Asian Journal of Agricultural Extension, Economics & Sociology

20(1): 1-11, 2017; Article no.AJAEES.36498
ISSN: 2320-7027

A Study on Role of WhatsApp in Agriculture Value Chains

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Authors' contributions

This work was carried out in collaboration between all authors. Authors PSN and SV designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author SSS managed the analyses of the study. Authors CPP, SK and JPS managed the literature searches. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/AJAEES/2017/36498
Editor(s):
(1) H. Saediman, Department of Agribusiness, Halu Oleo University, Indonesia.
Reviewers:
(1) Caner Dincer, Galatasaray University, Turkey.
(2) K. D. V. Prasad, Rashtrasant Tukadoji Maharaj Nagpur University, India.
(3) Kalpana L. Chaudhari, India.
Complete Peer review History: http://www.sciencedomain.org/review-history/21333

Original Research Article

Received 30th August 2017
Accepted 27th September 2017
Published 11th October 2017

ABSTRACT

WhatsApp sends real-time messages and is one of the world's most popular communication applications in the 21st century. The present study highlights and examines the domestication of WhatsApp among farmers. An exhaustive whatsapp user list was prepared from each village and 3 farmers were selected with the help of systematic sampling technique. Thus, 90 farmers from the 3 blocks of the district using whatsapp were purposively selected and grouped for sending the messages of agricultural aspects. The study was conducted at Krishi Vigyan Kendra, Neemuch during 2016-17. Results showed how farmers perceive WhatsApp as a 'convenient' communication application, problem solving with audio-visuals, on-time, solution at the time of crisis in their agriculture activities. Some of the critical issues arising from the use of WhatsApp included distractions and exposure to unregulated messages or information. Irrespective of its disadvantages, social media has proved to be an important platform for pluralistic extension, bringing together all the actors in Agriculture Information system and making them shareholders in development.

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Keywords: Whatsapp; social media; technology dissemination; digital farming; mobile technology.

1. INTRODUCTION

Information and Communication Technologies like web portals, mobile phones and social media are the most popular and most widely used and can enhance the interaction among researchers, extension personnel and farmers. The youth today are hooked to the internet and their 1st major activity on the web is social networking. Also, mobile phones are the most popular form of Information and Communication Technologies as has been proven by the sheer number of subscribers worldwide. And these tools, used appropriately, can change the whole structure of agricultural communication. Information and Communication Technologies can be an important part of communication strategies, connecting the youth to peers and professionals. It is true that the 'apps won't plough the fields' but they will definitely help the youth do the job better. ICTs can prove to be a great catalyst in engaging agricultural community in family farms making agriculture attractive and sustainable again.

Social media can offer amazing opportunities to farmers. It can help farmers to seek information on farm operations, clarify their doubts on plants/ livestock disease symptoms and can have immediate access to market related information. However, this can be possible only when they are socially networked with human resources - agricultural researchers, extension agents, veterinarians, progressive farmers, sellers & other buyers–in virtual space. Thanks to low cost of smartphones, there is an unprecedented increase of social media use in rural India. The power of social media can be harnessed and will be beneficial for the farming communities.

The Internet of Things has arrived on Indian farms. Social media can transform businesses to record sales and generate revenue. Social Media channels like LinkedIn, Facebook, Twitter YouTube and Instagram have changed how business interacts with their customers. The rising number of mobile internet usage even amongst the rural populace in India as one indicator of the "Future" train leaving the Station. In September 2015 WhatsApp mobile platform reached 900 million active users. According to the website statista.com the service handles more than 600 million photos and 64 billion overall messages every day. With increasing internet penetration levels in India and smartphone increasingly becoming very affordable one is left to imagine how a Platform such as WhatsApp can transform agriculture value chain actors such as Agro dealers, Agribusiness SMEs, and Agriculture extension workers and ultimately create value for the small holder farmers. The trump card for WhatsApp has been the group messaging ability of the platform to send messages, photos and videos to individuals and groups in a cost effective manner cheap than most MMS based platform in the market. The grouping capabilities of the WhatsApp platform can be extended to value chain actors like Agriculture extension workers. The market opportunities for WhatsApp use by Agriculture value chain actors are endless. WhatsApp has indeed become part of the holy grail together with the traditional over the internet SMS to reach more small holder farmers and value chain actors with timely information dissemination. Even though some problems do exist, such as –

