural Gas	\$70,823	\$6,180								\$10,300	\$22,660	\$23,443
Electric	\$14,446	\$1,230	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$2,050	\$4,510	\$4,666
Bags	\$110,950										\$110,950	
Elite seed import	\$495,579	\$495,579										
Royalty fees for production seed	\$275,445	\$110,178	\$110,178	\$55,089								
field insp growing	\$5,400			\$900	\$900	\$900	\$900	\$900	\$900	\$900		
gov inspection costs	\$1,000			\$900	\$900	\$900	\$900	\$900	\$900	\$900		
Total Marketing Costs @ 2% income	\$500	\$200	\$50	\$300	\$300	\$300	\$300	\$250	\$600	\$250	\$250	\$250
demonstration plot	\$4,050		\$2,000	\$300	\$300	\$300	\$300	\$250	\$600	\$250	\$250	\$250
Cost of Cleaning Gin before processing Seed	\$12,000			\$250	\$250	\$250	\$250	\$250	\$250	\$12,000	\$250	\$250
Lease on Factory site	\$3,000			\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250
Lease Payment to MOA	\$0											
Cost Contingency	\$317,634	\$22,989	\$91,744	\$8,988	\$697	\$697	\$697	\$839	\$53,298	\$66,423	\$40,814	\$22,107
Total Expenses	\$2,450,195	\$64,193	\$176,500	\$703,624	\$5,591	\$5,591	\$5,591	\$6,683	\$408,870	\$521,496	\$313,157	\$169,739
Monthly cashflow	-\$64,193	\$644,325	\$117,202	\$341,252	-\$5,591	-\$5,591	-\$5,591	-\$6,683	-\$408,870	-\$521,496	-\$313,157	-\$169,739
Opening value	-\$446,410											
Cummulative cashflow	-\$510,604	\$133,722	\$250,923	\$592,176	\$586,585	\$580,995	\$575,404	\$568,721	\$159,851	-\$361,646	-\$674,803	-\$844,542

Seed Production Cash Flow 2012

	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Annual revenue seed sales												
Sales - tons	2204	881	881	441								
Wholesale Seed Sales Income \$	\$5,398,717	\$2,159,487	\$2,159,487	\$1,079,743								
Retail Seed Sales Income	\$2,809,536	\$1,123,815	\$1,123,815	\$561,907								
Farmer payment for planting seed	\$300,887			\$300,887								
Monthly Income	\$0	\$3,283,301	\$3,283,301	\$1,942,538	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Income	\$8,509,141											
Net Income	\$4,842,118											
Fuzzy Seed Produced for Seed - tons	2974										474	569
Seed for Planting Processed - tons	2419	550							900	1600	200	
Cost of Purchase of Fuzzy Seed from Growers	\$743,500								\$225,000	\$400,000	\$118,500	
Company Manager	\$13,200	\$1,100	\$1,100	\$1,100	\$1,100	\$1,100	\$1,100	\$1,100	\$1,100	\$1,100	\$1,100	\$1,100
Office Secretary & Bookkeeper	\$4,800	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400
Cotton Seed Specialist	\$5,400	\$450	\$450	\$450	\$450	\$450	\$450	\$450	\$450	\$450	\$450	\$450
employees @175	\$13,825	\$2,100	\$700	\$350	\$350	\$175	\$175	\$175	\$350	\$2,450	\$2,450	\$2,450
Taxes on Employees Payroll	\$9,679	\$1,053	\$689	\$598	\$598	\$553	\$553	\$553	\$598	\$1,144	\$1,144	\$1,144
Driver, Car and Fuel	\$12,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
Cost of Acid, Soap, Neutralizer & Fungicide per ton of Fuzzy Seed	\$483,800	\$110,000								\$40,000	\$110,000	\$113,800
Compressed Natural Gas	\$99,663	\$22,660								\$8,240	\$22,660	\$23,443
Electric	\$20,186	\$4,510	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$1,640	\$4,510	\$4,666
Bags	\$120,950									\$120,950		
Purchase of Elite Seed	\$495,579		\$495,579									
Royalty fees for production seed	\$881,423	\$0	\$440,712	\$440,712								
field insp growing	\$6,000			\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
gov inspection costs	\$1,000											
Total Marketing Costs @ 2% income	\$170,183	\$21,700	\$22,835	\$300	\$300	\$300	\$300	\$300	\$300	\$500	\$7,000	\$20,000
demonstration plot	\$4,050		\$2,000	\$300	\$300	\$300	\$300	\$250	\$600			
Cost of Cleaning Gin before processing Seed	\$16,000		\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$16,000	\$250	\$250
Lease on Factory site	\$3,000					\$100,000				\$250		
Lease Payment to MOA	\$100,000											
Cost Contingency	\$462,786	\$24,746	\$144,827	\$66,939	\$832	\$799	\$799	\$942	\$34,627	\$86,681	\$40,382	\$25,267.89
Total Expenses	\$3,667,023	\$197,214	\$189,969	\$513,449	\$6,630	\$106,377	\$6,377	\$7,469	\$265,725	\$680,805	\$309,846	\$193,970
Monthly cashflow		-\$197,214	\$3,093,332	\$2,172,709	-\$6,630	-\$106,377	-\$6,377	-\$7,469	-\$265,725	-\$680,805	-\$309,846	-\$193,970
Opening value	-\$844,542											
Cummulative cashflow		-\$1,041,756	\$2,051,577	\$4,224,286	\$5,653,376	\$5,540,369	\$5,533,992	\$5,526,523	\$5,260,798	\$4,579,993	\$4,270,147	\$4,076,176

Seed Production Cashflow 2013

	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Annual revenue seed sales	3116	1247	1091	467								
Wholesale Seed Sales Income \$	\$7,635,328	\$3,054,131	\$2,672,365	\$1,145,299								
Retail Seed Sales Income	\$3,973,487	\$1,589,395	\$1,390,721	\$596,023								
Farmer payment for planting seed	\$397,171			\$397,171								
Monthly Income	\$1,160,882	\$4,643,526	\$4,063,086	\$2,138,494	0	0	0	0	0	0	0	0
Income	\$12,005,987											
Net Income	\$6,882,075											
Fuzzy Seed Produced for Seed - tons	4206											
Seed for Planting Processed - tons	3100	550							2006	2100	100	900
Cost of Purchase of Fuzzy Seed from Growers	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150	\$501,500	\$525,000	\$25,000	\$1,150
Company Manager	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$1,150	\$500	\$1,150	\$500
Office Secretary & Bookkeeper	\$6,000	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500
Cotton Seed Specialist	\$16,800	\$2,800	\$800	\$400	\$200	\$200	\$200	\$200	\$600	\$2,800	\$2,800	\$2,800
employees @ \$200/m	\$11,076	\$1,287	\$767	\$663	\$611	\$611	\$611	\$611	\$715	\$1,287	\$1,287	\$1,287
Taxes on Employees Payroll	\$13,800	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150
Driver, Car and Fuel	\$620,000	\$110,000								\$50,000	\$170,000	\$180,000
Cost of Acid, Soap, Neutralizer & Fungicide	\$105,060	\$22,660	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$10,300	\$35,020	\$37,080
Compressed Natural Gas	\$25,770	\$4,510	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$2,050	\$6,970	\$7,380
Electric	\$174,550									\$174,550		
Bags	\$654,165		\$654,165									
Purchase of Elite Seed	\$1,402,407	\$623,292	\$545,381	\$233,735	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
Royalty fees for production seed	\$6,000			\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
field insp growing	\$1,000			\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300
gov inspection costs	\$240,120	\$28,000	\$31,428	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300
Total Marketing Costs @ 2% income demonstration plot	\$4,050		\$2,000	\$300	\$300	\$300	\$300	\$250	\$250	\$250	\$250	\$250
Cost of Cleaning Gin before processing Seed	\$16,000	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250
Lease on Factory site	\$3,000											
Lease Payment to MOA	\$100,000											
Cost Contingency	\$652,815	\$25,884	\$119,677	\$35,962	\$902	\$864	\$864	\$864	\$76,210	\$115,468	\$38,157	\$38,527
Total Expenses	\$5,123,912	\$198,691	\$1,423,824	\$275,960	\$7,165	\$106,875	\$6,875	\$7,968	\$584,525	\$901,505	\$292,784	\$295,624
Monthly cashflow	\$962,191	\$3,725,750	\$2,639,262	\$1,862,534	-\$1,165	-\$106,875	-\$6,875	-\$7,968	-\$584,525	-\$901,505	-\$292,784	-\$295,624
Opening value	4076176											
Cummulative cashflow	\$5,038,367	\$8,764,117	\$11,403,379	\$13,265,913	\$13,258,748	\$13,151,873	\$13,144,998	\$13,137,030	\$12,552,505	\$11,651,000	\$11,358,217	\$11,062,593

