



RESEARCH
PROGRAM ON
Dryland Systems

International Potato Center 2015 Annual Report

December 2015

*Food security and better livelihoods
for rural dryland communities*

The CGIAR Research Program on Dryland Systems aims to improve the lives of 1.6 billion people and mitigate land and resource degradation in 3 billion hectares covering the world's dry areas. Dryland Systems engages in integrated agricultural systems research to address key socioeconomic and biophysical constraints that affect food security, equitable and sustainable land and natural resource management, and the livelihoods of poor and marginalized dryland communities. The program unifies eight CGIAR Centres and uses unique partnership platforms to bind together scientific research results with the skills and capacities of national agricultural research systems (NARS), advanced research institutes (ARIs), non-governmental and civil society organizations, the private sector, and other actors to test and develop practical innovative solutions for rural dryland communities.

The program is led by the International Centre for Agricultural Research in the Dry Areas (ICARDA), a member of the CGIAR Consortium. CGIAR is a global agriculture research partnership for a food secure future.

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SECTION I – KEY MESSAGES

a. Synthesis of Progress and Challenges

Synthesis of progress

According with the PPA agreement amended in November 2015, CIP has conducted four activities during 2015 in two sites in India, namely Jodhpur and Jaisalmer districts in Rajasthan. The activities, conducted in partnership with the Central Potato Research Institute (CPRI), were the following:

1. The characterization of farming systems, natural resources, gender roles and social systems in the sites.

This activity involved a baseline survey that covered 110 farming households in Mansaagar, Govindpura, Danwara and Bansi that provided a first diagnosis on cropping systems, natural resources, climate and soil conditions, water availability and gender issues. The surveyed sample was representative of smallholdings in the area. The methodology and results of the survey are presented in a draft working paper: <http://hdl.handle.net/20.500.11766/4564>

A complementary survey of 25 women was also conducted to have a first diagnosis of the situation of women of different castes <http://hdl.handle.net/20.500.11766/4565> and <http://hdl.handle.net/20.500.11766/4584> its significance for the intended work with potato.

Although we already knew that women in general have very limited access to land property, less access to education and information and little participation in farming decisions, the survey captured preliminary information on the differences between women of different castes and their potential to be active participants in potato farming and correlated value chains.

2. Introduction of potato as a high value crop in the dry agro-ecologies of the sites as an innovation to improve household incomes, enhance food security, and promote women participation in farming activities and processing of produce with the aim of generating gender equity.

Based on the data provided by the main survey, the sites were found suitable for potato cultivation despite the fact that there was no history of potato cultivation in the area. The introduction of potato as a novel crop in the area was previously discussed and agreed with local agencies like the Central Arid Zone Research Institute (CAZRI), Government officials of Horticulture and Agriculture offices, scientist from CPRI, ICRISAT, and Bioversity, and representatives of PepsiCo, ITC Pvt.ltd and local NGOs. It was based on research conducted by CIP in partnership with the Central Potato Research Institute (CPRI), Department Horticulture and private partners that has identified and tested drought and heat tolerant clones for arid regions as described in <http://hdl.handle.net/20.500.11766/4596> and <http://hdl.handle.net/20.500.11766/4587>

Altogether, 30 farming families (16 from Jodhpur and 14 from Jaisalmer) successfully introduced potato cultivation into their farming systems in a total of 30 acres. <http://hdl.handle.net/20.500.11766/4593>. It is expected that participant farmers will earn an additional income of US\$ 1500 per hectare by including winter potato (November-February) in their traditional cereal-based farming system as the net income generated by potato compared to wheat is more than double. Another expected benefit will be the improvement of food and nutrition security, particularly for women and children, due to increased availability of food at household level as families will keep part of produce for house consumption. We also expect that gender equitable capacity development based on increased access by women and youth to knowledge and information will increase their control of inputs and produce,

allowing the capture of an equitable share of increased income, food and other benefits for better nutrition and livelihood of the participant families.

3. Testing of water saving and cultivation technologies to improve water use efficiency and reduce labour costs.

Growing potato in dry agro-ecologies is a challenge, but when successful, smallholder farmers obtain higher income as shown in the previous section. Introduction of drought tolerant varieties and appropriate water management under those conditions are two areas where CIP is conducting research. We are searching for integrative traits that could facilitate selection of drought tolerant genotypes and water tolerance thresholds in those varieties. In the paper by Ramirez et al., 2015, <http://hdl.handle.net/20.500.11766/4607> we showed that carbon isotope discrimination in potato leaves, prior to tuber initiation, can be used to establish physiological status under different water restriction conditions whereas in the tubers provide breeders with an integrative selecting tool for drought tolerant genotypes, very early in the phenology of the plant.

As an innovation supporting the introduction of potato into farming systems in Rajasthan, sprinkle irrigation <http://hdl.handle.net/20.500.11766/4594> is being tested as a technology to economize water use in an area of limited water availability. Preliminary data and information from elsewhere suggest that sprinkler irrigation paired to row potato planting could reduce water utilization by about 40%. It is also expected that the use of a potato planter and digger will reduce labor cost by more than 60% and enhance income by 20%.

4. Development of a potato value chain by integrating different actors (farmers, public agents, private companies and NGOs) into an innovation platform in the area.

An important complement to the introduction of potato cultivation is the development of a seed and processing potato value chain. Value chains were kicked-off through an inception meeting and field visits that convinced the private sector to support the innovative potato activity in Jodhpur and Jaisalmer districts. As a significant step forward, five male/female farmers implemented a scheme of contract farming in collaboration with PepsiCo at Didoo village in Jaisalmer, to generate sustainable and higher income based on the agreed price of the produce. As a result of contract farming, it is expected that participant farmers will increase their income by 25%, regardless of any overproduction of potato in the country. McCain and ITC seed companies have planned to introduce seed value chains and contract farming at these two sites in 2016 taking advantage of the benign environment with low aphid population and the production technology provided by CIP and partners. By the effect of demonstrations at participant farmers' fields, it is anticipated that other farmers will be interested in signing similar contracts in the next potato season with private companies.

Synthesis of challenges

We are testing the value of potato as a novel crop in the area, intended to improve general farm productivity and food and nutrition security. One particular challenge is related to limited water availability for satisfying the requirements of the crop. We are tackling this challenge through more efficient irrigation management through sprinklers. Another challenge is the presence of high temperatures at planting and uncommon frosts at potato bulking period which requires the use of tolerant varieties which are being tested as components of the introduction of potato into local farming systems. Also challenging is the menace from wild animals, particularly wild pigs, which currently are not controlled. Actual damage will be quantified and some strategies to deal with this problem will have to be designed if its magnitude is as large as reported by farmers.