1. Lack of timely dissemination of agricultural messages.
2. Lack of timely available solutions of the problems.
3. Unawareness about agri. Related news and events.
4. Lack of interaction of farmers with agri. Scientists and experts.

1.1 Agriculture Value Chain

The agricultural value chain concept has been used since the beginning of the millennium, primarily by those working in agricultural development in developing countries. Although there is no universally accepted definition of the term, it normally refers to the whole range of goods and services necessary for an agricultural product to move from the farm to the final customer or consumer [1].

Information and Communication Technologies, or ICTs, have become an important tool in promoting agricultural value chain efficiency. There has been a rapid expansion in the use of mobile technologies, in particular. The price of ICT services is falling and the technologies are becoming more affordable to many in developing countries. Applications can support farmers directly through SMS messages [1]. Examples include iCow, developed in Kenya, which provides information on the gestation period, on

artificial insemination of the cows, and on how to look after them. Applications such as M-Pesa can support access to mobile payment services for a large percentage of those without banks, thereby facilitating transactions in the value chain. Other applications have been developed to promote provision of crop insurance through input dealers, for example [1].

ICTs are also being used to strengthen the capacity of extension officers and NGO field staff to reach farmers with timely and accurate information and, at the same time, help capture data from the field. The Grameen Foundation's Community Knowledge Worker (CKW) programme is an example. Farmer representatives are trained to use ICT applications on a smartphone to provide agricultural information and extension support. Most market price information is now delivered to farmers via SMS. Further along the chain, technologies offer considerable possibilities to enhance traceability, which is particularly relevant as certification grows in importance. Where necessary many exporters can now trace consignments back to individual farmers and take necessary measures to address problems. Finally, systems such as FARA's eRails are also supporting agricultural researchers through data collection and analysis and access to up-to-date research publications [1].

Most farmers access information from extension workers, libraries or websites. The number of extension workers has been decreasing while farmer numbers have been increasing; hence the need for innovative services to address this gap [2]. The agriculture sector in developing countries is becoming increasingly knowledge intensive. Researchers at the global, regional, and national levels continue to generate new information. As agriculture systems become more complex, farmers' access to reliable, timely and relevant information sources becomes more critical to their competitiveness. Information must be relevant and meaningful to farmers, in addition to being packaged and delivered in a way preferred by them [3].

Keeping all these views in focus, a study was conducted by Krishi Vigyan Kendra, Neemuch to analyse the performance and efficiency of use of agriculture related whatsapp messages among the selected farmers of the district Neemuch of Madhya Pradesh. The objectives of the study are as follows –

1. To share farmer's opinion about agricultural techniques through message, audio, video, photo etc.
2. To receive farmer's perception through message, audio, video, photo etc.
3. To collect farmers feedback for KVK scientists on their demonstrated techniques.

2. MATERIALS AND METHODS

The study was conducted at Krishi Vigyan Kendra, Neemuch. The KVK utilized Whatsapp (social media) for the dissemination of agricultural technology in Neemuch district of Madhya Pradesh. District Neemuch comprises of 3 blocks namely neemuch, jawad and manasa. Out of these, 10 villages from each block were selected randomly. A whatsapp user list was prepared from each village and 3 farmers were selected with the help of systematic sampling technique. Thus, 90 farmers from the 3 blocks of the district using whatsapp were purposively selected and grouped for sending the messages of agricultural aspects. Time to Time agro advisories, weather report, new varieties, sowing method, seed availability, market rates, new technologies and how to take precaution from the coming disease and pest outbreak were delivered to the farmer's group. To assess the overall impact of technology an interview schedule was developed and responses were recorded on a 3-continuum scale for each aspect and assigned scores. The farmers were personally interviewed on telephone and responses were collected on:

