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RESEARCH ARTICLE

SOCIO-ECONOMIC ANALYSIS FOR THE IMPACT OF ADOPTION & DIFFUSION OF MAJOR VEGETABLE CROP (ONION) IMPROVE SEEDS AT JEBEL MARRA RURAL DEVELOPMENT PROJECT-CENTRAL DARFUR STATE-SUDAN

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ABSTRACT

This study was carried out from 2012- 2014 at Jebel Marra rural development Project (Central Darfur State)-Sudan. To assess the impact of grassroots participation on how it facilitates the adoption and diffusion of agricultural innovations packages (improved onion seeds). As well as how personal characteristics equipped impact on adoption and diffusion of new technology packages transferred among the targeted population.

To achieve the objectives of this study, the area were divided into three clusters: Zalingei, Wadi Salih and Nyertete respectively. Targeted farmers were selected followed: accidental simple random sampling due to security situation. Beside geographical division for the purpose of questionnaire distribution and filled by 200 farmers. Who constitute 10% of the sample size to represent the studded population at the (State Level)? To who were mostly internally displace persons (IDPs), in camps due to Darfur Crisis since (2003). Observation field visits and market survey was used during the study was followed up. Data analyzed used, Statistical Packages for Social Sciences (SPSS), table's repeatability and percentages. The results were discussed with comprehensive interpretation and summarized comments.

Study revealed that three over four of the targeted farmers are men while before **(**JMRDP**)** intervention in1980, onion growers were predominantly women. Therefore, further studies and researches are needed to develop strategies encouraging women effective participation in adoption and diffusion of agricultural innovations packages practices.

In addition to agricultural lands is under the lease systems that reduced women participation in agricultural practices. The study showed that the area of onions agricultural land was expanded and the agricultural inputs prices were gradually increased mainly onion improved seeds. In addition to irrigation tools and cultivation of land preparations taxes was increase due to mechanized system introduced instate of man power before by using hand digging hoe (touria). The outcome of the study identified the gap of assets which is difficult to psoriasis by population self-reliant. This study reviewed the literature of project and focused on the impact community participation in the adoption and diffusion of agricultural technologies, on its historical long run operated background benefited the study succession.

The identification of the role of the major farmers (key informant) whom they hold and handling what they learn previously as a new technology from the JMRDP specialist concern adoption and diffusion tool as important element, for identifying and alleviating the constraints affecting adoption and diffusion of agricultural innovations. The study used community participation element and analyzed the role of farmers in knowledge transferred and skilled learned. This study showed that successful technology adopted and transferred is dependent on the equipped of wide range of factors, the most important being the network of research centers, training and development farmers groups that come from origin villages background and indigenous knowledge. Farmers' characteristics like sex, farm size and land ownership. Access promotion of information, environmental awareness, membership in local groups, and utilization of social networks emerge as some of the variables that are more often positively associated with adoption of technologies. Likewise complexities of technologies, labour constraints, and weak policies have negative and significant influences on the technology transferred. The study recommended that farmer's adoption rates will be improved by subsidies on strengthening influential farmers' networks and promoting technology into communities with genuine support and supervision from the government institutional and intervention of university extension, research centers and contact farmers partnership.

The study also recommended that farmers were knowledgeable enough to continue and hold transferring technologies to the others counterparts, including newly acquired knowledge and expertise through their participation in the activities and programs of the Jebel Marra Rural development project which they received from their previous rural resettlement sites or origin villages.

Finally, the study recommended that: social analysis for women group as gender analysis is requested to strengthen their role on agriculture. Assessing policies and formulating new technology that environmentally, socially accepted like Jebel Marra Animal Traction (JMAT) Donkey Plough. The continuations of financial support were requested for the project. On the other hand promotion and develop the principles, methods that raise up the efficiency of work and strive to provide improved onion seeds production locally as well as means of irrigation and pest control materials with agricultural research funding opportunities to expand and bring out an ideal development with tingable results on the grassroots level of the rural community to promote their welfare on the base of worldwide standards and measurements.

