

The Role of Village Extension Worker in North Kordofan Rural Development Project (NKRDP) In North Kordofan State, Sudan

Elzubair E. Elzain¹, Mekki A. A. El Maleih², Gaafar B. Suliman¹, Mohammed Y. Abdalla³ and Maruod E. Maruod⁴

¹University of Kordofan, Faculty of Natural resources and Environmental studies, Department of Agricultural Extension and Rural Development, Elobied, Sudan

²Ministry of Agri., Elobeid, Sudan.

³University of Kordofan, Faculty of Education, Elobied, Sudan.

⁴University of Kordofan, Faculty of Natural resources and Environmental studies, Department of Agricultural economics and rural development, Elobeid, Sudan

Abstract-The current study was conducted in North Kordofan State. The study covered both Um Ruwaba and Bara localities (NKRDP area) during 2006. The main objective of the study was to investigate the role of the Village Extension Worker (VEW) on increasing the awareness of the community towards IPM techniques that used to improve production and minimize hazards in the environment in the project area. The study based on both primary and secondary data. The primary data were collected via questionnaires. These questionnaires were filled with the participant farmers and VEWs by direct interviews. Stratified random sampling technique was used to select 142 participants and 30 VEWs as a sample size. The data were analyzed using descriptive statistics. The results showed the allocation and presence of VEW at the project villages. The results have also highlighted the different extension methods used by VEW, such as home and field visits, meetings, FFS, leaflets & posters and extension campaigns. The results have showed positive role of VEW as source of pesticides instead of the village traders. The results also indicated the increase in farmer's awareness towards the importance and use of seed dresser. The study had also shown an increase in the awareness of the farmers in the IPM of watermelon bugs campaigns by 90% and the participation for the reason to control the pest by 76%. Finally, the study recommended the establishment of an extension system that can be developed for an effective integrated pest management system.

Keywords: Village Extension Workers VEW, Ministry Of Agriculture MOA, Campaign, North Kordofan Rural Development Project NKRDP

I. INTRODUCTION

North Kordofan State is one of the three states forming greater Kordofan. The area is estimated to be about 239.000 km² and divided into five localities, Sheikan, Um Ruwaba, Bara, Sodri and Jebrat El Sheikh. It lays between latitudes 12° 10' 39 16' N, and longitudes 27° and 32° 25' E.

North Kordofan Rural Development project (NKRDP) area covers both Um Ruwaba and Bara localities. Um

Ruwaba is in the eastern part of the state and has a total area of about 21.000 km². Bara locality has a total area of about 20.000 km² bringing the total area of the project to about 41.000 km² (NKRDP, 1999). Agricultural extension activities in the Sudan took-off in 1958 with support from the United State Agency for International Development (USAID). The first extension unit was established in the same year in Khartoum-North. Between 1958 and 1982, the number of main extension units rose to 21 in the provinces and districts. Branch (village) extension units were added increasing the total number of the main and branch units to 74. A Department of Agriculture Extension and Education was established at the Ministry of Agriculture with women's section established to cater for the conventional "Home Economics" activities such as nutrition, child and mother care, sewing and knitting handicrafts ...etc. Development of the National Agricultural Extension system progressed with frequent and at times drastic changes in its organization and mandate. The most important two changes are the transfer of the responsibility of the agricultural education to the Ministry of Education and the devolution and transfer of the administrative responsibility from the central administration in Khartoum to the State Ministry of Agriculture (NKRDP, 2003). Although quantitative information is often lacking, it's generally recognized that small scale farmers in the semi-arid tropics suffer seriously from pre-and post harvest crop losses due to the pests and diseases (MOA, 2004). In the Sudan, crop protection is largely the responsibility of the Plant Protection Department (PPD). In practice, however, due to the limited resources, PPD in the rural areas at least is largely engaged with operations against the so-called National Pests which are usually migratory often breeding in remote areas away from the crops. In western Sudan (North Kordofan State) these include the tree locust (*Anacridium melanorhodon melanorhodon*), the Dura andat (*Agonoscillus pubescens*),

and the Gadoum Ahamar (*Quelea quelea atheupica*).est. The local pests include, grasshoppers (*Oedaleus senegalensis*), water melon bugs (*Coridius viduatus*) and rats (*Mastomyes natalensis*) (PPD, 2002).

