PROGRESS REPORT

CONSERVATION AGRICULTURE FOR IRRIGATED AREAS IN AZERBAIJAN, KAZAKHSTAN, TURKMENISTAN AND UZBEKISTAN

October 4, 2012

Tashkent, Uzbekistan

Submitted by

ICARDA

PROGRESS REPORT COVER PAGE

Project Title:	**CONSERVATION AGRICULTURE FOR IRRIGATED AREAS IN AZERBAIJAN, KAZAKHSTAN, TURKMENISTAN AND UZBEKISTAN**
Project Number:	**GCP/RER/030/TUR**
Starting date:	**January 2011**
Completion date:	**September 2013**
Reporting period:	**1 December 2011 – 1 June 2012**
Countries:	**Azerbaijan, Kazakhstan and Uzbekistan**
Name:	**ICARDA**
Address:	**P.O. Box 4564, Tashkent** **700000, Uzbekistan**
Tel. number:	**+998-71-1372130/1372169**
Fax number:	**+998-71-1207125**
E-mail:	**a.nurbekov@cgiar.org**
Contact person:	**Dr. Aziz Nurbekov** Project regional coordinator

Date of Report: Author of Report: Dr. Aziz Nurbekov

Reporting Period: September – November Approved by:

A. PROGRESS AND OUTPUTS

Output 1.1 Improved crop production and management within demonstration sites through accelerated adoption of conservation agricultural practices

- Local scientists engaged in monitoring agricultural and economic parameters of the demonstration sites.
- Maize is double-cropped after the winter wheat harvest in Azerbaijan. The maize harvest provided 4.9 t ha-1 (91.25 %) yield advantage after the no-till wheat, which is a significant difference.
- New legume crop species were introduced as a succeeding crop after winter wheat harvest in irrigated lands of South Kazakhstan province in Kazakhstan to improve the availability of legumes for crop production. Seed rates had a significant effect on Kidney bean grain yield. The highest grain yield (0.86 t ha-1) was recorded where the seeding rate was 110 kg/ha while the lowest grain yield (0.76 t/ha) was recorded with seeding rate 100 kg/ha.
- The Soy bean variety 'Uzbek-6' was planted on eight different treatments using the bed planting method. Plant height, growth, and grain yield were observed during the vegetation period. The maximum plant height was observed in the treatment where Rizobium+K60+P120 was applied while the lowest plant height was observed in the control variant. Soybean grain yield varied among the treatments. The eighth treatment (Control+Rhizobium K60+P120) received the highest grain yield 2.23 t/ha and the control treatment had the lowest grain yield 1.62 t/ha

Output 1.2 Raised-bed planter and land levelling technology adjusted and applied, and more efficient water utilization for the crop rotations introduced, as compared with traditional cropping systems

- Selected farms were surveyed and carried out soil analysis
- Grain yield was significantly affected by the bed planting method in Tar-Tar site, Azerbaijan. According to the results obtained from the first project year, bed planting method improves yields, save seed, save on an average of 36 % water.
- The results for grain yields shows that bed planted mungbean (2.24 t/ha) had significantly higher yields than broadcasted mungbean (1.85 t/ha) in Kasbi site, Uzbekistan.
- Direct seeding of double cropped crops supervised across the project countries
- Laser land leveling was made on 4 ha in Uzbekistan and Kazakhstan which is the base for improved irrigation practices.
- The best improved irrigation technology and crop rotations will be identified and will be recommended for adoption in the project countries and will be introduced to the farms of the country.

Output 1.3 Crop rotations diversified with crops suitable for CA

- On-farm training on water and crop management was carried out in the project countries
- Five different crops were planting on beds
- Winter wheat and spring barley crops were planted by using Brazilian no-till drills.

Output 1.4 Confidence of farmers, extension services and other stakeholders on principles of CA increased

- Growing conditions of crops on selected farms (demonstration and control plots) monitoring. All work on testing new technologies has been done in a farmers' participatory method during field days which helped to disseminate technologies on wider area.

- Socioeconomic survey instrument has been pre-tested and fine-tuned. The sampling methodology has been developed and sample sizes were determined.
- Farmer perceptions and preferences are being monitored. The economic impact of the traditional and bed planting technologies are being analyzed.