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INTRODUCTION

Socio-Economic Analysis for the Impact Adoption & Diffusion

Normal continuation growth of the communities elsewhere; Local Government-officials and community leaders are constantly challenged by the need to balance fiscal, social, economic, environmental goals and needs. One aspect of this challenge is deciding how much and what types of new development the community can accommodate without compromising the day-to-day quality of life for residents and nomads groups whom their system were affecting with the seasonal changes (shifting Methods). Socio-economic impact analysis is designed to assist communities in making decisions

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that promote long-term sustain-ability, including economic prosperity, a healthy community, and social well-being in general services meanly the social wince. Socio-economic impacts analysis requires both quantitative and qualitative measurements of the impact of a proposed development. For example, a proposed development may increase employment in the community and create demand for more affordable housing. Both effects are easily quantifiable to introduce changes. Also of importance, however, are the perceptions of community members about whether the proposed development is consistent with a commitment to preserving the rural character of the community.

Analyzing community perceptions about development requires the use of methods capable of revealing often complex and unpredictable community values as customs and traditions to consider. This paper provides an overview of socio-economic impact analysis, including what it is, why it is important and guidance on how to conduct a socio-economic impact assessment analyze the gathering data under consideration. Because socio-economic impact assessment is designed to estimate the effects of a proposed development on a community's social and economic welfare, the process should rely heavily on involving community members who may be affected by the development introduce either top down or bottom up approach. Others who should be involved in the process include community leaders and others who represent diverse interests in the community such as community service organizations, development and real estate interests, minority and low income groups, and local environmental components. In addition, local agencies or officials should provide input into the process of assessing changes in the social environment that may occur as a result of the proposed development (e.g., providing estimates and information demographics, employment and service needs). Furthermore need assessments is essential within community participation umbrella to find out plans with their priorities included and agreed on to follow what they mentioned.

Central Darfur State which The Jebel Marra Rural Development Project is allocates. Within the period of Darfur Crisis (2003) basically social services sectors and infrastructures were damaged in their nine localities. Therefore official and non official efforts mostly and highly in need to be shared in a manner that the community welfare must repack or bring back as development aspects to occur. Through preparatory need assessments with gender base analysis (GBA), in the whole project area of the (JMRDP) In order to be adaptive for livelihoods of the community and modulate in a mutter of the resources around to represent the situation view according to the future perspectives.

MATERIALS AND METHODS

Study area: Jebel Marra area was described and documented in many reports (FAO, 1968 Mohamed, 1997 and Adam, 1998) which diversity in climate, soil and crops and animals (Salam, 2014). The high massif of mountains modifies its climate and increases the amount of participation, particularly on western slopes. Rainfall normally occurs during may-September with more than 60% of the rain occurring July-Auguest.the variation in the amount of the annual rainfall is very limited.

Temperature decreases by approximately 6 C per 1000metres rise (FAO1968). The average maximum temperature is about 30C while the minimum is around 6 C (Mohamed1997). The importance of Jebel Marra from an ecological view and from the great potential resources it has, makes it a rich area for study and development. The total area of Jebel Marra is estimated to be about 2000km2. And Great Darfur is about 549000km2 with the size of the population approximately eight million (Dosa, 2013).

Sampling and data collection

To success the study achievements the whole area were divided in to three sectors mainly: Zalingei, Wadisalih and Nyertete which are mostly base of internally displacement persons (IDPs) Camps temporary. Approximately 2000 farmers in the State level practices agricultural activities, so the study targeted 10% for sample size to enable distribution of the questionnaire form for 200farmers by accidental random selection and geographically directed. Primary and secondary methods used, followed by observations and direct contact with farmers during field survey were covered.

Data analysis

The data from the questionnaire survey were analyzed using statistical packages for social sciences (SPSS), joint with frequency table's repeatability percentages.