Farmers in the area are not familiar with potato cultivation which calls for capacity building efforts among them. However, many farmers are contacting CIP to plant potato on their farms and as the

number of farmers interested in potato cultivation is likely to increase, based on preliminary results and a demonstration effect, a systematic capacity building and information system will be designed to support a growing demand for quality seed, planting technology, crop and irrigation management, seed production and supply and marketing of a new crop. At the moment, interested farmers are getting information from CIP and the initial participant farmers in the introduction of potato in the area. As the number of interested farmers is expected to increase, a more structured information system will be required.

Another challenge is the absolutely necessary participation of women, both as beneficiaries of a more equitable situation and as active agents of change. This participation is still precluded by social norms that are by no means affecting all women to the same extent. For instance, in many villages women belong to different castes which are constrained by different social norms, some more strict than others. This calls for tailor made strategies to include them all in the process of change. For example, women from the Bishnoi caste are overburdened with work in the field and also at home hence they are reluctant to participate in activities (like home processing of produce) that will increase their workload and they will be more receptive to technologies that reduce their burden, particularly in fieldwork. On the other hand, Rajput women are not allowed to go out of home to work in the field. Clearly, achieving gender equity is quite a challenge that requires a complex and multidisciplinary approach yet to be devised by any CRP.

b. Significant Research Achievements

- Potato was successfully introduced into cereal based system in 30 sample farms in non-traditional potato growing dry sites in Jodhpur and Jaisalmer districts in Rajasthan as a means of enhancing smallholder's family income and food security.
- Family income will be increased by 20% in 30 households by cultivating potato in cereal based systems.
- Sprinkler irrigation is being successfully tested on potato cultivation, allowing for a 40% reduction in water utilization.
- A value chain scheme for potato has been established and five farmers signed a contract farming agreement with PepsiCo and their income is expected to increase by 25% due to a fixed farm gate price to be paid for produce.

c. Financial Summary

The financial report and the detail of the person year covered with Dryland Systems funds are included as part of the full set of reports submitted to DS. As shown in the financial report, the execution of the W1, W2 y W3 funds reached 101% during 2015. It is important to mention that the prevalent funding uncertainties along the period and the reductions in fund allocations have affected the work. One particular consequence was the decision to reduce CIP participation to just one of the geographical areas of work initially covered within the DS CRP. Another consequence has been the reduced possibility to conduct gender-oriented work.

CIP's 2015 CRP Dryland Systems Final Financial Report is available [here](#).

SECTION II– IMPACT PATHWAY AND INTERMEDIATE DEVELOPMENT OUTCOMES (IDOS)

a. Progress Along the Impact Pathway

1. Increased resilience of the poor to climate change and other shocks

- Preliminary data suggests that the inclusion of potato cultivation into cereal based systems in dry areas in Jodhpur and Jaisalmer districts in Rajasthan (India) improves the resilience of poor farming households by providing enhanced incomes and more food and nutritional security by way of an increased food availability during the year.
- Water is a scarce resource in the intervened sites and the use of sprinkler irrigation is showing to reduce about 40% of water use in potato. This, at a large scale, will bring about a considerable conservation of over utilized water resources in the area.

2. Improved diets for poor and vulnerable people

- Diversification of cereal-based systems with the inclusion of potato increases food availability and quality along with increased incomes, which are contributors to food and nutritional security.

3 Improved food safety

- Potato contributes to food safety as it is a vegetable free of toxins and anti-nutritional factors and, in this case, is produced with very limited non-organic inputs other than fertilizers.

4 Equity and inclusion achieved

- Active participation of women in information sharing and capacity building activities has been promoted. Knowledge about the complexity of gender issues in the sites has been increased and small but significant progress in social acceptance of women participation has been achieved.

b. South Asia/Rainfed

I. Progress towards outputs

Activity: The characterization of farming systems, natural resources, gender roles and social systems in the sites.

1. OUTPUT:

A more clear understanding of baseline characteristics and conditions of the traditional farming systems and concomitant social aspects prevalent in the sites was obtained through the survey conducted in the area. The methodology and results of the survey are presented in a draft working paper which includes a SWOT analysis related to the intended introduction of potato into the traditional cereal-based farming <http://hdl.handle.net/20.500.11766/4564>

The survey has shown that several climate, soil and labour availability conditions were in favour of the introduction of potato cropping in the area. Major problems to be overcome for successful introduction of potato were (and still are) the low water availability (low rainfall and over utilized ground water), low investment capacity of poor farmers and non-availability of quality potato seed. However, the opportunity and convenience for the introduction of potato in the area was suggested by the potential high income generation of the crop, compared to cereals, the suitable

environmental conditions for high potato productivity, its suitability to be accommodated into the cropping calendar and the potential contribution of potato to food and nutrition security.

Activity: Introduction of potato as a high value crop in the dry agro-ecologies of the sites as an innovation to improve household incomes, enhance food security and promote women participation in farming activities and processing of produce with the aim of generating gender equity.

2. OUTPUT

Potato was introduced into farming systems in 30 smallholdings (16 farms in Jodhpur and 14 in Jaisalmer). Quality seed of Kufri Pukhraj and Kufri Badshah varieties were planted on 30 acres by November 2015, following several information and training events for a total of 342 participants including farmers, consumers, researchers, traders, and extension workers of public and private sectors <http://hdl.handle.net/20.500.11766/4586>

Participants included men (200), women (109) and youngster (33) of both sexes. Among other topics, farmers were trained on best production practices, seed treatment with chemical disinfectant, depth of tuber at planting, use of weedicides and sprinkler irrigation. The crop will be ready for harvesting in February 2016. The pictures of training at planting time are given in <http://hdl.handle.net/20.500.11766/4590>. A training report is being elaborated.

Activity: Testing of water saving and cultivation technologies to improve water use efficiency and reduce labour costs.

3. OUTPUT:

Preliminary data (crops are still in progress) and published results from elsewhere suggests that sprinkler irrigation paired to row potato planting reduced water utilization by about 40%. The use of a potato planter and digger reduced labor cost by more than 60% and enhanced income by 20%. Full information will be available after harvesting in February 2016. As potato cropping is labour intensive, one potato planter and one digger were introduced in Jodhpur and Jaisalmer to reduce labour costs and complete planting and harvesting timely.

Activity: Development of a potato value chain by integrating different actors (farmers, public agents, private companies and NGOs) into an innovation platform in the area.

4. OUTPUT:

Initial work on the establishment of a potato value chain has been conducted with the participation of the private sector. As an initial step, five farmers have signed a contract farming agreement with PepsiCo and their income is expected to increase by 25% due to a fixed farm gate price to be paid for produce.