A natural consequence of the understandable emphasis on the National Pest Programme that the local pest problems rarely receive the attention they deserve. This weakness in the crop protection services was identified by North Kordofan Rural Development Project (NKRDP).

It was decided by the NKRDP that, assisting farmers to control local pests would form an important part of the extension division's input programme to achieve the overall objective of the project which is aiming to improve the living standard of the communities in the project area, and specifically to enhance the productivity and increase incomes of individual farmers.

II. STATEMENT OF THE PROBLEM

According to MOA reports, agricultural production in North Kordofan State is quite unstable mainly due to many factors including, rainfall fluctuations, serious crop pests and disease attack, soil exhaustion and poor agricultural extension services. The illegal chemicals and pesticides handling and use to control pests and diseases may have hazardous effect in the environment.

Despite that, some of the indigenous farmer's experiences, methods and techniques for controlling pests and diseases may be of great use if they properly handled and well developed for further integrated pest management tools. To improve such situation, the skills of the villagers in the appropriate fields of crop production should be raised and developed. Savile (1965) explained the agricultural extension system as a system of our school education aiming to help rural people to help themselves. Mosher (1978) defined agricultural extension as a process of working with rural people through out of school education, along those lines of their current interests and needs which are closely related to gaining a livelihood, improving the physical level of living of rural families and enhancing rural community welfare. Adams (1982) stated that, agricultural extension is an advice and assistance for farmers to help them to improve their methods of production and marketing. Kelsey and Hearne (1963) defined agricultural extension as a system of education out of school in which adults and youth learn by doing (EL Aadli, 1983). Chang (1963) defined agricultural extension as an informal educational system out of school to train and influence farmers and their families to adopt the improved technologies in agricultural production, marketing, farm management and soil conservation. Salih (1997) defined agricultural extension as an educational process to farmers, out of school aiming to disseminate useful knowledge for them and their families to make use

of these knowledge's for their welfare and the local community in general. Uma lele (1979) defined the rural development as improving living standard of the mass of the low income population residing in rural areas and making the process of their development self-sustaining. Shareif (1990) explained the vital importance of agricultural extension in agricultural development and in general its importance in integrated rural development in traditional sector. From other point of view, the agricultural rain fed sector in North Kordofan state suffers from many constrains and obstacles that hindered production of all crops which consequently result in lowering the household income. Obviously, agricultural extension has a vital important role to minimize such constrains and to raise the awareness of the rural communities towards the new technologies and interventions and their sources. Rogers and Burdge (1972) defined development as a type of social change-in which new ideas are introduced into a social system in order to produce higher per-capita incomes and levels of living through modern production methods and improved social organization

III. OBJECTIVES OF THE STUDY

The overall objective of the study is to test and evaluate the role of the Village Extension Worker (VEW) in NKRDP area, in increasing the awareness of the rural communities towards effective IPM techniques. However, within this context the study seeks to achieve the following specific objectives:

1. To test the VEW different communication skills used to speed up community participation and involvement in the different project activities.
2. To evaluate the role of VEWs in increasing the awareness of the rural people towards handling and use of chemicals and pesticides.
3. To highlight the level of upgrading the skills of villagers by VEW to participate in pest management and
4. To check the achieved level of IPM systems in NKRDP targeted group farmers.

IV. MATERIALS AND METHODS

Data source

To fulfill the study objectives, the participants (farmers) and the VEWs were the model. The study was based on both primary and secondary data sources.

Primary data

Primary data were collected from the field using constructed questionnaires introduced to the rural community (participants) and VEWs.

Sampling procedure, techniques and size

A simple random sampling technique was used to select 142 participants and 30 VEWs were interviewed. Also nonconventional methods such as, direct field observations, key informants interviews and focused group discussions were used.

