

ICARDA-ICAR PROJECT: Promoting Cactus (*Opuntia ficus-indica*) As drought resilient feed resource under different agro-ecological production systems across India

PROJECT 3: SUB PROJECT 2

Webinar proceeding

organized between:

ICAR- CAZRI Regional Research Station at. Kukma, Bhuj, Gujarat

and

The International Center for Agriculture Research in the Dry Areas (ICARDA)

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Co-authors/Contributors/Collaborators:

Dr. Anandkumar Naorem and Mr. Sachin Patel (CAZRI – Bhuj)



RESEARCH
PROGRAM ON
Livestock

Promoting cactus (*Opuntia ficus-indica*) as drought resilient feed resource under different agro-ecological production systems across India

Webinar

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(ICARDA)

22 October 2020



Rational: Since its beginning in November 2019 in Wuhan, China, coronavirus COVID-19 has a tremendous impact on our lives. The world is still struggling to contain the spread and protective procedures are implemented to protect the public. This impact is shaping up to have serious long-term implications for businesses around the world, as most of the business have been postponed and international travel is very difficult to most of the countries. In-person meetings have been canceled in response to this pandemic. Due to the uncertainty of timing for resuming our normal operations, and in order to mitigate the increased risk of exposure through in-person attendance ICARDA management recommended to maintain contact with our partners through online meetings until the end of the year.

Objectives: This meeting aims to contribute to prepare and review progress on the implementation of the workplan and identify additional priorities; provide an opportunity for the Teams to meet and further specific tasks; and provide a platform for discussing on-going responses to Covid 19 with an aim to improve the coordinated response and information flow.

- The availability of good internet connection is required

Webinar

October 2020		
13:00-13:15	Welcoming remarks and meeting agenda • Dr. Sarker • Dr. Yadav • Kukma, Bhuj • Dr. Mounir • Dr. Sawsan	
13:15 – 14:00	Update on: • The current trials • Capacity development events • Cactus dissemination to farmers • Publications • Budget situation • Covid impact	All participants
14:00 – 14:15	Suggestions for next webinar Warp up and key action points	
14:15 –14:30	Concluding remarks	Kukma, Bhuj ICARDA

Webinar proceedings

A webinar was conducted by ICARDA in collaboration with ICAR-Central Arid Zone Research Institute (CAZRI), Regional Research Station, Bhuj, Gujarat on 22.10.2020 at 1:00 PM (Indian time). The webinar was organized in order to monitor the achievements and progress of the bilateral research project entitled “Promoting Cactus (*Opuntia ficus-indica*) as drought-resistant feed resources under different agro-ecological production systems across India” and to discuss the challenges faced by the team during the COVID-19 pandemic.

The following scientists were present during this webinar:

CAZRI

- Dr. S. Bhaskar, Assistant Director General (AA&CC), ICAR
- Dr. O.P. Yadav, Director, ICAR-CAZRI, Jodhpur
- Mr. M. Sureshkumar, Head, ICAR-CAZRI, RRS-Bhuj
- Dr. Anandkumar Naorem, Scientist and PI of the project, ICAR-CAZRI, RRS-Bhuj
- Mr. Sachin Patel, PA, ICAR-CAZRI, RRS-Bhuj