RESULTS AND DISCUSSION

The current project area had been changed according to the newly establish of state which basically divided from the western Darfur. Now the whole project map covered the Central Darfur State (2012). The results of the socio-economic survey indicated the status of some of the main aspects that highlight important personal characteristics of the respondents of study as showed below to represent and model zed the overall study results.

Availability of Land Cover and Use

Mostly the farmers mentioned were rain fed agriculturalist traditionally used the three major agricultural systems operated in Darfur: sedentary rain-fed agriculture, sedentary irrigated agriculture, and nomadic pastoralist. Northern Darfur consists primarily of three ecological zones: *goz* (sandy soil areas); *wads* (areas around water resources that fill after rainfall); and *tobacco* (tobacco-growing area). The northernmost zone is the most ecologically fragile of the three and the most acutely impacted by drought. Southern Darfur consists primarily of three agrarian zones: agro-pastoralist in semi-arid savannah; agro-pastoralist with high production; and agro-pastoralist and cash crop (mainly groundnuts). The central belt of Darfur, including the Jebel Marra massif (approximately 8000 feet high), is the richest and most stable area in terms of soil fertility and water resources available.

The progress of Agriculture in Darfur

The traditional agricultural system in Darfur is more affected by land degradation and decline of land productivity. And the Fur's attempts to face drought conditions evolved in developing various adaptation mechanisms to.

Total Numbers of households, farmers and population estimate for dry season 1988 in the project Area with and added population estimate of IDPs (2014)

Name of the Council	HHs	Farmers	Popul=	IDPS/ HH
Nyertete Locality Centre)	9399	21901	69838	40688
Golo- sub unit	6067	13286	33125	Non*insecurity
Rokero (Locality	7329	16637	48812	Non*insecurity
Zalingei (Head of the State)	15103	35642	96355	124449
ZamiBaya (Wadisalih area)	8134	20578	47989	67360
Mukjar (Locality)	13746	30242	76292	23606
Azum (Locality)	13826	32905	79635	7352
Zalingei Town (Locality)	7157	9117	35788	2258 ** UoZ
Umdohken (Locality)	36600	22000	183000*	65756
Bendisi(Locality)	37000	18000	185000 ***	19744
Total	154361	220308	855834	351213 * WFP

Source: Jebel MRDP Post harvests Survey -1988 Updated in2014 with the last added Colum/each ** Source: University of Zalingei, September, 2011***HH=HAC/ August2015 *Commissioner Office 28August2015

Various studies indicated the ability of the Fur people to adopt mechanisms to cope with the changing environmental conditions what is known (climate change) and food crisis. Expansion in cultivated area to compensate for the decline in grain production, (Elnour, 2007), which is initiated the practice on vegetable production mainly Onion to avoid the shortage of rainy season crops production. Jebel Marra is an important place in Darfur region and in the Sudan, rich with diversity of resources. It is characterized by abundant plants, trees, animals and fertile land. The plenty water flowing down from the large catchment location, Jebel Marra mountain constitutes the most important water catchment and forms the North-South divide separating the Nile and lake Chad Basins (FAO1968" Mie he 1986). In 2003, the majority of the Sudanese population depended on subsistence agriculture, which employed over 80% of the workforce and contributed 35 %t of the nation's Gross Domestic Products (GDP).

Table 1. Distribution of Respondents according to their locality

Localities	Freq	%
Zalingei (Head of State)	100	50.0
Wadi Salih (Head of other three localities)	050	25.0
Nyertete (Head of other two localities)	050	25.0
Total	200	100

The economy of Darfur is also largely agrarian. Its main consumption crops are millet, followed by sorghum. Groundnuts, tobacco, vegetables, and watermelons are the main cash crops. Before (2003), the main household food sources were localized subsistence agricultural production (45–60%), livestock (10–30%), and market purchases (15–30%). Most communities farm according to the following calendar: planting in July- August, weeding in September - October, and harvesting in November-December, sometimes January. Vegetables normally need less time to ripen than cereals. Majority of the Sudanese population depended on subsistence agriculture, which employed over 80% of the workforce and contributed 35 %t of the nation's Gross Domestic Products (GDP).