Sample frame

The sample frame, which contains the Um Rawaba and Bara localities (The study area), administrative units, villages, year of selection, number of participant farmers and VEWs, was obtained from NKRDP reports.

Data analysis

The descriptive statistical analysis methods such as, frequency table, cross-tabulation were used to analyze the data through using SPSS software.

V. RESULTS AND DISCUSSION

Extension Tools and Methods Applied by (VEWs)

The Village Extension Workers had applied different extension methods and tools in a way that aimed to raise the awareness of the community in the project area. These include, field and home visits, meetings, extension leaflets and posters, FFS sessions and extension IPM campaigns.

Field visits

The results showed that, most of the VEWs conducted field visits to the participant farmers. About 75.4% of them conducted regular monthly visits, while 13.4% were rarely applied visits. Table (1).

Meetings

The results explained that, almost 93% VEW intended to conduct meetings. This attributed to the fact that, direct contact of the farmer is more effective than any other extension mean particularly among farmers of high illiteracy rate. The number of meetings conducted by VEW varied from once, twice and more than twice during the agricultural season. Only seven percent of VEW did not conduct meetings. Table (2).

Extension leaflets and Posters

Only few VEWs were able to disseminate extension leaflets and posters in their villages. The majority 72% did not apply or use such method. This due to high illiteracy among the project community Table (3).

Extension campaigns

The annual publicity campaigns undertaken in collaboration with project partners, stakeholders and service providers were successfully drawn the tensions of the farmers towards IPM campaigns (NKRDP, 2004).

Table (1): Frequency of participants related to field visits conducted by the VEWs during the season (%)

Visit schedule	Frequency	%	Cumulative (%)
Monthly	107	75.4	75.4
Rarely	19	13.4	88.8
None	16	11.2	100.0
Total	142	100.0	

Source: Field survey, 2005.

N=142

Table (2): Frequency of participants related to village extension meetings conducted by (VEWs) during the season (%)

No. meetings/season	Frequency	%	Cumulative (%)
Once	41	28.9	28.9
Twice	38	26.8	55.7
More than twice	53	37.3	93.0
No meeting	10	7.0	100.0
Total	142	100.0	

Source: Field survey, 2005.

N=142

Table (3): Frequency of participants related to extension leaflets and posters distributed by VEWs during the season (%)

Distribution frame	Frequency	%	Cumulative (%)
Regularly	15	10.6	10.6
Rarely	25	17.6	28.2
None	102	71.8	100.0
Total	142	100.0	

Source: Field survey, 2005.

N=142

The results also revealed that almost 90% of the community participated in the different IPM extension and orientation campaigns entitled to PPD seasonal activities campaigns and conducted by VEW .Table (4).

Community Participation Awareness and Involvement

Participation in IPM Campaigns

As stated before, 90% of the community in the project area were involved and participated in different IPM campaigns. . Their level of participation varied from regularly, rarely and none with 71.8%, 18.3% and 9.9 %, respectively. As argued by the respondents, this was attributed to the incidence, danger and attack of the pests Table (5). The pests controlled include birds, rats, water melon bugs, locust and gabora Table (6).

Awareness of participants' farmers towards pesticides source

The study results showed that, 75.4% of the participant farmers depend on VEW to get their required pesticides. Traders represented the source of pesticide for only 10.6% of NKRDP village community. 14.1% of the participant received pesticides from both VEW and traders Table (7). For the reason of buying pesticides from VEW, the results indicated that, due to the effectiveness of the delivery of pesticides and extension packages, 61.3 % of the participants purchased their pesticides from the VEW. Only 6.3% of them were not yet aware about the VEW role in pesticides. Table (8).