Seed Production Cashflow 2014

	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Annual revenue seed sales	2833	1133	992	425								
Wholesale Seed Sales Income \$	\$6,941,208	\$2,776,483	\$2,429,423	\$1,041,181								
Retail Seed Sales Income	\$3,612,261	\$1,444,904	\$1,264,291	\$541,839								
Farmer payment for planting seed	\$361,065			\$361,065								
Monthly Income	\$1,055,347	\$4,221,388	\$3,693,714	\$1,944,085	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Income \$10,914,534												
Net income \$6,347,170												
Fuzzy Seed Produced for Seed - tons	3824								1900	1850	74	450
Seed for Planting Processed - tons	2541	700								150	450	
Cost of Purchase of Fuzzy Seed from Growers @ \$250/ton	\$937,500	\$1,180	\$1,180	\$1,180	\$1,180	\$1,180	\$1,180	\$1,180	\$475,000	\$462,500	\$1,180	\$1,180
Company Manager	\$14,160	\$600	\$600	\$600	\$600	\$600	\$600	\$600	\$600	\$600	\$600	\$600
Office Secretary & Bookkeeper	\$7,200	\$530	\$530	\$530	\$530	\$530	\$530	\$530	\$530	\$530	\$530	\$530
Seed engineer	\$6,360	\$2,800	\$2,800	\$2,800	\$2,800	\$2,800	\$2,800	\$2,800	\$2,800	\$2,800	\$2,800	\$2,800
employees @ \$200	\$16,800	\$1,329	\$1,329	\$1,329	\$1,329	\$1,329	\$1,329	\$1,329	\$1,329	\$1,329	\$1,329	\$1,329
Taxes on Employees Payroll	\$11,575	\$1,200	\$1,200	\$1,200	\$1,200	\$1,200	\$1,200	\$1,200	\$1,200	\$1,200	\$1,200	\$1,200
Driver, Car and Fuel	\$14,400											
Cost of Acid, Soap, Neutralizer & Fungicide	\$508,200	\$158,200	\$140,000							\$30,000	\$90,000	\$90,000
Compressed Natural Gas	\$104,689	\$32,589	\$28,840							\$6,180	\$18,540	\$18,540
Electric	\$21,256	\$6,486	\$5,740	\$60	\$60	\$60	\$60	\$60	\$60	\$1,230	\$3,690	\$3,690
Bags	\$127,050									\$127,050		
Purchase of Elite Seed	\$594,695	\$566,629	\$594,695	\$212,486								
Royalty fees for production seed	\$1,274,916		\$495,801	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$500	\$10,000	\$25,000
field insp growing	\$6,000											
gov inspection costs	\$1,000											
Total Marketing Costs @ 2% income	\$218,291	\$30,000	\$31,428	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300
demonstration plot	\$4,050		\$2,000	\$300	\$300	\$300	\$300	\$250	\$600	\$250	\$250	\$250
Cost of Cleaning Gin before processing Seed	\$16,000	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$16,000	\$250	\$250
Lease on Factory site	\$3,000					\$100,000				\$250		
Lease Payment to MOA	\$100,000											
Cost Contingency	\$580,221	\$34,937	\$116,827	\$32,814	\$941	\$903	\$903	\$1,046	\$72,274	\$95,265	\$19,480	\$21,730
Total Expenses	\$4,567,363	\$268,101	\$895,925	\$251,825	\$7,466	\$107,176	\$7,176	\$8,268	\$554,351	\$746,613	\$149,599	\$166,849
Monthly cashflow	\$787,246	\$3,325,463	\$2,394,996	\$1,692,281	-\$7,466	-\$107,176	-\$7,176	-\$8,268	-\$554,351	-\$746,613	-\$149,599	-\$166,849
Opening value \$11,062,593												
Cummulative cashflow	\$11,849,838	\$15,175,301	\$17,570,297	\$19,262,558	\$19,255,092	\$19,147,916	\$19,140,740	\$19,132,472	\$18,578,121	\$17,831,508	\$17,681,909	\$17,515,060

Assumptions for Budget

Percent of Seed Sold Wholesale	70%
Percent of Seed sold Retail	30%
Cost of Fuzzy Seed Purchased from Farmers/Ton	\$250
Cost of Acid, Soap, Neutralizer & Fungicide per ton of Fuzzy Seed	\$200
Cost of Bags - each	\$1.25
Pallets - for moving & storing processed seed	\$5.00
Compressed Natural Gas Usage/Ton	200
CHG cost/cubic meter	\$0.206
KWH Used per Ton of Fuzzy Seed	200
Cost/KWH	\$0.041
Royalty Fees for production seed/kg	\$0.5
Wholesale value of seed	\$3.50
Retail value of seed	\$4.25
Lease Payment to MOA (from 2012)	\$100,000
Cost Contingency based on Expenses - less Lease Payment to MOA	15%

Calculations for Parent Seed Propagation

	2010	2011	2012	2013	2014
Area/% of Hectors Planted to HQ Seed*		10%	40%	60%	60%
Seed Required - kg/Hector		35	35	33	30
Total High Quality Seed Needed for Planting the Following Year (tons)	267	1,070	1,513	1,375	1,375
Fuzzy Cotton Needed to Process Needed Seed for Planting - 17% Waste	308	1,289	1,823	1,657	1,657
Hectors Needed to Propagate Needed Fuzzy Seed - yield = 2.5 t/h; Fuzzy Seed = 45% of Seed Cotton	274	1,145	1,620	1,473	1,473
Parent Seed Obtained from Domestic Seed Development Organizations or International Seed Companies (Kg)	8,225	34,365	48,601	41,238	41,238
Cost of Parent Seed @ \$7/kg	\$57,574	\$240,553	\$340,210	\$288,663	\$288,663
*Hectors of Cotton in Sugd Oblast	76,400				

Calculations of Cost of Cleaning Gins for Seed Processing

	Number of Gins	Number of Varieties Grown	Total Number of "Cleanings"	Cost Per Cleaning	Total Cost Per Year
Year "2010"	1	3	3	\$2,000	\$6,000
Year "2011"	2	3	6	\$2,000	\$12,000
Year "2012"	2	4	8	\$2,000	\$16,000
Year "2013"	2	4	8	\$2,000	\$16,000
Year "2014"	2	4	8	\$2,000	\$16,000

1) Use of high quality processed seed is staged to increase over 4 years to 80 percent. It is estimated that due to poor soils and a lack of irrigation water, that increases above the 80 percent level are questionable.