Output 1.5 Farmer-oriented brochures and guidelines on applying CA practices in irrigated and rainfed areas in the selected countries produced and printed.

- A draft guideline on improved land, water and crop management through CA technology is being prepared
- A brochure on conservation agriculture practices in Kazakhstan was published in Russian.
- A leaflet on specifications of zero till planter was published in Uzbekistan
- A poster on conservation agriculture in Azerbaijan was published in Azerbaijan
- A poster entitled, "Conservation agriculture for irrigated areas in Azerbaijan, Kazakhstan, and Uzbekistan" was prepared and presented in European Regional Conference (ERC) 2012: "Save and Grow" and promotion of Conservation Agriculture Baku, Azerbaijan
- National TV covered the Field Days and interviewed Drs Asad Musaev, Zokhidjon Ziyadullaev and Dossymbek Sydyk in Azerbaijan, Kazakhstan, and Uzbekistan respectively.

Output 1.6 Capacity building activities in the area of CA designed and carried out at the benefit of farm households and national partners.

- Three field days were organized in Azerbaijan, Kazakhstan and Uzbekistan, to bring farmers, extension agents, and researchers to observe and discuss raised bed and no-till technology issues in the project demonstration sites throughout the three project countries. Farmers from the project demonstration site, and adjacent areas participated and became acquainted with conservation agriculture practices (please see annex 1).
- Three training courses were organized in each country for some farmers and specialists, researchers/technicians and policy makers at district level. The main objective of the formal training courses was to create awareness about the conservation agriculture. The formal training courses attended by 139 policy makers, researchers, agronomists and farmers (Please see annex 2).

B. INPUTS

I. National consultants

Each concerned country appointed a National Project Coordinator (NPC) to be located on-site and to provide full-time orientation, coordination and supervision during project implementation. 12 National Consultants were selected and approved. Recruitment of subject matter specialists on crop production, water management, farm mechanization and economics, in each country, is completed. In general, selection of National Consultants was conducted by the governments of respective project countries and in all cases was based on expertise in particular areas of the Project. National consultants were recruited according to FAO procedures. The national consultant in crop management will work as a national project manager (NPM) and will coordinate all field activities including planting of crops, field days, field formal training

courses, etc. The reports of national consultants will be presented elsewhere. A list of approved project national consultants is provided in table 1.

Table 1 List of National professional staff assigned to the project during the reporting period

Names	Functions
Azerbaijan	
Dr. Asad Musaev	National Consultant in crop production and National Project Manger
Dr. Kamil Fataliyev	National Consultant on Farm Mechanization
Dr. Akif Valiev	National Consultant on Farm Economics
Dr. Seymur Safarli	National Consultant in Irrigation/water management
Kazakhstan	
Dr. Dossumbek Sydyk	National Consultant in crop production and National Project Manger
Dr. Rahim Medeubaev	National Consultant on Farm Mechanization
Dr. Natalya Gritsenko	National Consultant on Farm Economics
Dr. Azhar Karabalaeva	National Consultant in Irrigation/water management
Uzbekistan	
Dr. Zokhidjon Ziyadullaev	National Consultant in crop production and National Project Manger
Dr. Yormamat Kholiyarov	National Consultant on Farm Mechanization
Dr. Abdumalik Namozov	National Consultant on Farm Economics
Dr. Ravshan Boyirov	National Consultant in Irrigation/water management

Dr. Aziz Nurbekov, Project Regional Coordinator, continued to communicate with FAO, Ministries of Agriculture of the Republics of Azerbaijan, Kazakhstan and Uzbekistan, and the National Project Coordinators and Managers and undertake technical monitoring for the day-to-day activities of the project. He was involved in all decisions on Project activities.

II. Equipment received during the reporting period

The Project provided three no-till planters from Brazil which helped to widely introduce Conservation Agriculture which was absolutely new concept not only for farmers. The project provided three boom sprayers for project countries. The boom sprayers are already installed and are working in the project demo sites in each country. Moreover the CA technology was appreciated by the Governor of the District who facilitated planting of winter wheat on area. Government officials on provincial level visited the demonstration sites in each country and expressed interest in no-tillage technology.