ICARDA

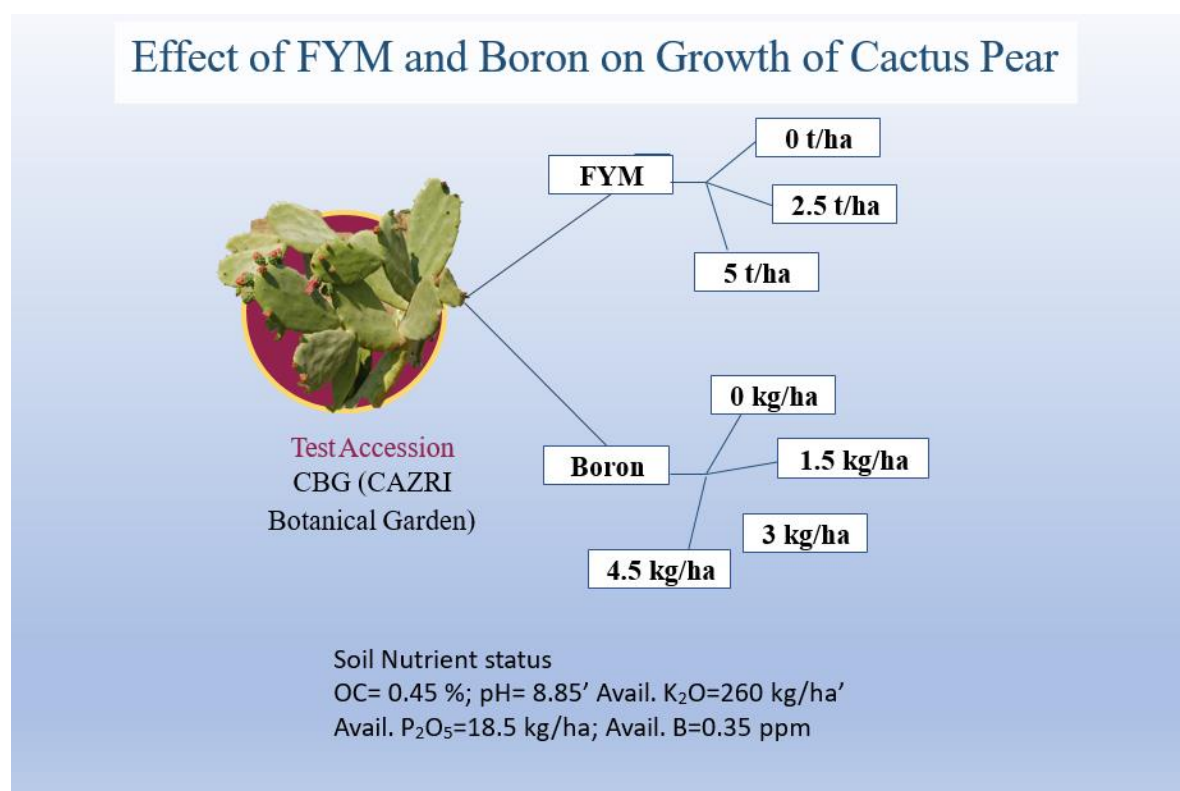
- Dr. Ashutosh Sarker, Regional Coordinator, South Asia & China Program, ICARDA
- Dr Mounir Louhaichi (Forage/Rangeland, ICARDA)
- Dr. Sawsan Hassan, (Forage/Rangeland, ICARDA)



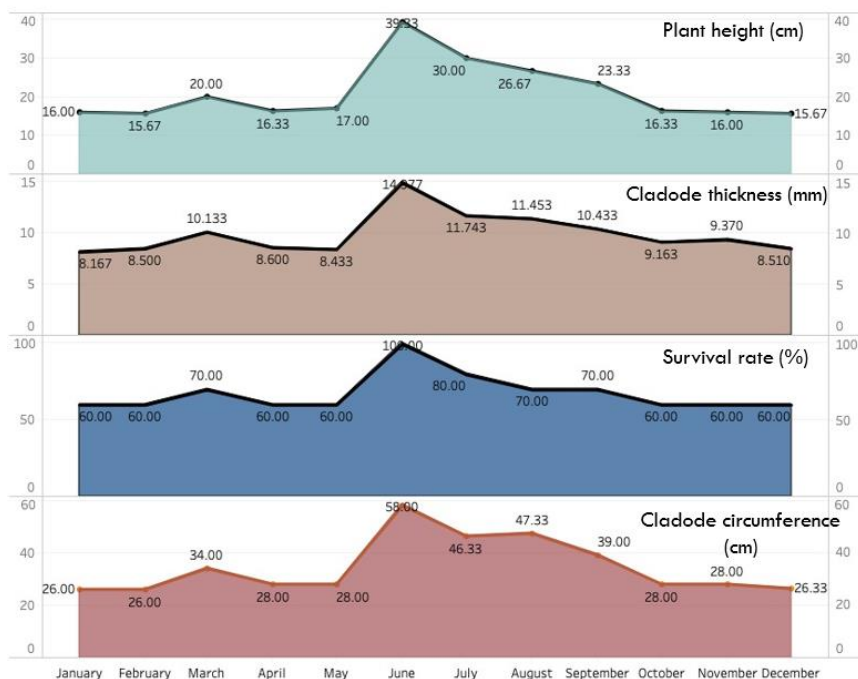
Dr. Sawsan welcomed all the members from ICARDA and ICAR and introduced the objectives of the webinar. Dr. Sarker, welcomed all the participants in this proceeding of the project that is being implemented successfully under the collaboration between ICARDA and CAZRI Bhuj. He valued the motivation and hard work from both sides in promoting cactus as a multipurpose crop. Dr. Yadav welcomed all participants. He was fortunate that along with Dr. Bhaskar were able to visit Bhuj station few weeks before the lockdown and it was a great opportunity to see the activities on the ground. The project is progressing well and he is extremely pleased to see new generation of scientists taking the lead. He mentioned that this project is quite innovative through introducing potential new crop. However, this might take long period as it requires time to raise the awareness of the farming community and to understand a the technical aspect related to this crop. But giving the efforts and the type of germplasm that has been evaluated, now we have made very good background upon we can further build up. He mentioned also that in this project the different activities are running simultaneously starting from the introduction, evaluation at the same time trying the promising materials at the farmers' field and getting the feedback from the farming community which is a very good initiative in a very comprehensive and transparent way. Dr. Yadav highlighted an important issue related to the biotic pressure mainly birds and rabbits as they like this spineless cactus and they are causing a lot of damage for the plants especially during the early growth stages and this is adding more challenges to our cactus work. So we need to be better prepared for this unseen kind of challenges. Dr. Mounir, pointed that although the project has a small budget, the deliverables and the outcomes are really big. He declared that among all the countries ICARDA is operating and introducing cactus, India comes first with respect to the support ICARDA is getting either from the government or from the states. He thanked the ICAR and the South Asia & China Regional Program Leader Dr. Sarker for the continuous support to make cactus pear not only visible but also of priority to help small livestock keepers. He stated that despite the combined stress of drought and salinity in Bhuj, cactus is performing very well. Thanks to all involved scientists for their hard work, continuous out-of-the-box thinking and dedication. Dr. Sawsan indicated that farmers in Bhuj are