2) Farmers accustomed to planting processed seed use seeding rates of 15 kg to 23 kg per hector. Higher rates have been budgeted because it will take farmers several years to learn about the germination characteristics, soil preparation and the planting of high quality seed. As farmers learn, seeding rates will gradually decline.

It is recognized that it is likely that yields will be significantly higher than this because farmers with better quality soil and those that have demonstrated better management will be selected to propagate seed.

Implementation Budget

	<u>Sugd Oblast: Capacity = 1.0 ton/hr</u>			<u>Khatlon Oblast: Capacity = 1.5 ton/hr</u>			
	<u>Quantity</u>	<u>Unit Cost</u>	<u>Amount</u>	<u>Quantity</u>	<u>Unit Cost</u>	<u>Amount</u>	
<u>Equipment Purchase Tender</u>							
Purchase Equipment including installation, management training for first 30 days of operation			\$930,747			\$930,748	
Expand Equipment to 1.5 ton/hr capacity						\$28,000	
Tank for Compressed Natural Gas	1	\$31,000	\$31,000	1	\$31,000	\$31,000	
Generator 380V200kw	1	\$33,000	\$33,000	1	\$33,000	\$33,000	
Installation of Generator	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
Skid-type 1 ton loader - equipped to use GNG	1	\$35,000	\$35,000	1	\$35,000	\$35,000	
Freight	9	\$9,500	\$85,500	10	\$9,500	\$95,000	
Extended management training	2	\$12,000	\$24,000	2	\$12,000	\$24,000	
Total Equipment Tender			\$1,140,247			\$1,177,748	
<u>Civil Works</u>			<u>Amount</u>			<u>Amount</u>	
Preparation of Building for Equipment			\$50,000			\$54,000	
Storage Bins for Fuzzy Seed	4	\$10,000	\$40,000	5	\$10,000	\$50,000	
Equipping Office; desks, computers, etc.			\$12,000			\$12,000	
Total Civil Works			\$102,000			\$116,000	
<u>Technical Assistance</u>							
Due Dilligence needed to select partner			\$6,000			\$6,000	
Legal Council			\$21,000			\$21,000	
Direct related fees and advertising costs			\$4,000			\$4,000	
Country Ground and Air Transportation			\$20,000			\$20,000	
Communications			\$5,000			\$5,000	
Supplies, copy services, printing			\$1,600			\$1,600	
Temporary Secretarial Services			\$500			\$500	
Pre-Engineering, Design and Construction			\$5,000			\$5,000	
Seed Sector Specialist to build linkages between farmers company and international seed suppliers; prepare quality assurance system and program manual	4.5	\$13,740	\$61,830	4.5	\$13,740	\$61,830	
Per diem	\$101	135	\$13,635	\$101	135	\$13,635	\$90,750
Travel - international			\$4,060			\$4,060	
Travel - regional	4.5	\$1,500	\$6,750	4.5	\$1,500	\$6,750	
Communications	4.5	\$300	\$1,350	4.5	\$300	\$1,350	
Visa			\$200			\$200	
Interpreter - Translator	4.5	\$650	\$2,925	4.5	\$650	\$2,925	
Legal Specialist - Tajik National to assist with contractual matters	2	\$1,000	\$2,000	2	\$1,000	\$2,000	
Contingency	10%		\$15,585	10%		\$15,585	
Total			\$171,435	Total		\$171,435	

Financial Summary

	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
Income		\$1,142,115	\$6,227,182	\$5,297,880	\$5,297,880
Expenses	\$276,335	\$1,191,278	\$2,385,172	\$2,385,144	\$2,388,917
Year's Cash Flow	-\$241,380	-\$49,163	\$3,842,010	\$2,912,736	\$2,908,963
Cummulative Cash Flow	-\$241,380	-\$290,543	\$3,551,467	\$6,464,203	\$9,373,166

Comparing Capacities of 4 Different Sizes of Seed Processing Equipment

	Days in Month	Hours of work - 10 hour work days	Hours of work - 12 hour work days	Hours of work - 18 hour work days
November	30	300	360	540
December	31	310	372	558
January	31	310	372	558
February	28	280	336	504
Total Days	120	1200	1440	2160
.5 ton/hr Processed Fuzzy Seed*		600	720	1080
1.0 ton/hr Processed Fuzzy Seed*		1200	1440	2160
1.5 ton/hr Processed Fuzzy Seed*		1800	2160	3240
2.0 ton/hr Processed Fuzzy Seed*		2400	2880	4320
<u>Fuzzy Seed to Be Processed</u>		<u>Sugd</u>		
2010		308		
2011		1289		
2012		1823		
2013		1657		
2014		1657		

*Assumes no days off for holidays or time lost due to power outages.

Analysis: By the 2nd year of operation, the .5 ton per hour equipment will not be able to process the amount of fuzzy cotton needed without working more than 12 hour days and by the 3rd year of operation operating the plant 18 hours will not be sufficient to process the amount of fuzzy seed needed.

Even equipment designed to process 1 ton per hour will need to work 18 hours per day by the 3rd year to process all of the seed needing processing. Eighteen hours of operation is amounts to 2 shifts each working 10 hours with 1 hour off for lunch.

Equipment rated at 1.5 tons per hour will be able to process the seed in 12 hour work days through the 5 years of the project.

2.0 ton per hour equipment has excess capacity through the 5 project year period.

Seed Production cash flow 2010

	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Annual revenue seed sales												
Wholesale Seed Sales Income	0											
Retail Seed Sales Income	0											
Farmer payment for planting seed	34956											
Monthly Total Income	0	0	0	\$34,956	0	0	0	0	0	0	0	0
Income				\$34,956								
Net Income				-\$241,380								

	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Expenses												
Fuzzy Seed Produced for Seed - tons	308								75	220	13	100
Seed for Planting Processed - tons	100											
Cost of Purchase of Fuzzy Seed from Growers	\$77,000								\$18,750	\$55,000	\$3,250	\$1,000
Company Manager	\$11,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
Office Secretary & Bookkeeper	\$3,850	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350
Cotton Seed Specialist	\$4,000	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400
employees @\$150 / month	\$3,600								\$600	\$600	\$600	\$1,800
Taxes on Employees Payroll	\$5,837	\$351	\$455	\$455	\$455	\$455	\$455	\$455	\$611	\$611	\$611	\$923
Driver, Car and Fuel	\$11,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
Cost of Acid, Soap, Neutralizer & Fungicide per ton of Fuzzy Seed	\$24,096										\$500.00	\$24,096
Pallets - for moving & storing seed	\$500											\$4,120
Compressed Natural Gas	\$4,990											\$820
Electric	\$870	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$13,370
Bags	\$13,370											
Elite seed import	\$57,574											
Royalty Fees for reproduction seed	\$0											
field insp growing	\$7,000	\$700	\$700	\$700	\$700	\$700	\$700	\$700	\$700	\$700	\$700	\$700
gov inspection costs	\$600											
Total Marketing Costs	\$3,400								\$800	\$800	\$800	\$1,000
demonstration plot	\$4,050	\$2,000	\$300	\$300	\$300	\$300	\$300	\$250	\$600			
Cost of Cleaning Gin before processing Seed	\$6,000								\$6,000			
Lease on Factory site	\$2,750	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250
Rental Payment to MOA	\$0											
Cost Contingency	\$34,848	\$413	\$9,529	\$638	\$638	\$638	\$638	\$721	\$3,729	\$9,077	\$1,389	\$7,437
Total Expenses	\$276,335	\$0	\$3,414	\$73,309	\$5,143	\$5,143	\$5,143	\$5,776	\$28,840	\$75,838	\$10,900	\$57,266
Monthly cashflow	\$0	-\$3,414	-\$73,309	\$29,813	-\$5,143	-\$5,143	-\$5,143	-\$5,776	-\$28,840	-\$75,838	-\$10,900	-\$57,266
Cummulative expenses	\$0	-\$3,414	-\$76,722	-\$46,910	-\$52,053	-\$57,196	-\$62,340	-\$68,115	-\$96,955	-\$172,793	-\$183,693	-\$240,960