III. Training activities during the reporting period

The Project document required the organizing of training of private farmers involved in the project together with extension staff on integrated crop management, improved irrigation and water conservation practices with key topics related to the introduction of new range of crops, weed control (use of chemicals), crop residues/cover crops, crop rotations, direct drilling, irrigation frequency, harvest, and crop storage. Field training courses were organized. Farmers from the project pilot site, and adjoining areas participated and became acquainted with conservation agriculture practices. The field training courses (139) and field days

(147) were organized in Azerbaijan, Kazakhstan and Uzbekistan and were attended by policy makers, researchers, agronomists and farmers.

C. PROBLEMS ENCOUNTERED AND ACTIONS TAKEN OR REQUESTED TO RESOLVE THEM

The GCP project on conservation agriculture has encountered some difficulties mainly associated with the very difficult financial situation in the farm sector. Implementation of planned activities has been initiated with a delay due to the following reasons:

- National consultants were reported directly to FAO/SEC, and there were some communication problems with all national consultants due to limited internet connections and inability to complete reports on time.
- The partner national institutes have been very slow in actively searching for and involving young scientists as researchers in the project activities. In the reporting period, most students were assisting senior staff but not actively pursuing field research for obtaining a degree.
- A zero-till planter from Brazil arrived at the end November 2011 to Azerbaijan while Uzbekistan and Kazakhstan could receive in the beginning of January through March. That is why Azerbaijani team was able to plant late winter wheat while Uzbek and Kazakh partners were able to start planting of spring crops in April.
- Quality of staff for data collection and the need for constant follow-up with partners was needed to show that the project team was seriously interested in real research data to be published in PR journals.
- The time-demanding nature of repeated supervision and training of three geographically spread sites – led to more cluster-wise trainings and reduced monitoring visits but active continuous telephonic follow-up.

D. WORK PLAN AND EXPECTED OUTPUTS FOR THE NEXT REPORTING PERIOD

I.WORK PLAN

For more details please see annex 5.

II. EXPECTED OUTPUTS FOR THE NEXT REPORTING PERIOD

II.I. **Raised-bed planting and land levelling technology adjusted and applied and lower and more efficient water utilization for the crop rotations introduced, as compared to traditional cropping systems**

The best improved irrigation technology and crop rotations will be identified and will be recommended for adoption in the project countries and introduced to the farms of the country. Farmer perceptions and preferences will be monitored. The economic impact of the traditional and bed planting technologies will be assessed.

II.II. Improved crop production and management through accelerated adoption of conservation agricultural practices

The best crop management system of conservation agriculture will be recommended to be used in the farm conditions and introduced to the farms of the region through booklets and posters. Farmer perceptions and preference will be monitored. Economic impact of the traditional and conservation agriculture technologies

will be assessed. Collaboration with other projects on conservation agriculture will take place to exchange experiences and equipment. Booklets and posters on the project results will be produced and will be distributed during field days and training courses.

II.III. Capacity building activities in the area of CA designed and carried out at the benefit of farm households and national partners

For all activities, field days and training courses will be organized for farmers and policy makers during the cropping cycle to promote information exchange to encourage adoption.

The success of the project depends on the support of scientists engaged in all aspects of the project including the project regional coordinator, national project coordinators, national project managers, and the national partner institutes. Fortunately, the project team is working in all countries with highly motivated and enthusiastic partners that are trying hard to make the project a success and also to reach success on conservation agriculture in the region.

Some issues deserve special attention in 2012 and 2013:

- Finalization of data collection and data entry, in particular data necessary for economic evaluation of interventions
- Strengthening activities on conservation agriculture with main emphasis on crop rotation
- Organization of field days, field and formal trainings with a range of stakeholders
- Producing training material for successful interventions
- Training of students working in the project
- Data analysis and report writing

E. REPORTS

Dr. A. Nurbekov is reporting timely on all project activities and communicated routinely with FAO (Drs. T. Friedrich, and Hafiz Muminjanov) on implementation of Project activities including financial issues. MoA of Azerbaijan, Kazakhstan and Uzbekistan were represented by Drs. Asad Musaev, Dossymbek Siddiq and Zokhidjon Ziyadullaev respectively with whom communications have taken place on a daily basis.