Table (4): Frequency of participants related to extension and orientation campaigns conducted by the VEWs during agricultural seasons

Campaigns	Frequency	%	Cumulative (%)
Regularly	102	71.8	71.8
Rarely	26	18.3	90.1
None	14	9.9	100.0
Total	142	100.0	

Source: Field survey, 2005.
N=142

Table (5): Frequency distribution of farmers according to their participation in pest management campaigns (%)

Participation level	Frequency	%	Cumulative (%)
Regularly	102	71.8	71.8
Rarely	26	18.3	90.1
None	14	9.9	100
Total	142	100.0	

Source: Field survey, 2005. N=142

Table (6): Frequency distribution of farmers according to pest campaigns conducted by VEW in NKRDP villages (%)

Pest	Frequency	%	Cumulative (%)
Birds	53	37.3	37.3
Rats	43	30.3	67.6
Watermelon	41	28.9	96.5
Bugs			
Locust & Gabora	5	3.5	100.0
Total	142	100.0	

Source: Field survey, 2005. N=142

Table (7): Frequency distribution of respondents according to the source of pesticide in villages of NKRDP (%)

Source	Frequency	%	Cumulative (%)
VEW	107	75.4	75.4
Traders	15	10.6	85.9
Both	20	14.1	100.0
Total	142	100.0	

Source: Field survey, 2005. N=142

Table (8): Frequency distribution of participant farmers according to the reasons for purchasing pesticides from the VEWs (%)

Reason	Frequency	%	Cumulative (%)
Pesticides effective	22	15.5	15.5
With extension package	24	16.9	32.4
Both	87	61.3	93.7
Don't know	9	6.3	100.0
Total	142	100.0	

Source: Field survey, 2005.
N=142

Participants' involvement in different IPM techniques

To test the awareness of participants towards durra and millet smut control, the study results recorded that 54.9% of participants were following the appropriate harvesting techniques where the infected Dura and millet heads were harvested and collected separately. About 19% of the participants used the seed-dressing in sowing and 6.3% of them followed a proper crop rotation. These raised the participant awareness in the project area towards Dura and millet smut to about 97.8% Table (9).

For the best way to control the watermelon bugs, a comparison between mechanical control following different technique (collection and burning, collection and boring.) and using pesticides (Benducarb, Sevein ... etc) indicated that, 57% of the participants followed mechanical control and only 43% were using chemical control Table (10).

Table (9): Frequency distribution of respondents according to smut disease control methods (%)

Smut control methods	Frequency	%	Cumulative (%)
Harvest technique	78	54.9	54.9
Using seed-dressing	27	19.0	73.9
Following crop rotation	9	6.3	80.2
All above	25	17.6	97.8
Can't be controlled	3	2.2	100.0
Total	142	100.0	

Source: Field survey, 2005.

N=142

Table (10): Frequency distribution of participants according to mechanical and chemical control methods of watermelon bugs (%)

Method of control	Frequency	%	Cumulative (%)
Mechanical	81	57.0	57.0
Chemical	61	43.0	100.0
Total	142	100.0	

Source: Field survey, 2005.

N=142

The study also highlighted the techniques practiced by the participant farmers to control the grass hoppers (Gabora) in the project area. Fallow cleaning around the farms represented 33%, whereas, cleaning the bushes and shrubs inside the farms in a way not to harbor the pest during the day represented 17.6%. Some farmers (24%) intended to burn the fallow where the pest occurs Table (11).

Table (11): Frequency distribution of farmers according to the techniques practiced to control Grass hoppers in NKRDP villages (%)

Grass hoppers control technique	Frequency	%	Cumulative %
Fallow cleaning (around fields)	47	33.1	33.1
Farms cleaning	25	17.6	50.7
Fallow burning	34	24.0	74.7
All above	30	21.1	95.8
Can't be	6	4.2	100.0
Total	142	100.0	

Source: Field survey, 2005.

N=142

VEWs training

NKRDP conducted in collaboration with Ministry of Agricultural/directorate of technology transfer, plant protection department and ARC El-Obeid basic and advanced IPM training. Training site (place) and time were preferably accepted by VEWs (90% and 83%, respectively). Training Duration was moderate as prescribed by 44% of VEWs Table (12).