Table1.Consist the head of localities sample size that the targeted respondents were represented three sectors. The two localities Wadisalih and Nyertete according to natural similarities and population activities mainly in rainy season are divided equally with the sample size. To match the other side in Zalingei to complete the total number 200 of the respondents studied.

According to the climate and soil type these three localities classified the communities in to different types of activities, In Zalingei rainy season and winter is basic. But in the other two localities there is a similarity which is rainy season, crops grown like millet, sour gum, sesame and groundnut…etc. and for example Onion is the main annual crops grown under irrigation winter season, particularly in the Alluvial Valleys and the lower mountain slopes (JRDP, Annex 1V Agriculture, December 1977).

Table 2. Distribution of gathered Respondents according to their cumulative State level Sample

Central Darfur State (CDS)	Freq	%
Sample Size was 10% from the targeted farmers	200	100

Source: Field Survey, 2014

Table 2. Showed 10% of sample size from the state level Central Darfur State (CDS) consist nine localities named as (Zalingei, Azoum- Nyertete, Golo and Rokero - Wadisalih, Bendisi, Mukjar and Umdohken). As Mentioned above, the climate and Natural factors classify the agricultural activities among the communities. But there is a similarity between sector (B and C) in Agricultural crops practices in the rainy season. For Sector A and B there is a similarity in soil type and water basement, but usage of this of sources is defer in both of it.

Table 3. Distribution of respondents according to their sex, age, educational level & marital status

(N=200)

Issue	F	%	Issue	F	%
Sex			Age		
Male	145	72.5	18 – 25	20	10.0
Female	055	27.5	26 – 33	50	25.0
Total	200	100	42 – 49	42	21.0
			above 50	39	19.5
Total				200	100
Education	F	%	Marital Status	F	%
Illiterate	024	012.0	single	033	016.5
Khalwa(tradition)	054	027.0	Divorced	006	003.0
Before university	077	038.5	Married	150	075.0
University	042	021.0	widowed	009	004.5
Post graduate	003	001.5	Husband Absence	002	001.0
Total	2oo	100	Total	200	100.0

Source: Field Survey, 2012

Table. 3 Showed that: 72.5 % respondents were male and 27.5 % Female and this variation Indicate that the methods of agricultural facilities has been changed and highly priced like mechanizes used, Land rent and improved seeds adopted, in addition to displacement situation. Family responsibilities and ability to pay the taxes of tools or agricultural in puts male have a wide chance more than female also in lawns and bank

lends system share there for the cause need successful gender analysis **(**SGA**)** for equal power sharing to strengthen women participation.

- 61% respondents had formal education before university up to post graduate followed by 27% of Khalwa traditional education system and 65.5% share in agricultural activity in compared with 21% university level involved in agricultural activities looking for life standard improvement
- Showed that the Age of the respondent's variations is range between 33- 49 years which indicate that 50% of the respondents were youth and more productive in agricultural activities due to age factor and responsibilities. But 10% were under 18-25 years and most of them are school years students.
- -75% of the respondents were married, it indicated that their responsibilities let them to be well committed with agricultural activities and professionalism on the process by traditional background suitability in the whole state either to be farmer or mix with livestock herders. On the other hand single respondents followed by 16. 5% it showed the youngest groups among the targeted sample of study and not socially engages means youth. 8.5% were Divorced, widowed and Husband Absence.

Agricultural extension Services

52.5% of the respondents agreed that the extension unit presences in their areas, was decrease due to Darfur crisis (2003). 44.5% of respondents were represent residence in IDPs camp and not yet under extension services coverage. 3% of the respondents were not mentioned. What mentioned revealed that coverage done by the 60 extension services units? But changes happen after 1994 when Grater Darfur divided in to three States, which expand the coverage area by JMRDP.