II. Progress towards the achievement of research outcomes and IDOs

Several social agents related to potato cultivation have been motivated to participate in introducing potato into cereal-based systems in the area of work. Solid basis for this introduction, including production potential, income generation capacity and potential contribution to food and nutritional security have been arrived to in an analytical brainstorming meeting with key public and private stakeholders, organized to discuss the opportunities of introducing potato in the dryland farming systems of Jodhpur and Jaisalmer in Rajasthan. The meeting was attended by PepsiCo, Techni Tubers, ICARDA, ICRISAT, Bioversity, officials of Department of Horticulture and Agriculture from Jodhpur, along with progressive farmers from Gujarat and Jodhpur to ascertain the potential of cultivating seed potato, processing potato and ware potato in the area. Based on scientific and technical inputs by a number of experts, it was agreed that potato can be successfully cultivated in both Jodhpur and Jaisalmer districts if farmers have access to technology and quality seed

material. CIP informed about the performance of heat and drought tolerant CIP material tested in dry areas in India and elsewhere. The private sector was keen on introducing a scheme of contract farming for producing seed and processing varieties in this region as shown in a technical paper, <http://hdl.handle.net/20.500.11766/4596> and the following link: <http://hdl.handle.net/20.500.11766/4588>.

Local agencies are using the information produced by the project to support the introduction of potato into local farming systems and creating opportunities for seed production and processing of potato.

Awareness of farmers about new farming options and the development of new technical skills have been promoted. The initial involvement of the private sector in the creation of a potato value chain is a significant step towards outcomes and IDO's.

III. Progress towards Impact

It is expected that the successful introduction of potato as a winter crop into traditional cereal based farming systems in dry areas in Rajasthan will be replicated by a substantial number of smallholders who will see a significant improvement of their livelihoods, particularly through enhanced family income and food security. It is likely that field exposure of farmers to other potato growing regions will increase by 25% the area under potato at project sites in 2016. As to natural resources, we are confident that improved irrigation management as shown by sprinkler irrigation will contribute to enhance water use efficiency in an area where water availability is a critical limitation. It is also expected that potato will improve the diet of women and children at household level.

SECTION III – CROSS-CUTTING ISSUES

a. Gender Research Achievements

In spite of the extreme importance of social and cultural factors that prevent gender equity in Rajasthan, very limited gender research has been conducted during the reported period. This was due to funding restrictions. However, a rather limited survey covering 25 women was conducted to assess the potential involvement of women in the new farming and processing activities related to the introduction of potato into the local farming systems. Results are presented in <http://hdl.handle.net/20.500.11766/4565> and <http://hdl.handle.net/20.500.11766/4584>

Besides the confirmation of the well-known fact that women have very limited access to land property, less access to education and little participation in farming decisions, it was also evidenced that women participation in new activities was limited by societal norms that curtail their freedom, particularly after they got married. Gender issues are very complex and no simple women empowerment measures are viable, particularly some proposed by projects like this one. It is likely that local and national government holistic initiatives, supported by women's advocacy groups are required. For instance, government measures to protect women from early marriage and to give them the right to land registration under their name have been enacted. Also, the position of Lady Sarpunch (elected Head of village) has been created by the government to help women to come out of households and be accepted by men in outside activities. However, potato processing could be a good option for women to work at home and increase their income. After harvest in March potato can be dried, packed and sold or kept for household consumption. This can increase nutrition as well as food security during dry spells when nothing fresh is available.

b. Partnerships Building Achievements

- Key partnership building achievements

Strong participation of the private sector in the introduction of potato cropping into the traditional, cereal-based systems in Rajasthan has been promoted. This participation is intended to strengthen the industry of seed production and the creation of a potato value chain in the area. Main partners to date are PepsiCo and Techni Tubers. On the other hand, the partnership with the Department of Horticulture and Agriculture of Rajasthan has been consolidated. We are looking forward to obtaining bilateral funding from this government office for supporting further work on potato cultivation in the area

- **Mechanisms designed to align CRP with priorities in national, regional bodies etc.**

The DS CRP has been aligned with the ICAR funded project at two project sites and the on-going activities will partially be funded by the bilateral funding. This project contributes with the India Government goals to improve economy of rural areas, develop new markets, reduce poverty, improve child nutrition and enhance women's situation.

- **CRP research outputs and outcomes being used by partners:**

The working paper based on the household survey provides important information to the Department of Agriculture and key stakeholders of the private sector. The information about the situation of women in rural areas supports development policies. As to innovations, more than 300 stakeholders were trained on production technologies of potato at two project sites. Introduction of potato cultivation in Jodhpur and Jaisalmer and the opening of market opportunities contributes with the economic development of poor rural households. Trained farmers in new production technologies improved labour market and employment opportunities.

- **Strategic interactions with other CRPs and their effectiveness.**

The CRP- Dryland Systems has strategic interaction with CRP-RTB. The objective of both CRPs is to co-invest for improving food security and livelihoods of marginal farmers in cereal based systems.

c. Capacity Building Achievements

Capacity building is a central issue for achieving a successful introduction of potato into cereal-based systems considering the fact that local farmers have not previous experience with potato production. Thus, as an initial step, 342 stakeholders (200 men, 109 women and 33 youth) were trained on best potato production practices in sandy soils. The use of paired row potato planter was demonstrated to 138 farmers in Jodhpur and 63 in Jaisalmer districts including women and youth. Also, the same farmers received information on the use of sprinkle irrigation on potato. An exposure visit of 60 farmers, researchers and extension workers will be organized in January 2016, taking farmers to the potato growing district in Deesa, Gujarat. The "farmer to farmer" meeting and discussion with progressive farmers of Gujarat will give an opportunity to learn more about potato cultivation and develop confidence among target farmers.

d. Risk Management

Please list at least three major risks that hindered the expected delivery of results by the CRP and describe the mitigation actions taken to manage these risks.

1. **Low water availability.** Optimizing water utilization is a priority concern in our sites since limited underground water is available due to low annual rainfall (400mm). Conservative water utilization for potato cultivation was difficult. The water table is below 800 feet in Mansaagar and 300 feet at Didoo villages and to install a new tube-well is very expensive and marginal farmers cannot afford the investment. The only solution for farmers is to use sprinkler or drip irrigation not only for potato but for all crops. In case of potato the farmers were expecting

sprinklers supplied by the project but they were convinced to do the investment themselves. A message was conveyed that only those farmers that installed and managed sprinklers would get potato seed for planting. Afterwards many farmers came forward. In coming years many more farmers are expected to go for potato cultivation by sprinkler or drip irrigating system.

2. **Scarce labor availability.** The availability of labor is another major issue as cultivating potato is labor intensive if planted and harvested manually. Paired row potato planter and diggers were introduced and this innovation reduced drastically labor cost at planting <http://hdl.handle.net/20.500.11766/4591>. Farmers will use potato diggers at harvesting in February 2016. One local farmer is trying to come out with a low cost, locally manufactured planter option intended to benefit resource poor farmers in future cropping seasons.
3. **Presence of predators.** The wild animals and particularly wild pigs are serious pest for potato and other vegetables cultivated in Rajasthan. However, the Government has banned the killing of wild animals. It is expensive to put the barbed wires to check entry of wild animals in the field and other management options are being explored. The potato farmers have taken the responsibility to protect potato fields from animals.
4. **Funding uncertainty:** Another risk worth to mention is the funding uncertainty and budget reductions that have severely affected the work in the area.

e. Lessons Learned

Limitation of resources: The farmers who came to see the demonstrations were quite enthusiastic to cultivate potato this year. But they face the unavailability of quality seed, required fertilizers, weedicides and pesticides. The Department of Horticulture or the private sector should come forward in providing quality seeds, fertilizer and pesticide to cater to the need of the interested farmers. The adoption of a new crop and new technologies will generate more income and employment and provide business to private sectors.