ANNEX 1

FIELD DAYS

Field day in Azerbaijan

A field day was organized on March 13, 2012 in Ter-ter site in Azerbaijan. On March 13, 40 participants visited field trials at Ter-ter experimental station, no-till wheat and bed planted wheat at Zumurkhan and got acquainted with new Brazilin no-till drill. Fields are prepared which were visited throughout the field day, where participants were able to see experiments on Conservation Agriculture. These fields were set up in different parts of the project demonstration pilot farms. System of No-Till, benefits of the system and its environmental impact, criteria on production strategies for different agricultural systems, crop rotation, crop residue management issues and also bed planting technologies and machinery for conservation agriculture (no-till drill) were discussed during the field day. The formal training-cum-field day was successful and the attendees were happy to get valuable knowledge on conservation agriculture. Azerbaijan TV (AzTV) representatives covered the formal training–cum–field day and interviewed Leading National Consultants Drs. Asad Musaev and Imran Jumshudov.

Field day in Kazakhstan

A field day on resource conservation technologies was organized on 06 April, 2012 Sayram district, Kazakhstan. The field day was organized to discuss new improvement planting methods and new no-till drills used in the project with farmers in the project demonstration pilot site. The objective of the field day was to demonstrate spring wheat and alfalfa planting with different type of planters namely Brazilian no-till drill, Local no-till drill and ordinary cereal planter. Fifty five (55) farmers, agronomists, researchers and policy markers participated in the field day. Dr. Dossymbek Sydyk, Deputy Director South-West Kazakhstan Research Institute of Livestock and Crop Production and National Project Manager, introduced to the participants agenda and objectives of the field day.

In the field day technical specifications of the Brazilian drill was introduced and was calibrated, with participation of attendees of the field day, to plant spring wheat and alfalfa and no-till drill machine is worked well and is planted spring wheat on 3 ha in the project demonstration site. At Yassau collective farm participants were exposed to different types of planting methods and large scale demonstrations on winter wheat fields planted with the bedplanter which is an own development, modifying a conventional disk seeder to a bed planter, with the advantage over the models from Turkey seen in other parts of the project, that the disk furrow openers can handle residues and that they follow the contour for each bed independently and are not fixed. Participants also observed the differences in field performance of wheat in bed planting vis-à-vis broadcasting wheat. For many farmers, from other districts of the South Kazakhstan province, bed planting and associated technology was a first time experience and they were generally receptive. Both these technologies were seen as transformative and can be facilitated by direct seeding of wheat immediately after harvesting of rice using zero tillage technology.

Policy makers at provincial level and farmers are keen to adopt conservation agriculture practices in the South Kazakhstan province because it reduces tillage costs, and yields can be higher. It is decided to

organize demonstration plots in each district for about 10 ha. Local TV covered the Field Day and interviewed National Consultant for agronomy Dr. Rahimjan Medeubayev.

Field day in Uzbekistan

The field day was organized on 27 March, 2012 to introduce Brazilian no-till drill to the participants (52) of the training course and field day. Dr. Aziz Nurbekov welcomed the participants to the field day. He highlighted the importance of conservation agriculture (CA) technologies including no-till, furrow irrigated permanent raised bed planting and operation, maintains of Brazilian no-till drill. And then, Dr. Yormamat Kholiyarov is briefly explained technical specifications of the no-till drill and dwelled on operating system of the planter and calibration operations. No-till maize crop was planted at 25 kg per hectare and also at the same Nitrogen was applied at 180 kg ha. It is used a 70 cm row width with furrow irrigation for maize, which forms a raised bed between the furrows. Then a group visited no-till winter wheat in the project demonstration field. Participating farmers, adjacent project site, were convinced with the technology after seeing the crop growth. Traditionally, farmers of this region have been sowing wheat as conventional method, mostly minimal tillage or planting of wheat into standing cotton. In the field where sowing was done by no-till drill, the crop looked much better than the fields where farmers had done with traditional seeding. During the field day invited researchers, project national consultants and farmers discussed conservation agriculture practices, diversification of proposed crops in the project demonstration site, new farm machinery for no till. The field day was very productive in terms of discussions between national consultants of the project and participating agronomists, farmers, researchers.