1. Perception of Farmers for Whats App usage
2. Extent of Utilization
3. Extent of Dissemination
4. Timeliness
5. Visibility of the content
6. Applicability, Reliability and Creditability
7. Feedback

Data was collected through personal interview. The data thus collected was organized and tabulated using simple statistical method, tables and percentage.

3. RESULTS AND DISCUSSION

3.1 Perception of Respondents for Whatsapp Usage

The Tables 1 and 2 shows the perception of the respondents about the reasons of use of

whatsapp and what drawback they see in using the whatsapp.

Because of the peer presence in social media, it makes a great platform to discuss idea and problems and get professional views. The major uses of social media, according to the respondents, were to find information related to agriculture news and events (76.66%), to exchange agriculture knowledge (67.77%), To share agriculture information (61.10%), to connect with agriculture experts and farmers (60.00%), to share professional agriculture activities (54.44%) and to find agriculture related interest (53.33%), (Table 1). Even though use of social media for agricultural information was fairly high among the respondents, there were some major concerns for not using it intensively for the purpose. Also, sparse use of the platforms for professional use, lack of authentic information, lack of awareness about its use, lack of competence in using the social media platforms properly, unavailable or erratic internet connections, and biased information and advertisements were found to be acting as deterrents among the respondents in using whatsapp for professional purposes.

Table 1. Reasons to use WhatsApp (%) n=90

S. no.	Reasons	(%)
1	Find agriculture related interest	53.33
2	Share professional agriculture activities	54.44
3	Connect with agriculture experts and farmers	60.00
4	To share agriculture information	61.10
5	Exchange agriculture knowledge	67.77
6	Find out agriculture related news and events	76.66

Major drawbacks in using whatsapp as a social media has been depicted in Table 2. Faulty internet connection (35.55%) and unproductive use of time (34.44%) were considered as the major drawback in using whatsapp (Table 2). Lack of expertise was also reported by about 22.22 per cent of the respondents. Concerns about privacy, wastage of time, and lack of expertise in using whatsapp is in line with the findings of [4]. While internet connections are infrastructural issues and needs to be looked into by the service providers and governments, personal constraints and privacy concerns can be easily taken care of with awareness creation and learning to better use social media through trainings and workshops, if needed [5].

Table 2. Drawbacks in using WhatsApp (%) n=90

S. no.	Reasons	(%)
1	Fear of missing out	10.00
2	Lack of expertise in social media	22.22
3	Low battery back up	20.00
4	Unproductive use of time	34.44
5	Faulty internet connection	35.55

3.2 Extent of Utilization

With regard to extent of utilization of the whatsapp messages, the data from Table 3 reveals that 86.66 per cent of the farmers felt the usefulness of pictured information against written messages, while 81.11 per cent of them Started selecting pesticide & insecticides according to the message sent on the basis of crop followed by 77.77 percent of farmers who felt that the messages are use of information. 75.55 percent farmers reported using INM according to the message sent on the basis of crop. However more than 50 percent of the farmers committed to start practicing seed treatment (54.44%), using IDM (51.11%) and selecting weedicide according to the message sent on the basis of crop (63.33%).

3.3 Extent of Dissemination

The main purpose of delivering information through whatsapp was to make farmers aware of the usefulness of modern crop management practices in enhancing a crop's productivity and subsequently to convince the farmers to adopt the technologies communicated. The whatsapp messages delivered to registered farmers contained agricultural information covering different aspects of fertilizer application, pesticide application, pest management, disease management, best agricultural practices, seed varieties, seed treatment, weeding and government schemes. In order to understand the extent of dissemination of messages, the farmers were asked how they disseminate the information to other farmers. The findings are given in Table 4 and the results showed that 45.44% per cent of the farmers had expressed that they sometimes share the information with other framers, while 61.11 per cent of them expressed that they never send the information to other farmers.