73% of the respondents mentioned that the real number of field agents was one person per each agricultural extension unit and 12% they said two people per unit. But 15% of the respondents were said nothing. For technical assistant one field agent will cover 5-7 villages which is depend on households and distance between the villages. 60% of respondents showed that 1-2 villages were covered by one field agent and this should reflect that some villages were displaced within (Darfur Crisis, 2003). But 40% of the respondents were out of extension services due to Darfur resent situation. 55% of the respondents are used communication channels against 45% who did not used due the Darfur recent circumstances. Before the communication revolution in the year 2000 the project used the communication channels available like writing letters, office and field visits…etc.

78% of the respondents used this communication channels like: written messages, field visits and frequent office visits, But 22% said somehow. The project did a lot to success the signed goals through these methods which reflect the vice versa of community participation. 60.5% of respondents mentioned that the effective communication channels used as followed: training and field visits, 8.5% office visits and 28% no effective methods available, 3.5% did not answer.

Training and field visits both of it can be seen as educational methodology, because within behavior will change and new technology were transfer and adopt to diffuse.

95.5% of respondents mentioned that, they Progress on production by improved Onion seeds in the project area. 4.5% of the respondents were not mentioned. Al farms mostly introduced the improved onion varieties (Bafteam and American) with expansion of the crop land. 84% of the respondents mentioned that their area is suitable for Onion production; with long life experience and inclusive project activities were key factors which facilitated onion practice in the project area and 16% mentioned trade value influence. In sector B Wadisalih probably (certainly) awareness for the community is the priority because they follow the transitional trade and not much in the agricultural process.

Social Services and infrastructure situation in the Project Area

67% of the respondents mentioned that the population density in their areas ranged from very high to high, against 33% who said it was medium in density. The fact can classified in to two groups the first allow to be seen at that time when the villages was settled while the second revealed the case of the camps situation which shows the gathered people from deferent areas. 81.5% of the respondents mentioned that the number of households in their areas were above one thousand and half in the area of study. 18.5% of the respondents mentioned less than one thousand and half. It gives the same resemblance of previous results above, but due to Darfur crisis some of the households decrease regarding to war side effects. 96% of the respondents mentioned that education situation in the area were increased. And 4% of respondents said education situation decrease in the area. Education percentages increase gradually from 2003 up to now for many reasons like accessibility of school facilities, environment and teacher with quantity and quality in towns that the camps were is closed.

77.5% of the respondents mentioned that the feeder roads which linked the villages and head towns were not accessible. But 22.5% said somehow. There for previously the JMRDP yearly was maintenance, while this period of Darfur crisis the shrubs and valleys occurs the inaccessibility of the feeder roads. 74% of the respondents mentioned roads were not accessible, due to the following factors: many valleys, Bad roads, long distance, and scarcity of transports. And 26% of the respondents not registered any comments. Water erosion by the valleys and insecurity leads to inaccessibility of roads and new residence in camps create the long distance to home lands. 59.5% of the respondents mentioned that the social services were blow acceptable services in the area of study. But 40.5% said somehow for social services. This results show the effects of war everywhere social services will not the same as in the previous when they are settled. 66% of the respondents mentioned that education situation in the area was decreased, due to displacement situation and 34% of respondents mentioned reasons that influence for education rate situation decreased due: to education quality cost in towns and lack of work opportunity in displacement situation. 80% of the respondents mentioned that their practices depend completely on innovations mainly onion improved seeds. But 20% of respondents used the endogenous onion seeds.

This result reflects the benefit of the improved onion seeds, due to early maturity and higher production (economic factors).

95.5% of the respondents had knowledge and background about agricultural innovations and according to the awareness, the respondents were chose these options: fertilizers and insecticides, improved onion seeds treated, animal traction tools used and advanced irrigation tools were introduced in the project area. And 4.5% were said nothing. The results show that the communities were aware about the innovations, due the right options selection.