Appendix A - Seed Production cash flow

	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Annual revenue seed sales												
Sales - tons		107	107	53								
Wholesale Seed Sales Income \$		\$262,052	\$262,052	\$131,026								
Retail Seed Sales Income		\$136,374	\$136,374	\$68,187								
Farmer payment for planting seed				\$146,050								
Monthly Income	\$0	\$398,426	\$398,426	\$199,213	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Income	\$1,142,115											
Net Income	-\$49,163											
Fuzzy Seed Produced for Seed - tons		1289										
Seed for Planting Processed - tons		867										
Cost of Purchase of Fuzzy Seed from Growers		160	7						500	700	89	275
Company Manager	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$125,000	\$175,000	\$22,250	\$1,000
Office Secretary & Bookkeeper	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$1,000	\$1,000	\$1,000	\$1,000
Cotton Seed Specialist	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$350	\$350	\$350	\$350
employees @ \$150/month	\$1,800	\$1,800	\$450	\$300	\$150	\$150	\$150	\$150	\$400	\$400	\$400	\$400
Taxes on Employees Payroll	\$8,268	\$923	\$572	\$533	\$494	\$494	\$494	\$494	\$450	\$1,800	\$1,800	\$1,800
Driver, Car and Fuel	\$12,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$572	\$923	\$923	\$923
Cost of Acid, Soap, Neutralizer & Fungicide per ton of Fuzzy Seed	\$173,400	\$32,000	\$1,400						\$1,000	\$1,000	\$1,000	\$1,000
Pallets - for moving & storing seed	\$750								\$30,000	\$30,000	\$55,000	\$55,000
Compressed Natural Gas	\$35,720	\$6,592	\$288						\$750	\$750	\$11,330	\$11,330
Electric	\$7,459	\$1,312	\$57	\$50	\$50	\$50	\$50	\$50	\$50	\$1,230	\$2,255	\$2,255
Bags	\$46,000								\$50	\$1,230	\$46,000	\$46,000
Elite seed import	\$240,553	\$53,480	\$240,553						\$50	\$50	\$50	\$50
Royalty fees for production seed	\$133,700	\$53,480	\$53,480	\$26,740					\$900	\$900	\$900	\$900
field insp growing	\$5,400			\$900	\$900	\$900	\$900	\$900	\$900	\$900	\$900	\$900
gov inspection costs	\$1,000								\$1,000	\$1,000	\$1,000	\$1,000
Total Marketing Costs @ 2% income demonstration plot	\$4,050	\$250	\$200	\$300	\$300	\$300	\$300	\$250	\$600	\$250	\$250	\$250
Cost of Cleaning Gin before processing Seed	\$12,000								\$600	\$600	\$600	\$600
Lease on Factory site	\$3,000	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250
Lease Payment to MOA	\$0								\$250	\$250	\$250	\$250
Cost Contingency	\$153,428	\$6,844	\$9,135	\$4,736	\$697	\$697	\$697	\$697	\$19,548	\$32,795	\$21,346	\$11,109
Total Expenses	\$1,191,278	\$52,721	\$70,284	\$36,559	\$5,591	\$5,591	\$5,591	\$6,683	\$150,120	\$263,678	\$163,904	\$85,417
Monthly cashflow		-\$52,721	\$328,142	\$162,654	-\$5,591	-\$5,591	-\$5,591	-\$6,683	-\$150,120	-\$263,678	-\$163,904	-\$85,417
Opening value	-\$240,960											
Cummulative cashflow		-\$293,681	\$34,462	\$250,402	\$244,811	\$239,220	\$233,630	\$226,947	\$76,826	-\$186,852	-\$350,756	-\$436,172

Seed Production cash flow 2012

	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Annual revenue seed sales												
Sales - tons	1513	605	605	303								
Wholesale Seed Sales Income \$	\$3,706,164	\$1,482,466	\$1,482,466	\$741,233								
Retail Seed Sales Income	\$2,314,462	\$771,487	\$771,487	\$771,487								
Farmer payment for planting seed	\$206,556			\$206,556								
Monthly Income	\$0	\$2,253,953	\$2,253,953	\$1,719,276	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Income	\$6,227,182											
Net Income	\$3,842,010											
Fuzzy Seed Produced for Seed - tons	1823								850	900	73	
Seed for Planting Processed - tons	1230	120								160	350	350
Cost of Purchase of Fuzzy Seed from Growers	\$455,750	\$1,100	\$1,100	\$1,100	\$1,100	\$1,100	\$1,100	\$1,100	\$212,500	\$225,000	\$18,250	
Company Manager	\$13,200	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$1,100
Office Secretary & Bookkeeper	\$4,800	\$450	\$450	\$450	\$450	\$450	\$450	\$450	\$450	\$450	\$450	\$400
Cotton Seed Specialist	\$5,400	\$2,100	\$700	\$350	\$175	\$350	\$175	\$175	\$350	\$2,100	\$2,100	\$450
employees @175	\$12,775	\$1,053	\$689	\$598	\$553	\$553	\$553	\$553	\$598	\$1,053	\$1,053	\$2,100
Taxes on Employees Payroll	\$9,406	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,053
Driver, Car and Fuel	\$12,000	\$24,000										\$1,000
Cost of Acid, Soap, Neutralizer & Fungicide per ton of Fuzzy Seed	\$50,000	\$10,300	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$70,000
Pallets - for moving & storing seed	\$50,676	\$984	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$14,420
Compressed Natural Gas	\$10,436	\$340,210	\$302,544	\$302,544	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$2,870
Electric	\$68,750	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$68,750
Bags	\$340,210											
Purchase of Elite Seed	\$605,088											
Royalty fees for production seed	\$6,000	\$21,700	\$22,835	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$7,000
field insp growing	\$1,000	\$2,000	\$2,000	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$20,000
Total Marketing Costs @ 2% income	\$124,544	\$28,000	\$28,000	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$20,000
demonstration plot	\$4,050											
Cost of Cleaning Gin before processing Seed	\$16,000	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250
Lease on Factory site	\$3,000	\$8,660	\$100,797	\$46,214	\$832	\$799	\$799	\$799	\$942	\$32,752	\$51,114	\$17,796
Lease Payment to MOA	\$100,000	\$66,641	\$773,025	\$354,556	\$6,630	\$106,377	\$6,377	\$7,469	\$251,350	\$408,121	\$136,689	\$130,652
Cost Contingency	\$295,588	\$111,171	\$2,187,312	\$1,364,720	-\$6,630	-\$106,377	-\$6,377	-\$7,469	-\$251,350	-\$408,121	-\$136,689	-\$130,652
Total Expenses	\$2,385,172	\$14,468	\$111,171	\$111,171	\$111,171	\$111,171	\$111,171	\$111,171	\$111,171	\$111,171	\$111,171	\$111,171
Monthly cashflow	\$4,361,712	\$4,361,712	\$4,361,712	\$4,361,712	\$4,361,712	\$4,361,712	\$4,361,712	\$4,361,712	\$4,361,712	\$4,361,712	\$4,361,712	\$4,361,712
Opening value	-\$436,172											
Cummulative cashflow	-\$547,343	\$1,639,969	\$3,120,897	\$4,485,617	\$4,478,987	\$4,372,610	\$4,366,234	\$4,358,764	\$4,107,414	\$3,699,294	\$3,562,604	\$3,431,952