Table 3. Extent of utilization of WhatsApp messages by the respondents (n=90)

S. no.	Statements	Always (%)	Sometimes (%)	Never (%)
1	Use of Information	77.77	20.22	0
2	Benefitted from the information received	61.11	38.88	0
3	Share the information with relatives and friends	34.44	65.55	0
4	Usefulness of pictured information against written messages	86.66	13.33	0
5	Practiced seed treatment by the message sent	54.44	45.55	0
6	Started selecting weedicide acc. to the message sent on the basis of crop	63.33	36.66	0
7	Started selecting pesticide & insecticides acc. to the message sent on the basis of crop	81.11	18.88	0
8	Using INM acc. to the message sent on the basis of crop	75.55	24.44	0
9	Using IDM acc. to the message sent on the basis of crop	51.11	48.88	0

Similarly, it has been stated that although mobile phone can help in disseminating agricultural information to improve the farm productivity and rural incomes, trustworthiness of information is one of the important aspects that need to be considered while delivering to farmers to meet their needs and expectations [6].

3.4 Timeliness

Timeliness of agricultural information is very crucial to farmers' success. Farmers need to be provided with the information at the right time so as to apply that information in their farming activities for better farm productivity. This study measured the timeliness of the whatsapp messages provided to farmers basing on the seasonal activities to which messages can be used as information tools required by the farmers. The respondents were asked to rate the information on the three grounds; always, sometimes or never. About 86% of the farmers (Table 5) indicated that whatsapp messages provided timely information whereas 80% showed that the messages always solved their problems / curiosity on time and 77.77% indicated they had discussion with expert from time to time after the messages has been sent.

Not just in natural disasters or social and political emergencies, social media can be effective in agricultural crisis like pest or disease outbreaks as well facilitating faster communication among experts, farmers, and other actors helping in containing situations quickly, [5].

3.5 Visibility of the Content

The audio-visuals messages used to relay the information was very simple and easy to understand by the farmers. 77.77% of farmers indicated that it was easy to understand any agriculture related photo shared via whatsapp.

3.6 Applicability, Reliability and Creditability

The information should not only offer the benefits of timeliness, but also able to suit the relevant context. Relevant information is one of the key requirements for increased productivity and increased income to reduce poverty among food producers in underprivileged communities [7]. The study addresses the relevance of information provided to farmers using whatsapp facilities by looking into the usefulness and the suitability of the information in the farmer's context. The information brought to the farmers should address the challenges of a particular farming system undertaken by the farmers at a particular area. About 86% farmers indicated that the content of the message was accurate followed by 78.88% farmers who responded that the language used in whatsapp messages was easy to understand and accurate and 70% of the farmers reported that due to availability of messages timely they changed their agri. practices and indicated that the information sent to them is relevant to their farming requirements (Table 7).

3.7 Feedback

With reference to feedback of farmers, the data from Table 8 indicated that farmers (88%) were very satisfied with the quality, simplicity of language and content of the whatsapp messages which contained adequate agriculture information sent timely. It implied that the agricultural

Table 4. Extent of dissemination of WhatsApp messages by the respondents (n=90)

S. no.	Statements	Always (%)	Sometimes (%)	Never (%)
1	Share the information with others farmers	38.88	45.55	15.55
2	Send the information to other Farmers	11.11	27.77	61.11

Table 5. Timeliness of WhatsApp messages as reported by the respondents (n=90)

S. no.	Statements	Always (%)	Sometimes (%)	Never (%)
1	Solution of Problems / curiosity on time	80.00	16.66	3.33
2	Agri. Related information on time	86.66	7.77	5.55
3	Experiences of experts shared on time	72.22	16.66	11.11
4	Experiences of other farmers shared on time	61.11	22.22	16.66
5	Discussion with experts from time to time	77.77	12.22	10.00