Awareness: As potato is a new crop in the area, it is realized by farmers and Department of Horticulture that CIP/CPRI should train some trainers who could further train people on potato cultivation in other villages. Some local trained staff should be deputed to the field to solve the problems of farmers.

Women's Self Help Groups It is important to have women's SHG to support potato cultivation, processing and marketing after the harvest. In March 2016, training on potato processing at household level will be organized and CIP will form the SHG for potato. Women groups will be made responsible for the management of planters and diggers to give on rent for cultivating potato. This assignment will empower SHGs by generating extra income.

Technical brochure: A technical bulletin on potato production technologies in local language (Hindi) should be developed to disseminate the technology to larger number of farmers. CIP will take the steps to prepare it soon.

Women Participation: Women meetings should have larger number of participants to make them more comfortable to speak in the gatherings and discuss social norms. Even after few meetings we could see a lot of difference in the attitude of people both men and women and some male farmers are thinking that women can be engaged in more productive ways than simply doing household chores.

Youth Awareness about utilizing resources: Unemployed male and female youth can be involved in marketing of potato products which can give them local employment in the villages.

Capacity Building: Potato as a novel crop in the area has generated the interest of farmers who are demanding more training and support. It is crucial to involve women in capacity building activities

but prevalent social norms prevent their attendance to the meetings. An incentive system based on supporting only those male farmers that came along with some female of the house has been tried with success (Picture attached). This helped to motivate the inclusion of women. Once they joined the meetings and trainings women were keen to learn new things. Now few young girls have shown interest to work for the cause like the CIP worker Chaillu of Mansagar village.

Funding: One important lesson learn is that it will be important to reduce the dependence on W1 and W2 funds and to be more active in pursuing bilateral funding.

SECTION IV - RESEARCH OUTCOME STORIES

OUTCOME STORY 1

Opening the path for equitable women participation in farming and capacity building activities in India

CIP tested 12 clones/varieties for drylands in 2014 at Gorkha Ram. The trial was an interesting demonstration for the farmers of the area. Chaillu - a young girl of Rajput family, stays with her father, next to the field observing CIP's trial. She was getting quite curious and keen to understand the way of growing potatoes. She reached to the project staff asking if she could be also involved in the work so that she could understand how potatoes can be grown to enhance the income of the family. Seeing her initiative and burning desire to learn, CIP staff allowed her to come freely to discuss whatever query was in her mind. At the end of the trial the potatoes had to be kept for storage studies. CIP staff tried to involve Chaillu for the study by keeping 12 of CIP's clones in her house for her to take the observations (Chaillu had finished her schooling). When CIP staff suggested involving Chaillu for the potato storage study, some of partners did not appreciate the idea. But CIP staff made an extra effort to involve Chaillu and really had to convince partners that Chaillu was the right person to take observations. Finally, it was decided by the Project Leader to involve Chaillu. She proved to be the right choice. She took care of potatoes, informing CIP about its day to day situation and was very helpful for the monthly readings.

In 2015 Chaillu was involved full time in potato growing demonstrations and gender studies in the site. One could easily see the nervousness, fear of the conservative society and embarrassment of being exposed to 26 men farmers of the village. There was one old lady of Gorkha Ram along with one female staff of CIP. During the meeting Chaillu was literally trembling, sitting on the chair next to female CIP scientist, despite the fact that Chaillu's father was also sitting next to her. But Chaillu faced the men farmers for the very first time. She exhibited the boldness and a steal determination to do something better for her life. It was the first time she came out of the house and faced men of the village. It was a commendable effort of the girl and her family. In the area, the Rajput women never comes out of the house not even for her own field work while Bishnoi women do go out in the field and easily work with male farmers.

After getting appreciation she started feeling confident and was very useful for gender meetings and was able to handle big gatherings of people, arranging the snacks during meetings, taking up pictures. She completed the survey work of 25 women of the village and helped in taking the information of schedules. She is fast and flexible to pick up any new kind of work with confidence. Seeing her developing fast and feeling confident and happy, another young girl of the village also approached to be part of the Gender program. Most of women during meetings and training started feeling comfortable. We tried to involve the powerful, talkative and skilled women in the group with the help of Chaillu.

Now the women are quite at ease to come to field demonstrations of the planter at the sowing of potato even when men are around. A lady Sarpanch (elected Head of village) even showed her skill at driving the tractor with planter <http://hdl.handle.net/20.500.11766/4595>.

Later on the lady of a retired army man also showed that if time demands she can also do planting by planters. It is the slight push of CIP which helped women and men both to be receptive to bringing women ahead out of four walls of the house, although all this is still being done behind the veil.

OUTCOME STORY 2

Meeting with Agriculture Minister of Rajasthan

A meeting was organized with Agriculture Minister, Mr. P. L. Saini at his office along with Commissioner of Horticulture, Mr. N. K. Praveen at Jaipur the capital of Rajasthan for exploring bilateral funding for dryland system project at Rajasthan on 17 and 18 Feb 2016. And to invite the Minister and his staff from the Ministry for a field day to be organized at harvesting of the DS-Demonstrations in Jodhpur District on 6 March 2016. A presentation of the project activities undertaken by CIP in partnership with NARS in 2015-16 potato crop season was given by Dr. M S Kadian to the Minister and to the other officers of Department. The Minister as well as commissioner showed interest to promote the potato cultivation in at deserts area of Rajasthan. The senior officials and media persons were also present and the information about the potato project was covered by News Channel and New Papers as shown in the following picture: <http://hdl.handle.net/20.500.11766/4589>.

OUTCOME STORY

Name of research activity/project title:	Rainfed Systems
Flagship:	South Asia
Geographical region:	Rajasthan, India
Name and email of Activity Lead:	Mohinder Kadian <m.kadian@cgjar.org>
Name and email of Outcome Story Lead:	Sushma Arya: <s.arya @cgjar.org>
Activity Lead Center:	CIP
Activity Partner Center(s):	Central Potato Research Institute
Activity Partner CRPs:	RTB

1. Outcome Story 1 Headline:

Opening the path for equitable women participation in farming and capacity building activities in India

SELF-CHECK - Have you:

- Captured the overall message of the outcome story?
- Included an action verb?
- Captured the reader's attention?