Field day in Azerbaijan 13 March, 2012

Field day in Kazakhstan 06 April, 2012

Field day in Uzbekistan 27 March, 2012

ANNEX 2

FIELD TRAINING COURSES

Field training course in Azerbaijan

A formal training-course on conservation agricultural technology was organized at Ter-Ter district during March 12, 2012. The main objective of the formal training course was to create awareness about the conservation agriculture in Azerbaijan (please agenda at annex 1 and pictures 1 and 2). The formal training-cum-field day was organized by ICARDA-CAC and conservation agriculture project team in Azerbaijan and was attended by 40 policy makers, researchers, agronomists and farmers. The formal training was started with welcome address of Dr. Asad Musaev, Director Azerbaijan Scientific Agrarian Center and National Project in Azerbaijan. The speaker in brief introduced the objective of the project and agenda of the formal training course and field day. Dr. Aziz Nurbekov, Project Regional Coordinator and National Consultants in Azerbaijan were delivered presentations on status of conservation agriculture in the region and also in Azerbaijan, bed planting technologies, improved irrigation and machinery for conservation agriculture. Two invited specialists Dr. Zulfi Ismailov from Azerbaijan Information Center (AIM), Aqjabedi district made presentation entitled "Climate change adaptation and mitigation of its negative impacts on sustainable farming systems" while Dr. Imran Jumshudov, Azerbaijan Research Institute of Farming, delivered presentations "Effect of planting and fertilizer rate on productivity of bed planted winter wheat productivity". At the end of each presentation, there were various questions, comments and exchange information on the conceptual aspects of no-till crops, crop rotations and also participants exchanged their views on promotion of conservation agriculture in Azerbaijan. The formal training was ended up with the vote of thanks by Dr. Asad Musaev. A formal training-cum-field day on conservation agricultural technology was fruitful and farmers were happy to participate in the events.

Field training course in Kazakhstan

Chimkent hosted the formal training course in March, 2012. The training course focused on promotion of conservation agriculture in South-Kazakhstan province. The training ultimately aims to give the participating staff: enhanced understanding of the principles of conservation agriculture and promote conservation agriculture in South-Kazakhstan. This formal training course brought together key public and private leaders and national consultants from South Kazakhstan Agricultural Department, different research institutes and Chimkent University, Agricultural College and to share these ideas with participants. A total number of was participants 47 and attendees included: Key officials from Agricultural Department of South Kazakhstan Province, Ministry of Agriculture; Researchers from different research institutes; Officials from Sayram district; ICARDA-CAC representative; Students of Chimkent agricultural college; Farmers from all over South Kazakhstan province (Sayram, Qazigurt, Ordabasy, Enbekshi, Turkistan, Arys, Saragach Makhtaaral districts); Specialist from State seed quality control and certification center; Project National Consultants. At formal training course, officials, national consultants, researchers and farmers joined to discuss promotion of conservation agriculture in South Kazakhstan. It should be mentioned here that, for the first time students from Chimkent Agro College attended the formal training course on conservation agriculture. Some students are requested to do their bachelor degree in the project. They described their great enthusiastic interest to do research on conservation agriculture in the experimental station of South-West Kazakhstan Research Institute Livestock and Crop Production (SWKRILCP). There were various questions and comments

concerning the status of conservation agriculture in the country, comparative advantage of crop rotation, minimum tillage, and status of machinery for conservation agriculture, and figures about fertilizer use and yields of agricultural crops in Kazakhstan. The participants exchanged their views on promotion of conservation agriculture in the region. At the end of the discussion the floor was given to project farmer namely Sattarkhanov Musakhon and Kh.Niyazbekov. Sattarkhonov Musakhon, project farm, the farmer says: “A producer will definitely save on fuel, but other expenses may increase, if you use herbicides”. I am happy that I am part of this FAO project. I will continue close work with project national consultants to be made project the success. Dr. Dossymbek Siddiq, thanked for all speakers and participants who are presented their knowledge in the field of world conservation agriculture practices, crop rotation, agricultural machinery for conservation agriculture, and etc. I am convinced that the existence of project on conservation agriculture will now promote extension of conservation in the irrigated conditions of South Kazakhstan. The formal training course was successful and the attendees very actively participated during the discussions.