Table 6. Visibility of the content as perceived the farmers (n=90)

S. no.	Statements	Always (%)	Sometimes (%)	Never (%)
1	Easy to read the message	27.77	50.00	22.22
2	Easy to understand a discussion	61.11	18.88	20.00
3	Easy to understand any photo shared	77.77	16.66	5.55

Table 7. Applicability, reliability and creditability as perceived by the respondents (n=90)

S. no.	Statements	Always (%)	Sometimes (%)	Never (%)
1	Accuracy of the content	86.66	12.22	1.11
2	Timely Available	67.77	22.22	10.00
3	Easy and accurate language	78.88	16.66	4.44
4	Fully understandable	64.44	24.44	11.11
5	Change in agri. practices acc. to the message received	70.00	20.00	10.00

Table 8. Feedback by the respondents (n=90)

S. no.	Statements	Always (%)	Sometimes (%)	Never (%)
1	Information acc. to the agri. situation	86.66	11.11	2.22
2	Adequate agri. information	88.88	1.00	2.22
3	Easy and influential information	82.22	13.33	4.44
4	Full solution of the problem	77.77	16.66	5.55
5	Information acc. to the farmers suggestion and need	81.11	15.55	3.33
6	Timely availability of the information	88.88	11.11	0.00

information that was disseminated through whatsapp could be easily comprehended by farmers. With respect to comparison of mobile voice messages with other sources of information, the data from Table 8 indicated that majority (62.50%) of the farmers did express that the mobile voice messages were better as compared to other sources of information that they were accessing [8].

4. CONCLUSION

Across India, WhatsApp groups are not only connecting farmers to their customers in the virtual market—they're creating a network of resources and support for the country's farmers who need it most. The study also indicates that by the use of whatsapp farmers are able to seek information on farm operations, clarify their

doubts on plants/ livestock disease symptoms and are having immediate access to market related information. The social media–enabled whatsapp is helping farmers to solve farming related problems more efficiently by making them digitally literate as they perceived in the study that the whatsapp messages used were clear and satisfactorily for them. WhatsApp isn't only used as a marketing tool—it has also created a kind of support network among farmers. On the level of daily interaction, the WhatsApp groups are successful at providing a sounding board of assistance and in motivating farmers.