Seed Production Cash Flow 2013

	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Annual revenue seed sales												
sales ton	1375	550	550	275								
Wholesale Seed Sales Income \$	\$3,369,240	\$1,347,696	\$1,347,696	\$673,848								
Retail Seed Sales Income	\$1,753,380	\$701,352	\$701,352	\$350,676								
Farmer payment for planting seed	\$175,260			\$175,260								
Monthly Income	0	\$2,049,048	\$2,049,048	\$1,199,784	0	0	0	0	0	0	0	0
Income	\$5,297,850											
Net Income	\$2,912,736											

	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Fuzzy Seed Produced for Seed - tons	1657											
Seed for Planting Processed - tons	1365											
Cost of Purchase of Fuzzy Seed from Growers	\$414,250	225							750	850	57	350
Company Manager	\$13,800	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150	\$187,500	\$212,500	\$14,250	\$1,150
Office Secretary & Bookkeeper	\$6,000	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$1,150	\$1,150	\$1,150	\$1,150
Colton Seed Specialist	\$6,000	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500
employees @ \$200/m	\$14,800	\$2,400	\$800	\$400	\$400	\$200	\$200	\$200	\$600	\$2,400	\$2,400	\$2,400
Taxes on Employees Payroll	\$10,556	\$1,183	\$767	\$663	\$663	\$611	\$611	\$611	\$715	\$1,183	\$1,183	\$1,183
Driver, Car and Fuel	\$13,800	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150	\$1,150
Cost of Acid, Soap, Neutralizer & Fungicide	\$273,000	\$45,000								\$30,000	\$70,000	\$70,000
Pallets - for moving & storing seed	\$500									\$500		
Compressed Natural Gas	\$44,290	\$9,270								\$6,180	\$14,420	\$14,420
Electric	\$11,543	\$1,845	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$1,230	\$2,870	\$2,870
Bags	\$68,750									\$68,750		
Purchase of Elite Seed	\$288,663											
Royalty fees for production seed	\$687,600	\$275,040	\$275,040	\$137,520								
field insp growing	\$6,000											
gov inspection costs	\$1,000											
Total Marketing Costs @ 2% income	\$105,958	\$30,000	\$31,428	\$300	\$300	\$300	\$300	\$300	\$300	\$500	\$10,000	\$25,000
demonstration plot	\$4,050		\$2,000	\$300	\$300	\$300	\$300	\$250	\$600			
Cost of Cleaning Gin before processing Seed	\$16,000									\$16,000		
Lease on Factory site	\$3,000									\$250	\$250	\$250
Lease Payment to MOA	\$100,000	\$250	\$250	\$250	\$250	\$100,000	\$250	\$250	\$250	\$250	\$250	\$250
Cost Contingency	\$295,584	\$55,206	\$90,307	\$21,530	\$902	\$864	\$864	\$1,007	\$29,110	\$48,981	\$17,763	\$17,876
Total Expenses	\$2,385,144	\$423,494	\$692,605	\$165,313	\$7,165	\$106,875	\$6,875	\$7,968	\$223,425	\$391,774	\$136,436	\$137,299
Monthly cashflow	-\$123,540	\$1,625,554	\$1,356,443	\$1,034,471	-\$7,165	-\$106,875	-\$6,875	-\$7,968	-\$223,425	-\$391,774	-\$136,436	-\$137,299
Opening value	3431952											
Cummulative cashflow	\$3,308,412	\$4,933,966	\$6,290,409	\$7,324,880	\$7,317,715	\$7,210,840	\$7,203,964	\$7,195,997	\$6,972,572	\$6,580,798	\$6,444,361	\$6,307,062

Seed Production Cashflow 2014

	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Annual revenue seed sales												
sales ton	1375	550	550	275								
Wholesale Seed Sales Income \$	\$3,369,240	\$1,347,696	\$1,347,696	\$673,848								
Retail Seed Sales Income	\$1,753,380	\$701,352	\$701,352	\$350,676								
Farmer payment for planting seed	\$175,260			\$175,260								
Monthly income	\$0	\$2,049,048	\$2,049,048	\$1,199,784	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Income	\$5,297,880											
Net income	\$2,908,963											
Fuzzy Seed Produced for Seed - tons	1657											
Seed for Planting Processed - tons	1375	225							750	850	57	350
Cost of Purchase of Fuzzy Seed from Growers @ \$250/ton	\$400,000								\$187,500	\$212,500		
Company Manager	\$14,160	\$1,180	\$1,180	\$1,180	\$1,180	\$1,180	\$1,180	\$1,180	\$1,180	\$1,180	\$1,180	\$1,180
Office Secretary & Bookkeeper	\$7,200	\$600	\$600	\$600	\$600	\$600	\$600	\$600	\$600	\$600	\$600	\$600
Seed engineer	\$6,360	\$530	\$530	\$530	\$530	\$530	\$530	\$530	\$530	\$530	\$530	\$530
employees @ \$200	\$14,800	\$2,400	\$800	\$400	\$200	\$200	\$200	\$200	\$600	\$2,400	\$2,400	\$2,400
Taxes on Employees Payroll	\$11,055	\$1,225	\$809	\$705	\$705	\$653	\$653	\$653	\$757	\$1,225	\$1,225	\$1,225
Driver, Car and Fuel	\$14,400	\$1,200	\$1,200	\$1,200	\$1,200	\$1,200	\$1,200	\$1,200	\$1,200	\$1,200	\$1,200	\$1,200
Cost of Acid, Soap, Neutralizer & Fungicide	\$275,000	\$45,000							\$30,000	\$70,000	\$70,000	\$70,000
Pallets - for moving & storing seed	\$500								\$500	\$500	\$500	\$500
Compressed Natural Gas	\$56,650	\$9,270							\$6,180	\$6,180	\$14,420	\$14,420
Electric	\$11,695	\$1,845	\$60	\$60	\$60	\$60	\$60	\$60	\$60	\$1,230	\$2,870	\$2,870
Bags	\$288,663									\$68,750		
Purchase of Elite Seed	\$687,600	\$275,040	\$288,663	\$137,520								
Royalty fees for production seed	\$6,000											
field insp growing	\$1,000								\$1,000	\$1,000		
gov inspection costs	\$105,958	\$30,000	\$31,428	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$10,000	\$25,000
Total Marketing Costs @ 2% income demonstration plot	\$4,050		\$2,000	\$300	\$300	\$300	\$300	\$250	\$600	\$500		
Cost of Cleaning Gin before processing Seed	\$16,000	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$16,000	\$250	\$250
Lease on Factory site	\$3,000									\$250		
Lease Payment to MOA	\$100,000									\$250		
Cost Contingency	\$296,076	\$55,243	\$90,346	\$21,569	\$941	\$100,000	\$903	\$1,046	\$29,149	\$49,019	\$250	\$250
Total Expenses	\$2,388,917	\$423,783	\$692,906	\$165,614	\$7,466	\$903	\$903	\$1,046	\$29,149	\$49,019	\$15,664	\$17,914
Monthly cashflow	-\$126,698	\$1,625,265	\$1,356,142	\$1,034,170	-\$7,466	\$107,176	\$7,176	\$8,268	\$223,726	\$392,064	\$120,338	\$137,588
Opening value	\$6,307,062											
Cummulative cashflow	\$6,180,364	\$7,805,629	\$9,161,771	\$10,195,941	\$10,188,475	\$10,081,299	\$10,074,123	\$10,065,855	\$9,842,129	\$9,450,066	\$9,329,727	\$9,192,139