Field training course in Uzbekistan

A formal training course and field day of FAO-GCP project on “**Conservation agriculture for irrigated areas in Azerbaijan, Kazakhstan, Turkmenistan and Uzbekistan**” 26 March, 2012, Karshi-Kasbi, Uzbekistan

Formal training course of GCP FAO project “Conservation agriculture for irrigated areas in Azerbaijan, Kazakhstan, Turkmenistan and Uzbekistan” took place in Karshi-Kasbi, from 26 March, 2012. ICARDA Regional Office in Tashkent is providing technical backstopping to the project. The Project activities will be implemented in the three farms in the Kasbi and Karshi districts on Kashkadarya province of Uzbekistan. The effect of bed planting and no-till practices on productivity of cereals, legumes and also integration of legumes and small cereals into cereal cropping systems will be studied in this site. The event was organized by the ICARDA-CAC with collaboration Kashkadarya Research Institute of Breeding and Seed Production of Cereal Crops. A total of 52 participants, including farmers, agronomists, scientists, mechanical engineers and project national consultants, attended the field training course and field day. Dr. Fakhriddin Norov, Head Agricultural Department of Kashkadarya province welcomed participants to training course and underscored that conservation agriculture technologies are now a mean of livelihood in the world. Dr. Zokhidjon Ziyadullaev, Director General Kashkadarya Research Institute of Breeding and Seed Production of Cereal Crops and National Project Manager of the project, explained to the participants goals and objectives of the training course and field day. The first day invited key speakers Profs. Alim Pulatov, Nasriddin Khalilov and national consultants and project regional coordinator of the project made presentations on research activities, status, challenges and in different aspect of conservation agriculture practices in the irrigated conditions of Uzbekistan.

Field training course in Azerbaijan, 12 Mar. 2012

Field training course in Kazakhstan, 01 Mar. 2012

Field training course in Uzbekistan, 26 Mar. 2012

Annex 3

Work plan and time frame of the activities

Outputs/Activities	2011												2012												2013								
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
Output 1.1. . Improved crop production and management through accelerated adoption of conservation agricultural practices																																	
Activity 1.1.1: Award contracts to ICARDA and local consultants and establish project office at ICARDA, Tashkent office																																	
Activity 1.1.2: Engage local scientists for monitoring agricultural and economic parameters of the demonstrations																																	
Activity 1.1.3: Organize an inception workshop to discuss the detailed national and regional work plans																																	
Activity 1.1.4: Select the demonstration sites in each country and identify in a participatory manner the participating farmers																																	
Activity 1.1.5: Order required equipment, spare parts, seeds, herbicides and fertilizers																																	
Activity 1.1.6: Modify existing machinery/equipment for the use under CA system																																	

Output 1.2. Raised-bed planter and land levelling technology adjusted and applied and lower and more efficient water utilization for the crop rotations introduced, as compared to traditional cropping systems																																	
Activity 1.2.1 Carry out soil analysis in the selected farms																																	
Activity 1.2.2: Survey the selected farms																																	
Activity 1.2.3: supervise improved land preparation and direct seeding																																	
Activity 1.2.4: Training workshops on improved water, land and crop management																																	
Output 1.3: **Crop rotations diversified with crops suitable for CA**																																	
Activity 1.3.1. Carry out monthly on-farm training on water and crop management																																	
Activity 1.3.2. Carry out bimonthly field days during each cropping season in each country																																	
Output 1.4 Confidence of farmers, extensionists and other stakeholders on practicing principles of CA increased.																																	
Activity 1.4.1: Monitor growing conditions of crops on selected farms (demonstration and control plots)																																	
Activity 1.4.2: Economic analysis of production cost of																																	

introduced CA technology.																																
Output 1.5 Farmer-oriented brochures and guidelines on applying CA practices in irrigated and rainfed areas in the selected countries produced and printed.																																
Activity 1.5.1: Preparation of draft guidelines on improved land, water and crop management through CA technology.																																
Output 1.6 Capacity building activities in the area of CA designed and carried out at the benefit of farm households and national partners																																
Activity 1.6.1 Organize at least one quarterly field day during the cropping season on each demonstration field in each country.																																
Activity 1.6.2: Organize one final assessment workshop in each country to disseminate project's results with participation of all stakeholders and related civil societies.																																
Design zero till drill in Uzbekistan																																
Inception report																																
Final evaluation																																
Final workshop																																
Prepare publications																																
Final report																																