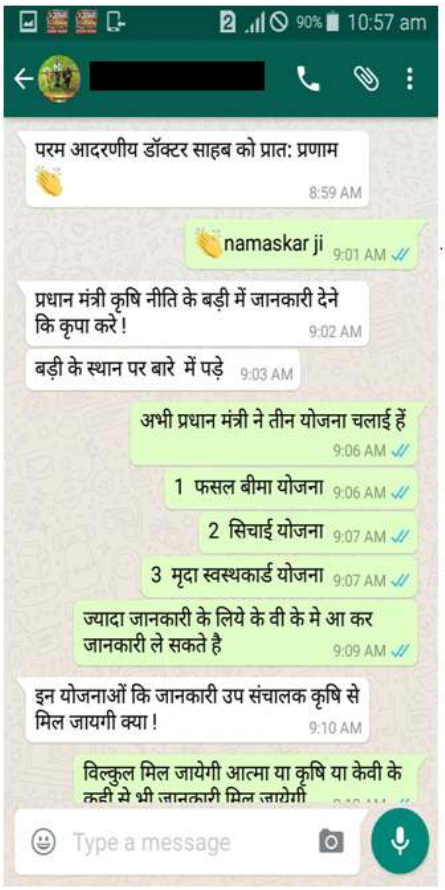
COMPETING INTERESTS

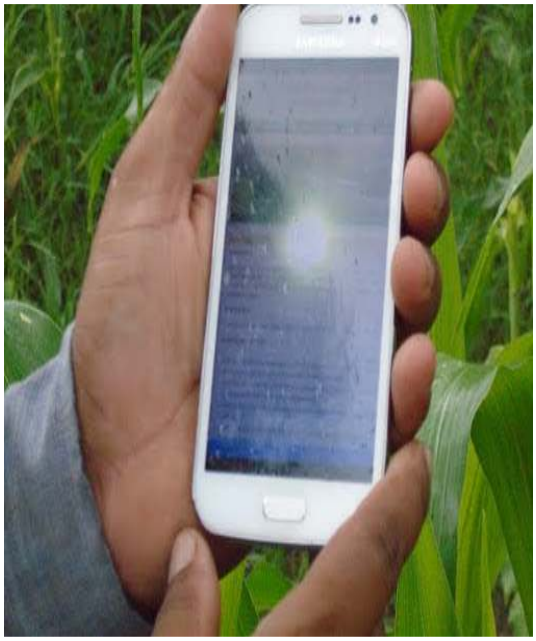
Authors have declared that no competing interests exist.