2. Outcome Story 1 Abstract

CIP tested potato clones in 2014 at Gorkha Ram as a demonstration for farmers. Chaillu, a young Rajput girl accompanied her father and she was quite curious. She asked whether she could participate in the work in order to learn to grow potatoes. CIP staff tried to involve Chaillu in taking observations on tubers kept for storage studies. Partners did not agree but were convinced and she proved to be the right choice. In 2015 Chaillu participated in potato demonstrations and gender studies. At her first meeting, her fear and embarrassment of facing men farmers was evident. But Chaillu showed a strong determination to improve her life. It was a commendable effort of the girl and her family as the Rajput women never comes out of the house. Her confidence increased and she

handled gender meetings and completed the survey of 25 women of the village. Taking her as a role model, another young girl also asked to be part of the program. Women during meetings started feeling comfortable thanks to Chaillu's example.

Women and men are becoming receptive to bringing women out of the house, although this is still being done behind the veil. <http://hdl.handle.net/20.500.11766/4592>

SELF-CHECK – Have you:

- Summarized the problem, program/activity, and outcomes?
- Provided a summary with specific measurable outcomes that avoids broad, sweeping statements such as "There was a noticeable increase in healthy eating habits"?

Outcome Story 2 Headline:

Meeting with Agriculture Minister of Rajasthan

Outcome Story 2 Abstract

A meeting was organized with Agriculture Minister, Mr. P. L. Saini at his office along with Commissioner of Horticulture, Mr. N. K. Praveen at Jaipur the capital of Rajasthan for exploring bilateral funding for dryland system project at Rajasthan on 17 and 18 Feb 2016. And to invite the Minister and his staff from the Ministry for a field day to be organized at harvesting of the DS-Demonstrations in Jodhpur District on 6 March 2016. A presentation of the project activities undertaken by CIP in partnership with NARS in 2015-16 potato crop season was given by Dr. M S Kadian to the Minister and to the other officers of Department. The Minister as well as commissioner showed interest to promote the potato cultivation in at deserts area of Rajasthan. The senior officials and media persons were also present and the information about the potato project was covered by News Channel and New Papers as shown in the following picture <http://hdl.handle.net/20.500.11766/4589>

3. Problem/Challenge Overview:

Potato is a novel crop in the area, intended to improve general farm productivity and food security. Limited water availability, high temperatures at planting and frosts at potato bulking are challenges that require tolerant varieties which are being tested. Local farmers are not familiar with potato cultivation yet but they are contacting CIP to plant potato on their farms and as the number of interested farmers is likely to increase, a systematic capacity building and information system is being implemented to support a growing demand for quality seed, crop and irrigation management, seed production and supply and marketing of a new crop. Another challenge is the equitable participation of women, both as beneficiaries and as agents of change. This participation is still precluded by social norms and achieving gender equity is quite a challenge that requires a complex and multidisciplinary approach yet to be devised by any CRP.

SELF-CHECK – Have you:

- Described the issue(s), challenge(s), problem(s), opportunities being addressed and why are these important?
- Used data to frame the problem, including the social and economic costs?
- Specified the affected dryland population(s)?
- Specified the affected dryland area (in hectares)

4. What are the main research activities:

1. Characterization of farming systems, natural resources, gender roles and social systems.

A survey involving 110 households and a complementary survey of 25 women were conducted.

2. Introduction of potato as a high value crop in the dry agro-ecologies of the sites as an innovation to improve household incomes, enhance food security, and promote women participation in farming activities and processing of produce with the aim of generating gender equity.

The introduction was agreed with local partners. Altogether, 30 farming families planted potato.

3. Testing of water saving and cultivation technologies to improve water use efficiency and reduce labour costs.

Sprinkle irrigation is being tested as a technology to economize water use.

4. Development of a potato value chain by integrating different actors (farmers, public agents, private companies and NGOs) into an innovation platform in the area.

A value chain is being developed with the participation of private sector.

SELF-CHECK – Have you:

- Described your approach of designing and implementing the research?
- Identified the various research users involved at different stages of the research process?
- Identified any major shifts or changes to the research activities and approach?

5. What are the main Outcomes of your research?

One important outcome is the increased participation of women in farming and capacity building activities in the sites.

Another outcome is the involvement of local State authorities and the private sector to actively support the introduction of potato cropping into the farming systems in the area.

SELF-CHECK – Have you:

- Described actual changes that occurred as opposed to desired or anticipated changes in your initial research proposal?
- Identified any outcomes that you did not intend or anticipate? How are these justified and/or attributed to your activities?
- Demonstrated the scalability of the outcomes for greater reach and impact (in terms of both dryland communities and land area)?

6. What are the main research Outputs that resulted in the outcome(s)?

A survey provided information on farming systems. Climate, soil and labour favoured the introduction of potato. Challenges are low water availability, low investment capacity of farmers and lack of quality seed. Opportunities are potential high income generated by potato, compared to cereals, and increased food security.

Potato was introduced in 30 smallholdings following training of 342 farmers, researchers and extension workers. Training included production practices and sprinkler irrigation.

Preliminary data and published results suggests that sprinkler irrigation reduced water utilization by about 40%. As potato cropping is labour intensive, planter and digger were

tested to reduce labour costs, which were reduced by more than 60%. Full information will be available after harvesting in February 2016.

The establishment of a potato value chain has been initiated. Five farmers have signed a contract farming agreement with PepsiCo and their income is expected to increase by 25% due to a fixed price.

SELF-CHECK – Have you:

X Identified all types of outputs delivered and observed?

- Included facts and figures to demonstrate the strength and outreach of your research outputs?*
- Avoided vague output statements such as “farmers benefited from increased food security as a result of our assessments of crop varieties.”*

7. Who were the intermediary and direct users of your research outputs and what role did they play in achieving the outcome:

-Extension workers: training and technology dissemination.
 -Policymakers: creation of enabling environment
 -Private sector: participation in innovation platforms and value chains.
 -Specialized seed producers: production of quality seed
 -Researchers: continuous research on challenges related to climate change, crop monitoring, impact assessment and social factors and particularly complex gender issues.
 -Farmers: end users and beneficiaries. Total number in the area is estimated at 2000 households cultivating 2500 ha.

SELF-CHECK – Have you:

X Clearly identified all users and distinguished between intermediary and direct users of your research?

X Described their specific related role in terms of research, development, technology dissemination, policy formulation, adaptation, adoption, etc.?

- Used facts and figures to strengthen your statements?*

8. How were your research outputs used (will be used in the future):

Research is in progress. Results will be used by farmers to diversify their cereal-based farming systems by introducing potato as a novel crop. This introduction will contribute to enhance family income and food security of smallholders. Outputs will also be used by policymakers, research agencies, seed producers and private companies dealing with processing potatoes. Major changes will be a more dynamic local economy.

SELF-CHECK – Have you:

- Described actual changes that occurred during or immediate after the release of your research outputs?*
- Identified how the use of research outputs set the stage for achieving the outcomes?*
- Identified steps and actions for ensuring sustainability?*

9. What is the Evidence of Your Research Outcomes:

It is a bit early in the research process to present evidence of research outcomes. As happens with the adoption of technology, there is a time lapse between the production of research outputs and the translation of them into research and development outcomes. However, preliminary evidence of outcomes is provided by the strong interest and involvement of the private sector and the support provided by the State Ministry of Agriculture. Also, the involvement of local research partners in the project.