Appendix C. Summary of Farmer Survey and Interviews in Sugd & Khatlon Oblasts*

1. Meetings were conducted in Zafarabad, Spitamen, Mastcha, Kanibadam and Asht districts with about 200 farmers participating for the period October 2008. The aim of the meetings was to determine the opinion of farmers on creating and being shareholders in a Joint Stock Company for seed and cotton processing.

Profile

2. The average size of farms among those farmers surveyed was 128 ha (data from surveyed farms). The survey was conducted among small and large farms that reported irrigated land ranging from 1, 5 ha to 4275 ha. The survey revealed that one land sharer has on the average 1.7 ha of land according to the land certificate. The average number of land shareholders according to the certificate is 117 people (57 men and 60 women). The average number of working members on the farms is 58 people (23 men and 35 women). The average number of shareholders on the surveyed Farms is shown in Table 1 below:

Table 1 Summary of Farm Workers

	<u>Average Total</u>	<u>Average No. Men</u>	<u>Average No. Women</u>
Recorded in Certificate	117	57	60
Those who really working from the recorded data in Certificate.	58	23	35
Total really working farmers (together with hired workers)	65	26	39

Farm Labor

3. Most of the farm labor is done by women since more women are available. The migration survey showed that 89% of surveyed people believe that this year, compared to last year, more men migrated abroad for work.

Cotton Production

4. The survey revealed that the area planted to cotton area is becoming smaller on a year-to-year basis as farmers are planting other crops. Farmers have increased the area planted to other crop because of low profits from growing cotton. This past year cotton planting area decreased 46 percent of total production to 37 percent. Farmers say that the main reasons for the decrease in cotton plantings is unreliable water supplies, poor quality seeds and fertilizers, lack of agricultural equipment and fuel. Today, farmers reported, only 30% of agriculture equipment is available compared to 1991. This complicates work for farmers as cotton production requires the extensive use of equipment. Below is a table, where the average planting area for each crop is indicated according to surveyed farms.

Table 2 Percent of Total Hectare Planted

<u>Crop</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>
Cotton	46%	37%	35%
Wheat	12%	13%	11%
Lucerne	6%	7%	8%
Cereals	12%	16%	16%
Onion	2%	2%	2%
Other	22%	26%	27%
<u>Total Hectares Planted</u>	135.3	119.7	116.4

5. Most farmers (more than 97%) are interested in purchasing good quality cotton seed because they have experienced problems caused by poor quality seed. Many dekhon farms in Sugd Oblast are growing the old variety "Fergana 3." This year 71 % of surveyed farmers planted seed from their last year's harvest. Also, 51% of surveyed farmers indicated that they could not buy good quality seeds because neither seed nor financing was available at planting time.

6. Because good quality seed is an important contributor to high yields, about 80 % of surveyed farmers answered that they would pay \$4/kg for seed that had the capacity to improve their yields 25-30 percent. About 77% of surveyed farmers would pay \$5.50/kg for seed that would increase cotton yields 40-45 percent.

Financing

7. This year banks increased financing offered to farms. However, for a number of reasons, there remained farms which were unable to obtain bank credit. These farms were mostly financed by cotton investors and microfinance organizations. Some farms also report being financed by relatives who migrated to Russia for employment. Forty three percent of dekhan farms are self financed and cotton investors provide about 35% of dekhan farm financing. The survey showed, that compared with 2007, this year there is a less financing of farms by investors. This reflects the change to banks for credit which provided about 45%. In 2007, about 61% of Dehkan Farms were financed by investors; this year only 35% were financed by cotton investors. Microfinance organizations provided only about 6% of needed credit in 2007 and 4.5% in 2008.

Table 3 Source of Financing for Farms

	<u>2007</u>	<u>2008</u>
Self financing	42,3%	42,5%
Banks	18,9%	45,0%
Investors	60,7%	35,0%
Micro financing	6,1%	4,5%
Other	12,2%	8,0%

Processing Raw Cotton

8. Eighty three percent of surveyed farmers report that they were free to select the gin to process their raw cotton. Many farmers reported that there is competition between cotton gins. Farmers also believe that their participation in gin ownership would help to improve ginning services.

9. The survey shows that most of the farmers are not satisfied with the quality raw cotton processing. Farmers are also not satisfied with the timeliness of ginning service. Most of the surveyed farmers reported that the processing of their raw cotton was completed after the first of January with some saying processing was not completed until April or May. In table 4 below cotton fiber output and seed output is shown by plants.

Table 4 Selected Gin Reported Fiber and Seed Production

Name of Farms (districts)	Fiber outturn	Seed output
219 " H Abdulov" (Mastcha)	33,1%	54,5%
229"Habib" (Kanibadam)	32,3%	53,7%
231"Pahtai Proletar" (J Rasulov)	33,2%	56,2%
239 "Komron" (B Gafurov)	33%	57,5%
240 " Dehkon" (Spitamen)	32,5%	54,7%
251"Guliston" (Spitamen)	33,5%	56,1%
259"Avaz" (Asht)	33,1%	55,5%
263"Dangin" (Zafarabad)	34,4%	55,6%
267"Amir Shukur" (Mastcha)	32,9%	55,2%
270"Dehkon"(Zafarabad)	33%	53,7%
274"E Boimatova" (Kanibadam)	33,1%	57,1%
282"Pahtai Asht" (Asht)	33%	54,3%
285"Hubjam I K" (Zafarabad)	34,1%	55,9%

10. More than 86% of farmers surveyed would like to process their cotton in a modern plant with honest management and improved quality of processing. They are ready to pay extra for the transportation of their raw cotton in order to have an increase in fiber outturn. They believe this would increase their profits.

Marketing

11. The survey showed that in spite of the difficult economic times, more than 90% of farmers have mobile phones and would like to receive information on marketing through their mobile phones. They also wish to have an opportunity to sell their cotton as fiber through the internet and participate in live cotton auctions with the use of their mobile phones.

12. Information obtains from surveys conducted both last year and this year reported that farmers believe that the few number of cotton buyers is having a negative impact on their profits because of an absence of competition in the marketplace. More than 90 % of farmers would like for there to be an increase in the number of buyers and the further development of honest

competition between gins. About 32% of farmers said that they would like to have more than 5 buyers to bid on their free cotton in 2008.

Needed Services

13. Farmers are interested in an expansion of the technical services that in the past has been provided by ginneries. The following table lists responses from farmers regarding the services for which an expansion is needed.