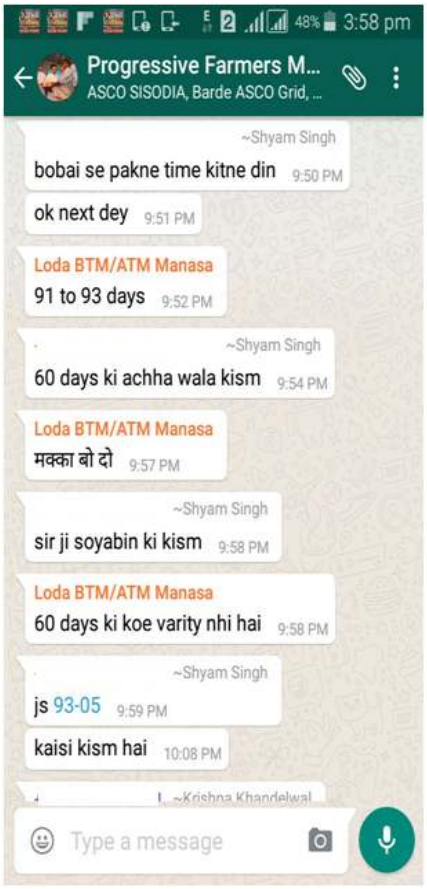
REFERENCES

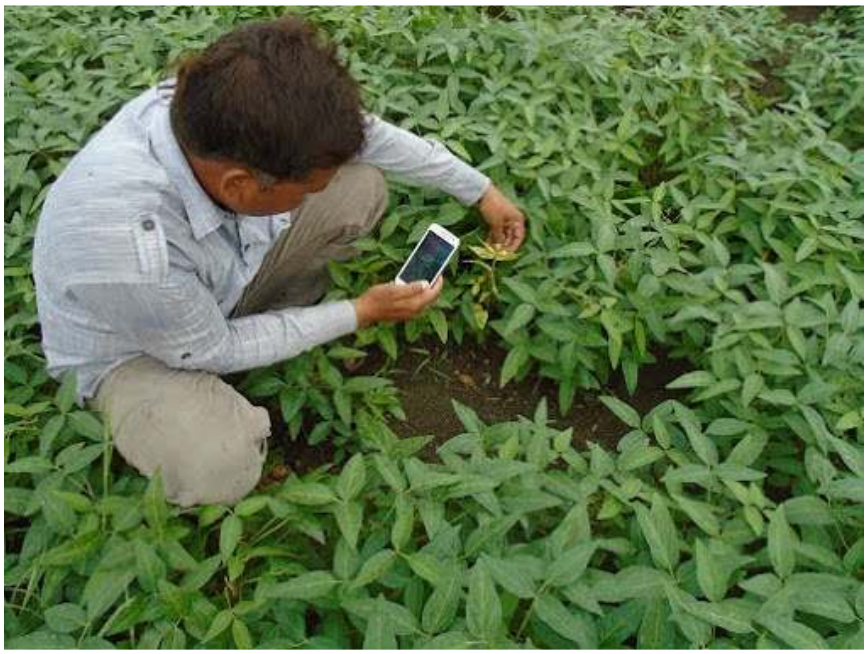
1. Anonymous. Agriculture value chain. Wikipedia; 2017.
   (Retrieved on 21st September, 2017)
2. Gakuru M, Winters K, Stepman F. Innovative farmers' advisory services using ICT. Paper Presented at W3C Workshop "Afrika Perspective on the Role of Mobile Technologies in Fostering Social Development", Maputo, Mozambique; 2009.
3. Diekmann F, Loibl C, Batte MT. The economics of agricultural information: Factors affecting commercial farmers' information strategies in Ohio. Review of Agricultural Economics. 2009;31(4):853-872.
4. Newbury E, Humphreys L, Fuess L. Over the hurdles: Barriers to social media use in extension offices. Journal of Extension. Article Number 5FEA1. 2014;52(5).
   Available:www.joe.org/joe/2014october/a1.php
5. Suchiradipta B, Saravanan R. Social media: Shaping the future of agricultural extension and advisory services, GFRAS interest group on ICT4RAS discussion paper. GFRAS: Lindau, Switzerland; 2016.
6. Surabhi Mittal, Gaurav Tripathi. Role of mobile phone technology in improving small farm productivity. Agricultural Economics Research Review. 2009; 22(Conference Number):451-459.
7. Rodriguez PL. Framework for effective communication over mobile networks. International Journal of Mobile Communications. 2008;2(1):97-102.
8. Muthiah G. Assessment of mobile voice agricultural messages given to farmers of Cauvery Delta Zone of Tamil Nadu, India. The Journal of Community Informatics, North America; 2015.
   Available:<http://ci-journal.net/index.php/ciej/article/view/1067/1133>
   (Accessed 23rd September 2016)