not interested only on cactus pear as a fodder crop but they are looking for the fruit production which could represent a new avenue to support their livelihood.

Following the opening statements, a presentation was delivered by Dr. Anandkumar Naorem, principle investigator of the project in which he highlighted the need of the spineless cactus for the Kachchh farmers. He also succinctly discussed the activities assigned for the year 2020. Each of the activities were explained with the objectives and the results. The results of the research trials were presented with scientific data and reasoning.



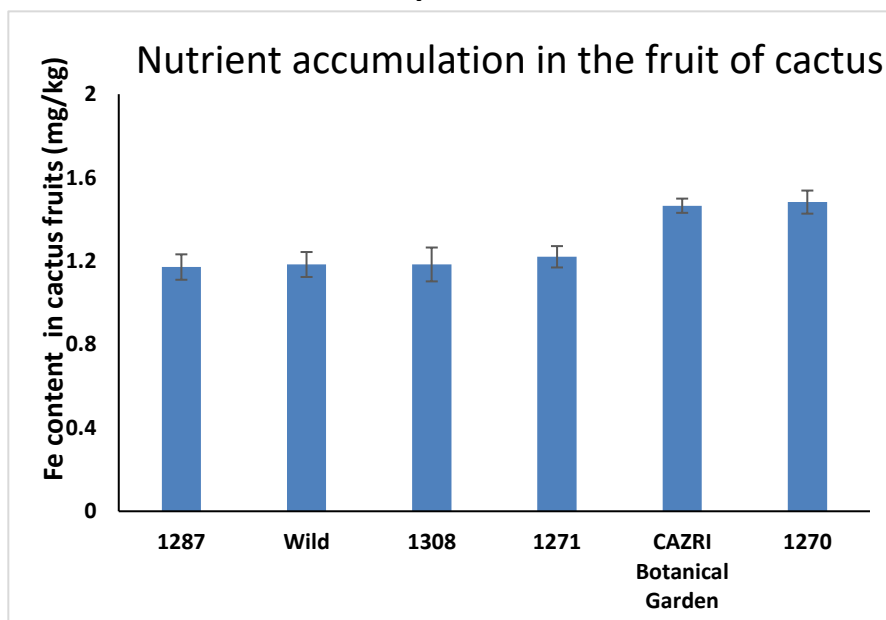
Application of 2.5 t/ha farm yard manure and 3.0 kg/ha Boron showed promising results.



Question: When is the best time to plant cactus pear in Kachchh?

Experimental Design:
 RBD
 Replications: 5
 Test accessions: CBG and Bianca Macomer
 Observation taken: After 1 year of each planting

Best time to plant cactus pear under Bhuj conditions is June followed by July and September



The iron content in the fruit pulp of new *Opuntia ficus-indica* accessions is higher than wild *Opuntia* accession

The second part of the webinar focused on the challenges met during COVID-19 pandemic. Dr. Anandkumar Naorem had explained the alternative measures adopted during the pandemic to reach to the farmers and its success rate. He also pointed out how IoT (internet of things) has helped during the pandemic in order to carry on the research activities and capacity building programmes. He stated that WhatsApp platform was established for the farmers who planted cactus to share images and information about the status of cactus pear in their fields. He also showed the successful completion of farmers' field day and hands-on training conducted to increase awareness and train the farmers on spineless cactus farming as fodder resources.