Market Analysis in the Project Area

From the result intervention for investment will be allow mainly in the peak period according to the crop production higher rate is available to introduce other value chain process for the product to incentive farmers to increase their product and productivity. Footnote: Market survey gives very details picture on how much the whole area at the three sectors massage suggested, the priority is: initiation for intervention to establish advance stores investment process within the peak period of onion production, to support farmers and rice up the productivity vertically and horizontally through the adoption of agricultural techniques. The result also resemblance that March, April and May were show the suitable period of time that the investment my required for value chain process regarding Onion crop.

Onion Prices per Sector/ monthly- From December to November 2013/2014
Sector (A) Zalingei – Production Area / year 2014

Month	Farm Price/SDG/Sac	Market Price/SDG/Sac	Remarks
Dec	630	660	New product Appearance
Janu	400	450	New production concussion
Feb	280	320	New production concussion
March	130	140	New production concussion
April	60	100	Peak production period direct market price
May	90	120	Start period of last harvest/ commerce or storage
June	220	230	Final Harvest time/ commerce or storage
July	300	350	Storing period
August	non	460	Early onion growing
Sept	non	400	Start period of cultivation / opening of stores
Oct	non	650	opening of stores and commerce the old onion
Nove	non	600	opening of stores and commerce the old onion

Resource: Field Survey with contact person the farmer / Jamal Mohammed Adam Abduelaziz, 2014

Onion Prices per Sector/ monthly- From December to November 2013/2014 Sector (B) Wadi Salih (Garsila) Medium production Area / year 2014

Month	Market Price/ SDG/Sac	Remarks
Dec	600	Direct market price
Janu	330	New production sailing
Febr	250	New production sailing
March	200	New production sailing
April	90	Peak production period not much Areas
May	100	Final harvest for the product
June	120	Start of rainy season
July	150	Rainy season crop period
August	500	Preparation of onion seedlings nursery
Sept	550	End of rainy season
Oct	600	Showers rain
Nov	650	Harvest of rainy season crops

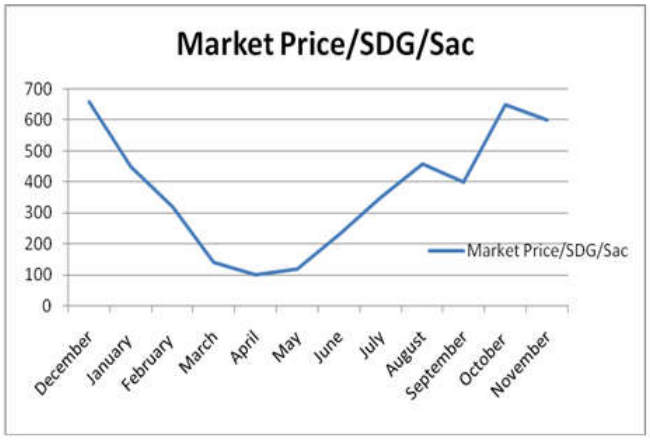
Resource: Field Survey with contact person the farmer / Kaltoum Osman Abdelkareem, 2014

Onion Prices per Sector/ monthly- From December to November 2013/ 2014
Sector (C) Nyertete as a low production Area / year 2014

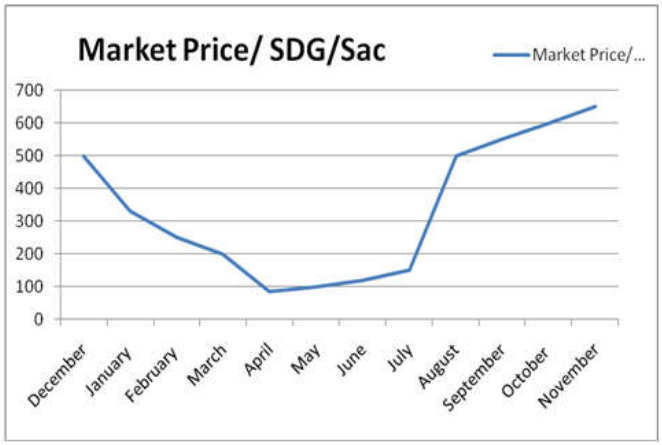
Month	Market Price/SDG/Sac	Remarks
December	320	Direct Market price
January	300	Direct Market price
February	240	Direct Market price
March	130	Direct Market price
April	130	Peak production period not much Areas
May	170	Peak production period not much Areas
June	200	Last harvest period
July	450	Start of rainy season
August	500	Heavy rainy season
September	550	End of rainy season
October	600	Showers rain
November	650	