The male VEWs trained (92.3%) conducted different training sessions to the farmers in their villages. Only 7.7% of VEWs didn't hold any training sessions for the reason, farmer's lack of desire to be trained by the female VEW. Different training tools and methods were applied in training the farmers such as meetings, FFS and demonstration field trials (Fig.1). The study explained that, the training conducted by VEW was accepted by 80% of

the farmers. Figure (2) explained some reasons for weak training as explained by the farmers interviewed.

Table (12): VEWs opinion in training according to the time, site and Duration of sessions conducted (%)

Training option	Acceptable (%)	Not acceptable (%)
Training time	92.6	7.4
Training site (place)	90.0	10.0
Training Duration	44.4	55.6

Source: Field survey, 2005.

Those trained farmers participated in the plant protection campaigns in the project area. The trained farmers are expected to form Village Pest Management Units (VPMU), which will help much in sustainable pest management systems in the future. It's expected that every 3-5 trained farmers will form one VPMU. The more the number of VPMU formed the more efficient the system could be (ENCCP, 1996).The frequency distribution of VEWs who trained farmers is presented in (Table 13).

4.3.6 Demonstration trials conducted by VEWs

To identify the VEW opinion on demonstration trials, the results showed that, VEW implemented the demonstration plots for the objective of comparing the results of the new crops with the indigenous varieties as argued by 14.8%. About 22.2% implemented the trials for training purposes and 51.9% for both comparing and training. A percent of 11.1% of VEWs were not yet aware of the objective of the plots (Table 14).The results also indicated the positive impact of the demonstration trials implemented in the gardud soils in the project area following water harvest techniques where Productivity of Dura reached 800 kg/fedan in season 2004 (MOA, 2004).

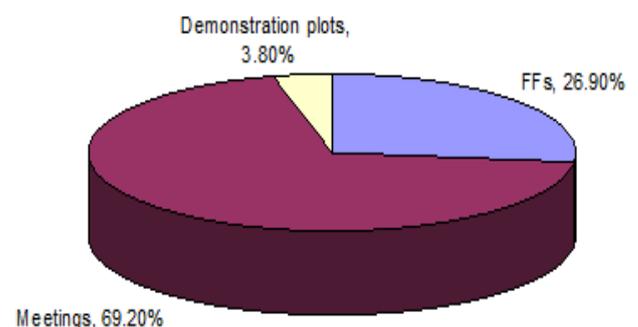


Figure (1): Methods of training implemented by Village Extension workers (VEWs)

Source: Field survey, 2005



Figure (2): Reasons for weak adoption of farmer to training material

Source: Field survey, 2005

Table (13): Frequency distribution of (VEW) according to the number of farmers trained (%)

Number of farmers trained	Frequency	%	Cumulative (%)
3-5 farmers	7	29.2	29.2
6-10 farmers	4	16.7	45.9
More than 10 farmers	13	54.1	100.0
Total	24	100.0	

Source: Field survey, 2005.

N=24

Table (14): Frequency of (VEWs) according to experience in demonstration plots implemented in NKRDP village (%)

Demonstration plot objectives	Frequency	%	Cumulative (%)
Comparing results	4	14.8	14.8
Training purpose	6	22.2	37.0
All above	14	51.9	88.9
Not known	3	11.1	100.0
Total	27	100.0	

Source: Field survey, 2005.

N=27

VI. CONCLUSION

The current study indicated that, VEWs who were selected and trained by the project and its partners were allocated to the project villages. The results of the study also explained the efforts exerted by the VEWs to conduct and disseminate the different extension packages availed by the project and others in away to raise the awareness of the community and upgrade the skills of the farmers to improve crop protection.

Findings of the results showed the positive response of the farmers towards pesticides source and use, 75% of them

shift and start to get their pesticides from the VEWs throughout the entrance year.

RECOMMENDATIONS:

1 MOA and other NGOs working in the field of agricultural development should tackle the FFS as main extension method.

2 More attention should be given to vegetables IPM in North Kordofan State where chemicals are used in inappropriate manner.

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