Dr. Mounir encouraged the presenter for the detailed and scientific findings of each trial. . He also appreciated the thinking "outside of the box" methods adopted for the successful running of the project. He enquired about the research plots as well as farmers' field in Kachchh region are protected. He emphasized on important note that might need investigation the threshold of number of provided cactus pads to guarantee the success of cactus plantation as from the observation it was confirmed that this success is more visible when the farmers planted large number of pads comparing to farmers who planted small number of cactus pads. Dr. Mounir highlighted the importance and innovation of the of the WhatsApp platform, and this can be taken further to develop a protocol on the methodology of taking the pictures and how frequent should be taking. The last recommendation provided by Dr. Mounir was to report the capacity development events in separate document with more details about the list of participants and the theme of the training. Dr. Anand answered that in Kachchh, spineless cactus cladodes are often damaged by rabbits and Nilgais. One of the experiments had to be repeated in the research farm due to rabbit damage as every night the fresh cladodes used as planting material were eaten by rabbits. Therefore, a fence was constructed to reduce the damage. In farmers' field, most of the farmers are cultivated cactus in open field. Although they are being damaged by Nilgais and rabbits, the frequency of attack is less as cactus is cultivated with other major crops and they take proper care of these damages. Some of the farmers are providing electric fence, thereby leading to less damage.

Dr. Bhaskar expressed his satisfaction about the activities conducted within this project, he recommended to test the cactus accession performance in other research stations, also he suggested to test these accessions under different ecological niches within India, and also to test their performance under different environmental stress such as salinity in soil or water. Moreover, how best we can integrate these accessions under different farming system. The water use efficiency of cactus crop can be compared with other major fodder crops such as Bulrush millet (bajra) and Sorghum (jowar). Dr. S. Bhaskar suggested that salinity experiments must be conducted in order to increase the promotion. Further studies such as integration of cactus in integrated farming system model can be carried out. The water use efficiency of cactus crop can be compared with other major fodder crops.

Dr. Yadav also encouraged the promotion of cactus in different regional stations and also explained the mixed response of cactus growth in different locations. He insisted on the importance of protection in early growth stages of spineless cactus. He agreed also with Dr. Bhaskar that there is a high need to compare cactus with other fodder species in terms of water requirement. He highlighted the fact that farmers in Gujarat are very innovative and business minded, for any new planation they will consider the comparative economics advantages comparing to the conventional crops.

Dr. Bhaskar suggested to solve the issue of protection, spiny cactus can be used as biological fence to protect the spineless cactus. Dr. Mounir appreciated this suggestion and he highlighted the Tunisian experience as farmers use spiny cactus as a cheap and efficient mean to protect properties. Nowadays, there is a new trend in Tunisia to invest in cactus for fruit production, the high-quality fruits are reserved for export while the poor one is used for cactus oil extraction. Dr. Mounir added the importance of cactus in various sectors. He added that direct grazing, waterlogging and frost are the main enemies for cactus pear establishment and growth and advised the farmers to avoid direct grazing and waterlogging in Kachchh region. He also highlighted the need of a silvipasture protection system where cactus can be a part of the model. He also encouraged the narrow spacings of the cactus for higher productivity from a small land. Dr. Mounir suggested to conduct a study in the camel research station in Rajasthan where we

can test different salinity levels, drought and planting season and the requirement of water depending on the planting time. Dr. A. Sarker enlightened the history of the project and he stated that the purpose is not to compete with any other crops rather than planting it along with other crops as suggested by Drs. Bhasker and Mounir. He highlighted the different use and benefits of cactus. He also assures that new research projects can be formulated to out scale the cactus research. Dr. Bhasker suggested government of Uttar Pradesh is very much interested in repetition of some of the success stories in Punargathan area and he is ready to apprise the cactus work.

Dr. Sawsan mentioned that ICARDA team is preparing an economic survey to measure the cost benefits of cactus planation in different countries under different production systems. The draft of this survey will be shared with scientist in Bhuj for their inputs. Dr. Sawsan enquired about the documentary movies and its release in which Dr. Anand replied that the documentary movies are almost complete and the voice over for the English language is continuing. He assured that the documentary movies will be shared to all the members before the release. Dr. Sawsan also enquired about the budget allocation in which Dr. Anand answered that due to the pandemic, the components such as travelling allowances could not be completed due to pandemic while the research components were carried on successfully. Dr. Anand has also informed that a manuscript draft will be sent to the members before it is published as soon as possible.

Afterward, the meeting ended with the vote of thanks to the chair.

Action Points

Dr. Dr. Anand to send detailed report about the WhatsApp platform with respect to number of participants and the information shared by them.

Dr. Anand to develop a protocol on the methodology of taking the pictures and ow frequent should be taking by the WhatsApp platform

Dr. Anand to share the documentary movies to all the members before the release.

Dr. Anand to send as soon as possible Audit Utilization Certificate of the actual utilized fund.

Dr. Sawsan to work with Dr. Sarker and Dr. Anand Kumar to develop a project proposal for cactus upscaling and to liaise with Dr. Bhasker for further proceeding with ICAR.

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