SELF-CHECK – Have you:

- Identified how the actions and behaviours of key stakeholders have now changed?
- Identified how these changes will be sustained?

10. Testimonials:

Testimonials are provided in the linked videos and pictures provided in other sections of this report.

- Testimonials from Beneficiaries (quote, video, letter, interview, survey, etc.)
- Testimonials from Partners (quote, video, letter, interview, survey, etc.)

SELF-CHECK – Have you:

- Included the name, position, organization and location of person giving the testimonial?
- Included a testimonial that clearly identifies a direct benefit to a person/community/organizations, as opposed to vague general praise for the program activity?
- Included a testimonial that captures the beneficiary's strong emotion stemming from the outcome of your activities in his/her life, community, organization, etc.?
- Ensured each quote is no more than 2-3 lines.

11. Lessons Learned:

Limitation of resources: Farmers enthusiastic to cultivate potato as an income generation but quality seed and other inputs are scarce. The Department of Horticulture and the private sector should cater to the needs of farmers as potato will increase incomes and employment.

Training: As potato is a new crop, intensive training of farmers is required. Training staff should be deputed to the field to advice farmers.

Women's Self Help Groups. Important for supporting potato processing and marketing. In March 2016, training on processing will be organized and CIP will form the SHG. Women groups will be responsible for the management of potato planters and diggers to give on rent.

Technical brochure: A technical bulletin on potato production in local language (Hindi) is required. CIP will prepare it.

Women Participation: Women should be involved in capacity building but social norms prevent their attendance to the meetings. However, activities so far conducted are causing changes in attitudes and some male farmers think that women should participate. An incentive system based on supporting only those male farmers that came along with females of the house has been tried with success. Unemployed male and female youth can be involved in marketing of potato products.

SELF-CHECK – Have you:

- Identified both challenges/weaknesses and successes/strengths?

- Identified what you might have done differently to ensure a better outcome or greater impact?
- Identified who/what other organization/canter/CRP can potentially benefit from these lessons?

12. Full reference citations and URL link to published research work.

Published references and evidence supporting this work are listed below:

Neeraj Sharma, Sanjay Rawal, Mohinder Kadian, Sushma Arya, Merideth Bonierbale, and BP Singh. (2014) Evaluation of advanced Potato clones for drought tolerance in Arid zone in Rajasthan, India. Potato J 41 (2), 189-193. <http://hdl.handle.net/20.500.11766/4596>

Drought tolerant CIP clone introduced in All India Coordinated Research Project after testing at Mansagar (Jodhpur project site) <http://hdl.handle.net/20.500.11766/4587>

13. Please check any of the following that are being submitted to complement your outcome story:

- Quality Photo(s) (of landscape, beneficiaries and activities) with appropriate captions and credit
- Testimonials from Beneficiaries (quote, video, letter, interview, survey, etc.)
- Testimonials from Partners (quote, video, letter, interview, survey, etc.)
- Full reference citations and URL hyperlinks to published research work
- Blog and/or other website stories with URL links
- Newspaper Articles (print or electronic)
- Communication (non-scientific) Materials Produced (brochure, poster, press release, etc.)
- Supporting Materials (presentations, workshop reports, activity reports, donor reports)
- Video/Audio Clips
- Other (please explain: _____)

14. Final Checklist

Please use the following checklist to ensure your outcome story is ready for sharing.

No.	Question to consider	Yes	No
1	Does the story describe the outcomes the research produced and the people who are benefitting? What changes—in skills, knowledge, attitude, practice, or policy—has the research brought, and who is benefitting from these changes?	X	
2	Does the story capture outcomes from an interesting angle (possibly a human angle) that would captivate the attention of the target audience?	X	
3	Does the story explain what new insights the research brings? Does the story describe a key insight on what works and what doesn't and something that future research could build on. What are the main lesson learned?		

4	Does the story make a compelling point that people will remember? Does the story show how the research makes a difference to improving livelihoods and reducing poverty?	X	
5	Does the story provide interesting facts that people will remember?	X	
6	Does the story explain in clear and measurable ways the kind of impact - beyond the level of the reported outcomes - could be achieved if the research outputs scaled out and up?	X	
7	Does the story show which partners contributed and how?		
8	Does the story include quotes from scientists, partners and/or beneficiaries?	X	
9	Have I provided links to other media (journal articles, website news, newsletter, blogs, annual reports of other CGIAR centres, CRPs) that also feature this story?	X	
10	Have I provided the contact details of people who can provide more information?	X	

SECTION V – LIST OF 2015 PUBLICATIONS AND SCIENTIFIC OUTPUTS

In 2015, CIP produced under the framework of the CGIAR Research Program on Dryland Systems a total of one ISI indexed publication 2 non indexed publication.

The following is the summary of all 2015 publications and research outputs produced by CIP under Dryland Systems by Region, including full and correct citation of all publications, weblink and categories of scientific output marked with the following codes to indicate:

- (S) = multidisciplinary/system research
- (M) = mono-disciplinary research
- [X.XX]= ISI Impact Factor¹
- (O) = Open Access

Table 1. Summary of all ISI publications

Region/ALS	ISI Factor [range of ISI scores]	ISI Open (% of ISI articles)	ISI Monodisciplinary (% of ISI articles)	ISI Multidisciplinary (% of ISI articles)
Global	2.4	0%	100%	0
TOTAL	2.4	0%	100%	0

Table 2. Summary of Non-ISI Publications

Region/ALS	Non-ISI Articles	Technical Reports & Working Papers	Datasets	Other
SA/	3	7	2	8
TOTAL	3	7	2	8

ISI Journal Articles (1)

1. (M) [2.4] D.A. Ramirez, J.L. Rolando, W. Yactayo, P. Monneveux, R. Quiroz. 2015. Is discrimination of ¹³C in potato leaflets and tubers an appropriate trait to describe genotype responses to restrictive and well-watered conditions? Journal of Agronomy and Crop Science. 201 (6) 410-418. <http://hdl.handle.net/20.500.11766/4607>

Non-ISI Journal Articles and Theses (3)

1. Neeraj Sharma, Sanjay Rawal, Mohinder Kadian, Sushma Arya, Merideth Bonierbale, and BP Singh. (2014) Evaluation of advanced Potato clones for drought tolerance in Arid zone in Rajasthan, India. Potato J 41 (2), 189-193. <http://hdl.handle.net/20.500.11766/4596>
2. S. Kumar, R. Quiroz and M.S. Kadian. 2015. Benchmarking Farmers' Economic and Social Status in Anantapuramu and Kurnool Arid Districts of Andhra Pradesh for Probable Introduction of Potato Crop. Accepted in Economic Affairs. <http://hdl.handle.net/20.500.11766/4565>
3. Rajesh K. Rana, S. Arya, Sanjay Kumar, B. P. Singh, G. Adinarayana, Shalander Kumar and M. S. Kadian. 2015. Analysis of pre-requisite and framework for introducing potato crop in non-traditional Antapuramu district of Andhra Pradesh: <http://hdl.handle.net/20.500.11766/3137>

¹ For ISI, the JCR Impact Factor List for 2013 has used (<https://www.360researchpapers.com/resources/impact-factor>, accessed 6 July 2015). For journals not listed, the website of that journal was checked and if it lists an Region ISI factor, this was recorded.