Table 5 Farmers' Responses on Needed Services

1	Ploughing	64,3%
2	Planting	46,2%
3	Cultivation	41,7%
4	Fertilizer application	49,2%
5	Transport	49,2%
6	Other	4,2%

14. The majority of the farmers, about 87%, are interested in being shareholders of a Joint Stock Company offering ginning or seed processing services. However, 62 % having no financial recourses with which to buy stocks and said that they would need credit for stock purchase.

15. From the results of survey, we can conclude that farmers are interested in owning a share of a seed delinting plant and ginnery. They are very interested in the development of gins that have new technology that will improve outturn and fiber quality. They understand the benefits obtained from planting high quality seeds and would like to have access to this seed for the next years planting in order to improve their yields and increase their profits.

Survey of Large Farms in Sugd and Khatlon Oblasts

16. Fourteen large farms were identified and were interviewed either with face-to-face meetings and with follow-up telephone conversations or by telephone to obtain needed information. .

17. It shows that even though the farms are larger than average and sometimes involved in specialty aspects of cotton production such as ginning or seed propagation, that they have not taken the needed steps to become modern for-profit organizations. None have changed to an internationally accepted accounting system. Most are the remnants of collective farms from the past and have multiples of the number of employees needed for an economically competitive business.

While some seemed to have updated their legal structure in recent years, only closer scrutiny would enable a determination of whether the present structure would be acceptable for the introduction of a modern business such as a cotton seed processing plant. Several do not have working relationships with banks that might present barriers. 18. The abilities and understanding of modern principles of management of almost all of those interviewed is questionable. While a couple seem to have potential, it is obvious that there are also major questions in regards to the companies' status as businesses and with their existing relationships.

Additional Information Obtained from Interviews with Farms in Khatlon Oblast

19. On November 28th and 29th, this consultant visited farms in Kulyab, Vose and Kabodiyon regions. A total of 6 farms were surveyed. The irrigated areas of surveyed farms range from 220 to 2400 ha. The farms which were surveyed differ by size and by the number of shareholders.

20. The consultant met with the leader of the farm Hamadoni, Mr. Zardiev Abdujabbor. The farm was established in 1932 and after reorganization in 2000, was registered in the Ministry of Justice as a production cooperative. The farm is a seed breeding farm with 2000 shareholders, with the area of 2400 ha and has enough experience in the sphere of cotton seed multiplication. Also the farm owns the cotton gin "Zarham." The territory of plant is 22 ha. The average fiber outturn is 33%. The farm manager indicated that the farm is mainly self-financed, but this year they received 3 million somoni credit from Agroinvestbank. They will repay the loan following sale of the processed fiber. From the conversation with leader of farm, we could come to the conclusion, that the farm is well managed and that they have a willingness to cooperate with project.

21. A meeting was held with the leader of the Agriculture Department in Khatlon Oblast, Mr Saidov Saidhomid, who suggested that we meet with farms "Hoja Mumin, Hulbuk and Mahmadaliev which are the larger farms in the district.

22. This consultant met with the leader of the farm "Hoja Mumin" (Vose district), Mr Nematov Mirzodavlat. The Farm was established in 1936 and after reorganization (reform) in 2006 was registered in the Ministry of Justice as a production cooperative. The farm has 680 shareholders and 380 ha of irrigative land mainly for cotton. They said that for several years they can not purchase good quality seeds and plant the same own seeds of last year. The leader was very glad to hear about our project and added that not only Vose district, but the whole Khatlon oblast needs such plant.

23. Further there was a meeting with leader of the farm Hulbuk. This farm was established in 2000 and after reorganization was also registered in the Ministry of Justice as a Production Cooperative. There are 500 shareholders in farm. It is also a seed breeding farm and has 220 ha. The dehkan farm has one gin for cotton processing and the seeds are used for planting. The farm would be able to offer land needed for the seed cleaning plant building.

24. The meeting with the leader of the farm "Avesto" in Kabodiyon district of Khatlon oblast, Mr Abdullaev Rahmatullo, was very interesting and fruitful. The farm, which was established in 1930, was reorganized in 2001 and was registered in the Ministry of Justice as a Production Cooperative. The farm is a seed breeding Farm with 2400 shareholders and 2100 ha of land of which 1600 ha is planted to cotton. Since they had experience with seed propagation, this year he obtained 12 tons of Turkish seeds "Flora" and "Karmen" from the Turkish company "Bayer." These seeds were planted on 400ha of land. From my evaluation and observation of cotton condition, I can say, that this farm does an above average job of growing cotton. The Farm also owns the gin Oriyon which potentially could be an asset to the new seed processing plant in Khatlon oblast.

25. During conversation, the farm manager reported that the farm is financed by investor XXI Century and for the current moment has debt of \$2,000,000, of which they plan to repay \$1,000,000 when the crops in storage are sold. The farm manager said that the farm was preparing documents and had planned to start doing their financing business with "Agroinvestbank." However, the National Bank instructed "Agroinvestbank" in Kabodiyon district

to not give credit. According to the farm manager, the manager of “Agroinvestbank” in Kabodiyan district explained the reason and said that he didn’t want to loose his job.

26. At this time, only about 60 to 65 percent of the cotton has been harvested. The remainder is rotting in the field because the “cotton investor” had refused credit with which to hire workers to pick the cotton. According to the farm manager, the average yield this year was about 24 centners per hectare, but there still is about 1000 tons in the field. In addition, during the last three months the investor did not provide the diesel fuel needed for transporting the cotton to the gin for processing. Even though the government decreed that starting in 2008 farmers should be able to receive bank financing, farms in Kabodiyan, Shahrituz, Kolhozabad and N. Husravv districts needed to continue working with their traditional cotton investor. As in past years, farmers reported that inputs purchased through the cotton investor were priced very high and farmers were required to deliver their raw cotton to gins owned by the cotton investor, XXI Century. At the end of conversation, the farm manager expressed his thanks and added that he wishes success for the ADB work in Khatlon Oblast. He added that Khatlon Oblast needs a modern seed processing facility and they are ready to support the project.

27. This consultant also met with the leader of the farm “Bobogulov” in Kabodiyan district, Mr. Bobogulov Muzaffar. The Farm was established in 1923 and was reorganized in 2002 at which time it was registered in the Ministry of Justice as a Production Cooperative. The Farm has 2140 shareholders and 834 ha of land. This year 580 ha was planted to cotton. Each land shareholder has a share of 0, 48 ha of land. The farm is financed by investor «XXI Century». During the conversation, the manager said that he is not satisfied with the quality of seeds and even though he tried, he was unable to purchase high quality seeds this year. The average of the yield this year is 18 centners/ha. They are ready to cooperate with project and purchase high quality seeds.

28. I met also with the leader of the farm «Rudaki» in Kabodiyan district Mr Jumaev Holmon. The Farm was established in 2008 from the lands of DF “Kambarova” and registered in the Ministry of Justice as a Dehkan Farm. The Farm has 861 shareholders. . Total area of Farm is 316 ha and out of it 203 ha is cotton field. The average of yield is about 20 centners/ha. The leader strongly asserted that they are interested in the development of a new seed processing plant.

29. Each surveyed farm has Annual report for 2007 and internal financial controls. Most of the surveyed farms are interested in the project and are also interested in becoming shareholders of a new seed delinting facility and are ready to cooperate.

For details of survey results for the large farms, refer to Attachment 1.