Resource: Field Survey with contact person the farmer / Hassan Adam Ali Haraka, 2014

Sector (A) Zalingei –as a higher Production Area / year 2014



Sector (B) Wadi Salih (Garsila) Medium production Area / year 2014



Sector (C) Nyertete as a low production Area / year 2014

Agricultural Assistants by (INGOs) in Darfur during Vulnerable situation: War- affected population in Darfur, early 2008

State	Total affected	IDPs	Residents
Northern Darfur	1.340.869	521.012	819.857
Southern Darfur	1.628.275	1.185.012	443.263
Western Darfur	1.301.235	745.952	555.283
Total	4.270.379	2.451.976	1.818.403

Source: OCHA

Number of Population Benefited from Humanitarian Agricultural Aid

Quantity of seed aid and number of beneficiaries reached over the years:

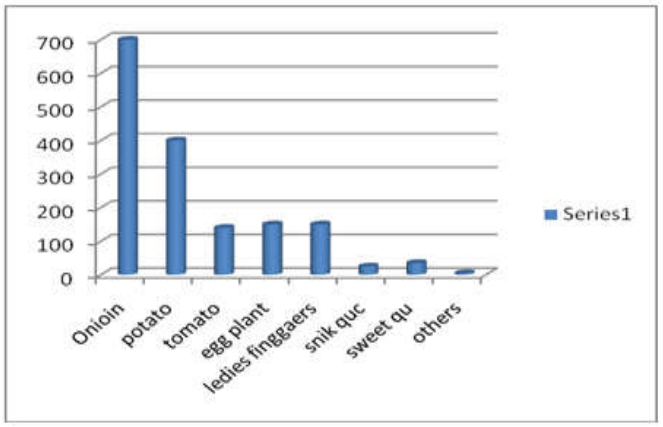
Like food aid, seed aid has been provided in Darfur since the beginning of the conflict in 2003. Between 2005 and 2011, FAO, the Government of Sudan, international Committee of the Red Cross (ICRC) and international NGOs distributed over 21433 tones of assorted crops seeds and over 84.99 tones of assorted vegetable seeds to over 3.500.000 IDPs returnees and vulnerable households (see the table below). In 2011, seed aid to Darfur witnessed a substantial decrease in volume as a result of good harvest realized in the 2010 summer season in addition to improvement in the security situation.

Volume of seed aid and number of beneficiaries – reached

Year	Assorted Crop seeds distributed / T	Assorted Vegetable seeds distributed / T	Total Number of beneficiaries
2005	2450	15.79	472030
2006	3742	13.00	660430
2007	4658	9.80	707258
2008	3520	15.81	700132
2009	2208	15.85	486261
2010	2657	12.23	346446
2011	2198	2.51	179383
Total	21433	84.99	3.551.940

Source: FAO, June 2011

Vegetables Prices in Khartoum 1n October 2015



Source: Next Day Daily News Paper, Khartoum, Sudan 15 October 2015, No= (955)

Conclusion

In many research studies involving the use of participation tools, much of the information gathered is of a qualitative and quantitative nature. Some of this will contribute to addressing specific research questions, while other parts provide a general understanding of peoples' livelihoods and constraints on the long run of activity practices. The aim of this study is to assess the level of grass roots participation in adoption and diffusion of improved onion seeds at the Jebel Marra Rural Development project (JMRDP), and discover the factors that affect the practice in Zalingei in comparison with Wadisalih and Nyertete districts, reflecting the adoption and diffusion process as packages of agricultural innovations.