Technical Reports and Working Papers (7)

1. Rajesh K. Rana., S. Arya., S. Kumar., T. Cecilia., V. Mares., R. Quiroz, S. Kumar and M.S. Kadian. 2015. Improving the livelihoods of dryland farmers through the introduction of potato cropping: a proposal based on detailed SWOT analysis. [working paper]. <http://hdl.handle.net/20.500.11766/4564>
2. Rawal, S., S.Arya, M.Kadian (2015, August 24).Drought tolerant CIP clone introduced in All India Coordinated Research Project after testing at Mansagar (Jodhpur project site) [working paper].<http://hdl.handle.net/20.500.11766/4587>
3. Kadian, M., S.Arya, V.Mares, C.Turin (2015).Baseline study: characterization of the farming systems, resources and environments. [working paper]. <http://mel.cgiar.org/xmlui/handle/20.500.11766/3136>
4. Kadian, M., S.Arya (2015). Men and women were interacted for introducing potato in the system . [working paper]. <http://mel.cgiar.org/xmlui/handle/20.500.11766/4257>
5. Kadian, M., S.Arya (2015).Water and labour saving technologies by micro-irrigation and machineries, selection of farmers and appraisal of potato cultivation in system . [working paper]. <http://mel.cgiar.org/xmlui/handle/20.500.11766/3139>
7. Kadian, M., S.Arya (2015).Private sector (McCain and PepsiCo) contacted for value addition of potato through contract farming. [working paper]. <http://mel.cgiar.org/xmlui/handle/20.500.11766/3140>

Datasets (2)

1. Arya, S., M.Kadian, M.Kadian, M.Kadian (2015, December 31).Diagnosis of the situation of women of different castes [Dataset]. <http://mel.cgiar.org/xmlui/handle/20.500.11766/4584>
2. Kadian, M., S.Arya (2015, March 23).Capacity building of farmer, researchers, extension workers, consumers and traders at DS project sites [Dataset]. <http://mel.cgiar.org/xmlui/handle/20.500.11766/4586>

Video and Images (8)

1. Kadian, M (Writer). (2015, January 22).Media coverage national news channel for potato cultivation on drylands of Rajasthan [Video file] from <https://www.youtube.com/watch?v=O3SWIB0I7qE>. <http://mel.cgiar.org/xmlui/handle/20.500.11766/4588>.
2. Male and female farmers attending training course on best potato production practices at farmer field day, Mansaagar, Jodhpur-Rajasthan. [Picture file]. <http://mel.cgiar.org/xmlui/handle/20.500.11766/4592>.
3. Kadian, M., S.Arya (2015, March 23).Demonstration given at potato planting time in project site Mansaagar, Jodhpur-India[Demonstration given at potato planting time in project site Mansaagar, Jodhpur-India]. [Picture file]. <http://mel.cgiar.org/xmlui/handle/20.500.11766/4590> .
4. Kadian, M., S.Arya (2015, November 25).Women empowerment with technologies [Women empowerment with technologies]. [Picture file]. <http://mel.cgiar.org/xmlui/handle/20.500.11766/4595>.
5. Kadian, M., S.Arya (2015, November 24).Farmer planting potato with paired row planter at project site Dindoo, Jaisalmer-Rajasthan[Farmer planting potato with paired row planter at project site Dindoo, Jaisalmer-Rajasthan]. [Picture file]. <http://mel.cgiar.org/xmlui/handle/20.500.11766/4591>.
6. Kadian, M., S.Arya (2015, January 22).Potato demonstration planted by farmer in Mansagar-Jodhpur, Rajasthan[Potato demonstration planted by farmer in Mansagar-Jodhpur, Rajasthan, CIP DG visited potato fields Jodhpur and Jaisalmer]. [Picture file]. <http://mel.cgiar.org/xmlui/handle/20.500.11766/4593>.

7. Kadian, M., S.Arya (2015, December 25).Potato grown successfully using sprinklers first time in DS system in Didoo-Jaisalmer, Rajasthan [Potato grown successfully using sprinklers first time in DS system in Didoo-Jaisalmer, Rajasthan]. [Picture file].
<http://mel.cgiar.org/xmlui/handle/20.500.11766/4594>.
8. Kadian, M., S.Arya (2016, February 17).Meeting with Agriculture Minister of Rajasthan exploring project extension support from Govt.[Exploring project extension support from State Govt. Rajasthan]. [Picture file].
<http://mel.cgiar.org/xmlui/handle/20.500.11766/4589>.

Annex 1: CRP indicators of progress, with glossary and targets

Center	CIP	2015
KNOWLEDGE, TOOLS, DATA		
1. Number of flagship “products” produced by CRP		0
2. Number of flagship products produced that have explicit target of women farmers/NRM managers (Selection from Above)		0 (0%)
3. Number of flagship products produced that have been assessed for likely gender- disaggregated impact (Selection from Above)		0 (0%)
4. Number of “tools” produced by CRP		0
5. Number of flagship tools produced that have explicit target of women farmers/NRM managers (Selection from Above)		0 (0%)
6. Number of flagship tools produced that have been assessed for likely gender- disaggregated impact (Selection from Above)		0 (0%)
7. Number of open access databases maintained by CRP	<p>Socio-Economics survey data: Diagnosis of the situation of women of different castes</p> <p>Crop yields in field experiements: Capacity building of farmer, researchers, extension workers, consumers and traders at DS project sites</p>	2
8. Total number of users of these open access databases		900
9. Number of publications in ISI journals produced by CRP	Publications: Is Discrimination of 13C in potato leaflets and tubers an appropriate trait to describe genotype responses to restrictive and well-watered conditions?	1
10. Number of strategic value chains analyzed by CRP	Value chains: Farmer potato value chain assessed and farmer income improved	1
11. Number of targeted agro-ecosystems analysed/characterised by CRP	Type: Mixed Crops (1),	1