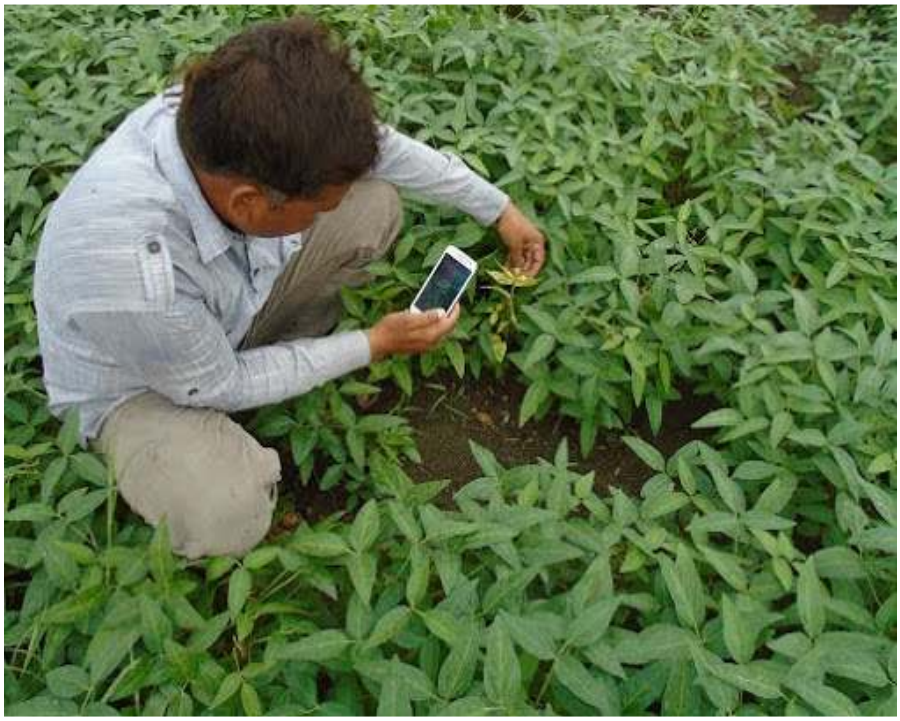
APPENDIX

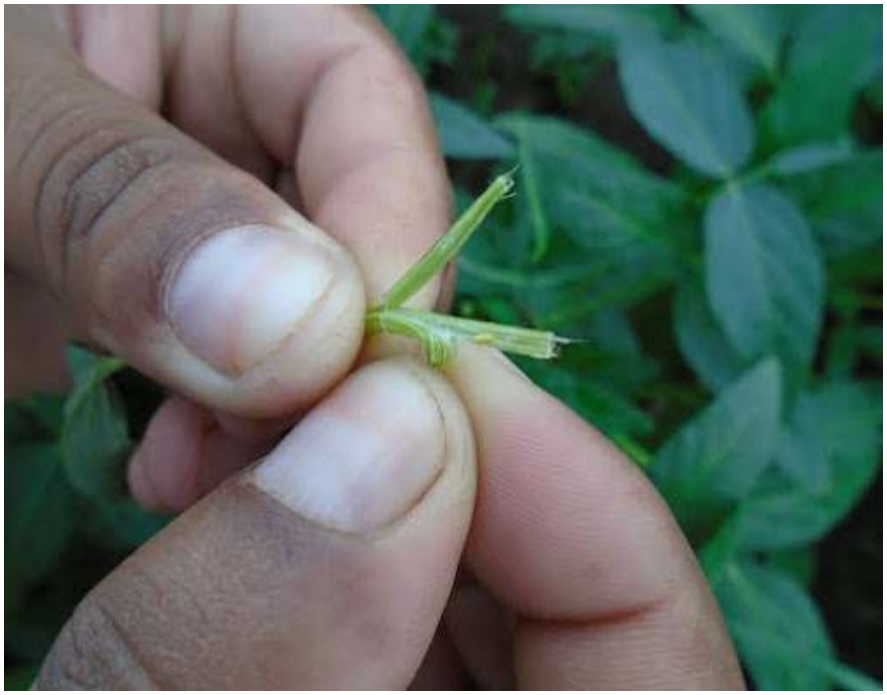

10:57 am
परम आदरणीय डॉक्टर साहब को प्रात: प्रणाम
8:59 AM
namaskar ji 9:01 AM
प्रधान मंत्री कृषि नीति के बड़ी में जानकारी देने कि कृपा करे !
9:02 AM
बड़ी के स्थान पर बारे में पड़े 9:03 AM
अभी प्रधान मंत्री ने तीन योजना चलाई हें
9:06 AM
1 फसल बीमा योजना 9:06 AM
2 सिचाई योजना 9:07 AM
3 मृदा स्वस्थकार्ड योजना 9:07 AM
ज्यादा जानकारी के लिये के वी के मे आ कर जानकारी ले सकते है
9:09 AM
इन योजनाओं कि जानकारी उप संचालक कृषि से मिल जायगी क्या !
9:10 AM
विल्कुल मिल जायेगी आत्मा या कृषि या केवी के
Type a message




3:58 pm
Progressive Farmers M...
ASCO SISODIA, Barde ASCO Grid, ...
~Shyam Singh
bobai se pakne time kitne din 9:50 PM
ok next dey 9:51 PM
Loda BTM/ATM Manasa
91 to 93 days 9:52 PM
~Shyam Singh
60 days ki achha wala kism 9:54 PM
Loda BTM/ATM Manasa
मक्का बो दो 9:57 PM
~Shyam Singh
sir ji soyabin ki kism 9:58 PM
Loda BTM/ATM Manasa
60 days ki koe varity nhi hai 9:58 PM
~Shyam Singh
js 93-05 9:59 PM
kaisi kism hai 10:08 PM
Type a message







Peer-review history:
The peer review history for this paper can be accessed here:
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