In addition, to reveal other relevant factors that will be developed and encouraged to strengthen the rural community in participation adoption and diffusion of improved onion seeds (JMRDP). The study concentrates on the trials of (JMRDP) to assess the successful of knowledge and innovations transfer to the targeted community. Appropriate sampling is essential for this purpose and careful studies are conducted to obtain meaningful generalization results. The study revealed that three over four (3/4) of the targeted farmers are men while before (JMRDP) intervention in1980, onion growers were predominantly women therefore, studies and research are needed to develop strategies to encourage women effective participation in adoption and diffusion of agricultural innovations packages.

The study recommended and highlighted the active need for involvement of private sectors and relevant institutions for investment and facilitation of timely deliverance of agricultural inputs, Such as improved onion seeds.

Recommendations

For National Ministry of Agriculture

- To Update strategies and plans that will recover the needs of the grassroots development gap, mainly in the field of agriculture and socio-development.
- To Promote and activate the national plans that has tangible effects on Agriculture and socio economic priorities.
- To Engage national and state level plans with very close coordination and consider priorities to confirm matching.
- To Encourage the investment by community base organization (CBOs) sector in the field of agriculture mainly vegetables production.
- To Strengthen agricultural production marketing (export to boarder countries).

For State Ministry of Agriculture

1/ To Assist and support Diffusion and adoption policies that related with the project recommended objectives.
2/ To Encourage Gathering of efforts between ministry of agriculture and the project in order to manage resources through coordination plans and optimal used of assets.
3/ To Recheck the project plans with continuous monitoring and evaluation system or tools.

For Jebel Marra Rural Development Project

- To Strengthen agricultural extension services in the project area and cooperate with agricultural research centers to promote innovations transfer, in order to diffuse and adopt.
- Accommodation of improved onion seeds to be produce locally.
- Provision of irrigation tools mainly water pumps and concrete wells.
- Provision of insecticides and agricultural machineries, furthermore creation of awareness among farmers is necessary to know how to manage it usages.
- Rehabilitate the experimental centers to strengthen its operation.

For UN Agencies & Donors

- provision of fund facilities to rebuild rural development project base that has socio-economic effects locally.
- Cooperate and work together with grassroots organizations to encourage community participation process.

For Further Research

- Formulation of new assessments and surveys that will adapted local situation in the present time to encourage the agricultural production investment.
- Provision of water harvest programmes were requested in the project area.
- Encourage integrated rural development were requested in the project area.
- Strengthen the field work with demonstration farm, to enable the scientific research succession.
- Develop and maintain the vital feeder roads which linked the production areas with the consumption locations.

Finally on the Historical Agricultural Point of View

The Green Revolution was the technological response to a world-wide food shortage which became threatening in the period after WWII. The Green Revolution transformed farming practice in many regions of the tropics and sub-tropics where the principal food crops were rice, wheat and maize, but the brief account that follows will be mainly focused on the Indian sub-continent. From 1900 to 2000, the amount of energy put into agriculture worldwide increased 80 times due to the shift from human and animal labor to the use of large machines. The increase in energy consumption and the dependency on more fossil fuels has resulted in pollution and has caused harm to the environment. In addition to the environmental impacts of the period, the Green Revolution also had impacts on society. As we now know, as a result of advances in agricultural technology, commercial farms were able to produce more food and sell it at lower prices. On the other hand, many small, low-income farms were not able to afford the new technologies and, therefore, did not reduce their costs or prices.

This made it very difficult for small farms to compete with commercial farms, and eventually many small farms were forced to sell their land. As they did so, a part of history and tradition in the United States was lost. Although the Green Revolution has been successful in producing more food, it is only a temporary solution. Some scientists are calling for a second Green Revolution, and are referring to it as the Doubly Green Revolution. In this revolution, they want to develop new technologies and agricultural methods that will increase overall production, through adoption and diffusion of new technologies, but will also conserve natural resources and limit the effects on the environment. By developing new technologies that are more sustainable, it may be possible to provide food for the ever-increasing population without destroying the environment.

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