Terms of Reference (TOR) of Consultants

TOR – Construction Engineer

Tasks:

1. Become familiar with the basic requirements of the equipment that will be installed in relation to electric usage, weight and load bearing requirements of the floor on which the equipment is placed.
2. Work with seed processing company management to determine site layout, location of driveways, storage facilities, office, restroom, etc.
3. Develop and file plans to fill requirements of the government of Tajikistan
4. If electric service is already in the structure; verify that the service is adequate to meet the needs of the equipment that will be installed. If new service needs to be acquired, work with electricians to assure the proper placement and capabilities.
5. Identify and chart underground gas and water lines; plan for their utilization in the developed seed processing plant.
6. Provide information to workers installing seed processing equipment.

Deliverables:

1. Develop a comprehensive site plan showing location of buildings, utilities and roads.
2. Prepare needed paperwork to procure needed permits
3. Prepare for management of the seed company a written evaluation of the existing building, floor and electrical capabilities and other utilities.
4. Develop plans for improvements that will be needed, discuss these plans with contractors and supervise the work needed.
5. Develop plans for the construction of the storage bins for fuzzy seed. Discuss these plans with contractors and supervise the work needed.
6. Provide information to workers installing seed processing equipment. Coordinate the work of other contractors, i.e. electricians, with that of the crew installing the processing equipment.

TOR – Cotton Seed Sector Specialist

Tasks:

1. Develop a working knowledge of domestic efforts in Tajikistan in identifying varieties of cotton that demonstrate high performance, domestic varieties that are being developed, and an understanding of the fledgling domestic cotton seed production industry.
2. Introduce the new seed processing company to international cotton seed producing companies. Explore the possible development of business relationships. Gather information on the cost of the seed plus royalties that must be paid.

3. Collaborate with the personnel in the seed company on identifying varieties with which to establish demonstration plots, on the company's seed marketing strategy and on the most effective method of advertising the seed company's products.
4. Collaborate with the legal expert in designing contracts so that they are consistent with similar contracts in other cotton producing countries.
5. Develop an understanding among seed company staff and among farmers propagating seed for the company on factors of importance in the production of quality seed.
6. Orientate the managers and operators of the seed plant so that a "quality first" attitude exists from the collection of the fuzzy seed at the gins to the delivery of the processed seed to the buyers.
7. Help seed company management select gins with which to develop contractual arrangements for the processing of raw cotton that is produced for seed propagation.

Deliverables:

1. Help the management of the seed company become knowledgeable of the international cotton seed business.
2. Develop a good working relationship with the country's Seed Producers Association and its members. Be a representative of the seed company at field days and other special events.
3. Identify 5 varieties that the seed company selects for propagation and help seed company management develop the business relationships needed to secure the elite seed.
4. Identify an additional 5 varieties from domestic and international sources that will be grown in demonstration plots along with the varieties being propagated for comparison and possible future propagation.
5. Develop a "Production Manual on Achieving Top Cotton Seed Quality" manual specific to the conditions in Tajikistan and the seed processing plant including the transport of fuzzy seed, its storage, processing and handling and storage of processed seed. Conduct training for seed company staff and for workers in the seed processing plant.
6. Develop a list of expectations for gins that will be selected to process raw cotton that is produced for seed propagation. Before the ginning season, conduct a training session for gin managers. Along with seed company personnel, monitor the ginning of raw cotton.

TOR – Legal Counsel

Tasks:

1. Study the report material from the desktop study of ways to establish a cotton seed processing business in Tajikistan. Thoroughly understand the economic rationale for the establishment of this business.
2. Conduct additional legal analysis as needed as it pertains to the development of a farmer owned seed processing company.
3. In consultation with the selected farmers group (from those responding to the tender), ADB and PIU, determine the form or basis on which to establish the seed processing company.

4. If the farmer group being granted the tender already represents an existing farmers company, then the legal counsel will analyze alternative courses of action to meet the requirements of the project and interests of the existing company.
5. Conduct regional farmer meetings as needed to meet the legal requirements of forming the company.
6. Work with raion, oblast and national governmental officials informing them of the formation of the farmer owned seed processing company.

Deliverables:

1. Provide all needed juridical advice and consultation in the areas of commercial, civil, land, labor and tax legislation in Tajikistan.
2. Serve as a key member of the team that will be assembled to form the farmer owned seed processing company.
3. Assure that all deadlines are met; all papers filed in a timely manner; and all needed public announcements performed on time which include the following tasks:
 - Define framework and process for determining shareholder qualifications
 - Conduct shareholder pre-formation orientation meetings
 - Collect data on qualified shareholders
 - Assess shareholder qualifications using data collected
 - Determine who will be shareholders, how many shares, and share price (if not defined before)
 - Prepare letter to Dekhon farmers on eligibility and terms for share subscription, including date of Foundation Meeting
 - Prepare Charter and founding documents
 - Select Organizational Committee for Foundation meeting
 - Organizational Committee reviews founding documents and prepares recommendations for Foundation Meeting
 - Select Founding Directors
 - Conduct Farmers' company Formation Meeting and nomination of directors
 - Open bank special account for approval payments not less than 50% shares
 - Start process of Company registration at appropriate legal body (It takes approx. 20-30 days)
 - Finalize registration process
 - After registration, open bank account, registration in the tax, statistics office, pension organs and in the Ministry of Finance

TOR – Legal Specialist

Tasks

1. Develop contract format for farmers involved in propagating seed for the seed processing company.
2. Along with seed company management, develop contractual agreements with international seed producing companies for the use of elite (or parent) seed from varieties adapted for growing in Tajikistan.
3. Along with seed company management, develop contractual agreements with domestic seed producing companies for the use of elite (or parent) seed.

4. Along with seed company management, develop contractual agreements with gins for processing raw cotton that is produced by farmers for the seed company. The contracts will include preparation of the gin for ginning the raw cotton, the collection of the seed from this cotton and its transport to the seed cleaning company.
5. Along with seed company management, develop contractual agreements with companies to which processed seed will be sold on a wholesale price basis.
6. Development of contract format for sale of seed to private farmers by the seed cleaning company.
7. Development of service contracts for specialized service providers, i.e. driver with car; trucks transporting fuzzy cotton from gins to seed cleaning company, by-product removal, other as needed.
8. Development of purchase contracts for supplies used by the seed cleaning company, i.e. sulfuric acid, soap, bags, and others as needed.
9. Participate in management's monitoring and evaluation of legal and financial progress and the company's contribution to the cotton sector.
10. Provide seed company management with advice in the event of contract disputes with the MOA or other entities.

Deliverables

1. Contract to be used with farmers that receive elite or parent seed from the seed development company for the propagation of seed.
2. Either the provision of a contract to be used with international and domestic seed producing companies or the review and written opinion regarding contracts that may be presented by international or domestic seed producing companies in regards to responsibilities of each party, restrictions on the use of the seed, royalties, amount purchased, terms of payment and shipment.
3. Provide and/or review contracts that are developed for use between the seed company and gins that will process raw cotton produced by farmers propagating seed for the seed development company. Assist seed company management in negotiations with gins and help resolve disputes that may arise.
4. Provide contracts to be used with companies purchasing seed to be sold on a wholesale basis that list restrictions on the sale and use of the processed seed, price, terms of payment and place where the seed can be picked or in some cases the place to which the seed should be shipped.
5. Provide service contracts as needed.
6. Provide purchase contracts for obtaining supplies for the business as needed.
7. Contribute on legal aspect of management reports that will be made to MOA and to ADB.