	AEZ: semi arid Geographical Focus: India	
12. Estimated population of above-mentioned agro- ecosystems		0
CAPACITY ENHANCEMENT AND INNOVATION PLATFORMS		
13. Number of trainees in short-term programs facilitated by CRP (male)	Subjects: Potato improved production and post-harvest technologies; Potato growing areas (exposure visit); Best package of practices for potato production in dryland agro-ecology; Best package of practices for potato cultivation in Jaisalmer-Rajasthan; Jodhpur: private sectors, policy makers and stakeholders - farmer potato value chain assessed and income improved	238
14. Number of trainees in short-term programs facilitated by CRP (female)	Subjects: Potato improved production and post-harvest technologies; Potato growing areas (exposure visit); Best package of practices for potato production in dryland agro-ecology; Best package of practices for potato cultivation in Jaisalmer-Rajasthan; Jodhpur: private sectors, policy makers and stakeholders - farmer potato value chain assessed and income improved	82
15. Number of trainees in long-term programs facilitated by CRP (male)		0
16. Number of trainees in long-term programs facilitated by CRP (female)		0
17. Number of multi-stakeholder R4D innovation platforms established for the targeted agro-ecosystems by the CRPs		0
TECHNOLOGIES/PRACTICES IN VARIOUS STAGES OF DEVELOPMENT		
18. Number of technologies/NRM practices under research in the CRP (Phase I)	Biological: Key mechanisms responsible for the varietal differences in biomass accumulation and tuber yield under different water availability levels; Improved potato production and post-harvest technologies Management and cultural practices: On-farm potato introduction and water saving technologies Geographical Focus: Global; India	3

<p>19. Number of technologies under research that have an explicit target of women farmers (Selection from Above)</p>	<p>Biological: Improved potato production and post-harvest technologies</p> <p>Management and cultural practices: On-farm potato introduction and water saving technologies</p> <p>Geographical Focus: India</p>	<p>2 (67%)</p>
<p>20. Number of technologies under research that have been assessed for likely gender- disaggregated impact (Selection from Above)</p>	<p>Biological: Improved potato production and post-harvest technologies</p> <p>Management and cultural practices: On-farm potato introduction and water saving technologies</p> <p>Geographical Focus: India</p>	<p>2 (67%)</p>
<p>21. Number of agro- ecosystems for which CRP has identified feasible approaches for improving ecosystem services and for establishing positive incentives for farmers to improve ecosystem functions as per the CRP's recommendations</p>		<p>0</p>
<p>22. Number of people who will potentially benefit from plans, once finalised, for the scaling up of strategies</p>		<p>0</p>
<p>23. Number of technologies /NRM practices field tested (phase II)</p>		<p>0</p>
<p>24. Number of agro-ecosystems for which innovations (technologies, policies, practices, integrative approaches) and options for improvement at system level have been developed and are being field tested (Phase II)</p>		<p>0</p>
<p>25. Number of above innovations/approaches/options that are targeted at decreasing inequality between men and women</p>		<p>0 (0%)</p>
<p>26. Number of published research outputs from CRP utilised in targeted agro- ecosystems</p>		<p>0</p>
<p>27. Number of technologies/NRM practices released by public and private sector partners globally (phase III)</p>		<p>0</p>
<p>POLICIES IN VARIOUS STAGES OF DEVELOPMENT</p>		

28. Numbers of Policies/ Regulations/ Administrative Procedures Analyzed (Stage 1)		0
29. Number of policies / regulations / administrative procedures drafted and presented for public/stakeholder consultation (Stage 2)		0
30. Number of policies / regulations / administrative procedures presented for legislation(Stage 3)		0
31. Number of policies / regulations / administrative procedures prepared passed/approved (Stage 4)		0
32. Number of policies / regulations / administrative procedures passed for which implementation has begun (Stage 5)		0
OUTCOMES ON THE GROUND		
33. Number of hectares under improved technologies or management practices as a result of CRP research		0
34. Number of MALE farmers and others who have applied new technologies or management practices as a result of CRP research		0
35. Number of FEMALE farmers and others who have applied new technologies or management practices as a result of CRP research		0

Annex 2: Performance indicators for gender mainstreaming with targets defined

Performance Indicator	CRP performance approaches requirements	CRP performance meets requirements	CRP performance exceeds requirements
1. Gender equality targets defined	Sex-disaggregated social data is being collected and used to diagnose important gender-related constraints in at least one of the CRP's main target populations	Sex-disaggregated social data collected and used to diagnose important gender-related constraints in at least one of the CRP's main target populations And The CRP has defined and collected baseline data on the main dimensions of gender inequality in the CRP's main target populations relevant to its expected outcomes (IDOs)	Sex-disaggregated social data collected and used to diagnose important gender-related constraints in at least one of the CRP's main target populations And The CRP has defined and collected baseline data on the main dimensions of gender inequality in the CRP's main target populations relevant to its expected outcomes (IDOs) And CRP targets changes in levels of gender inequality to which the CRP is or plans to contribute, with related numbers of men and women beneficiaries in main target populations
2. Institutional architecture for integration of gender is in place	- CRP scientists and managers with responsibility for gender in the CRP's outputs are appointed, have written TORS. - Procedures defined to report use of available diagnostic or baseline knowledge on gender routinely for assessment of the gender equality implications of the CRP's flagship research products as per the Gender Strategy -CRP M&E system has protocol for tracking progress on integration of gender in research	- CRP scientists and managers with responsibility for gender in the CRP's outputs are appointed, have written TORS and funds allocated to support their interaction. - Procedures defined to report use of available diagnostic or baseline knowledge on gender routinely for assessment of the gender equality implications of the CRP's flagship research products as per the Gender Strategy -CRP M&E system has protocol for tracking progress on integration of gender in research And A CRP plan approved for capacity development in gender analysis	CRP scientists and managers with responsibility for gender in the CRP's outputs are appointed, have written TORS and funds allocated to support their interaction. - Procedures defined to report use of available diagnostic or baseline knowledge on gender routinely for assessment of the gender equality implications of the CRP's flagship research products as per the Gender Strategy -CRP M&E system has protocol for tracking progress on integration of gender in research And A CRP plan approved for capacity development in gender analysis And The CRP uses feedback provided by its M&E system to improve its integration of gender into research

ANNEX 3: List of Centre Research Staff contributing to Dryland Systems

CIP's 2015 CRP Dryland Systems Final List of personnel and consultants contributing to CRP Dryland Systems in 2015 is available [here](#).



RESEARCH
PROGRAM ON
Dryland Systems

The CGIAR Research Program on Dryland Systems aims to improve the lives of 1.6 billion people and mitigate land and resource degradation in 3 billion hectares covering the world's dry areas.

Dryland Systems engages in integrated agricultural systems research to address key socioeconomic and biophysical constraints that affect food security, equitable and sustainable land and natural resource management, and the livelihoods of poor and marginalized dryland communities. The program unifies eight CGIAR Centers and uses unique partnership platforms to bind together scientific research results with the skills and capacities of national agricultural research systems (NARS), advanced research institutes (ARIs), non-governmental and civil society organizations, the private sector, and other actors to test and develop practical innovative solutions for rural dryland communities.

The program is led by the International Center for Agricultural Research in the Dry Areas (ICARDA), a member of the CGIAR Consortium. CGIAR is a global agriculture research partnership for a food secure future.

For more information, please visit

drylandsystems.cgiar.org

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