

Existing Practices of Farm Women to Decrease Pesticide Residues from Foodstuff

Pompi Saikia¹, Minerva S. Baruah² and Manju D. Das²

¹AICRP, Home Science Extension Component, Assam Agricultural University,
Jorhat, Assam, India

E-mail: ¹<pompisaikia.aau@gmail.com>

²College of Home Science, Department Extension Education,
AAU, Jorhat, Assam, India

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ABSTRACT Pesticide residues in agricultural produce are toxic and threat to human health. Harmful residues are to be removed to ensure safety of the consumer. Present investigation was undertaken to find out the existing practice of farm women to decrease the pesticide residues from foodstuff with an aim to study the socio-economic profile of the respondents, to find out the existing practices of farm women to decrease the pesticide residues from foodstuff. The study was conducted in the Nagaon and Jorhat districts of Assam. Total 120 numbers of respondents were selected randomly for the study. Data were collected with the help of interview schedule by personal interview. Collected data were analyzed by applying frequency and percentage. The result showed that 39.17% of respondents were in the age group of 31-45 years and majority of the respondents were married (70%) and 50.83% of respondents were educated upto primary level, farming is the main occupation of 69.17% of respondent's family. Respondents from small land holding accounted highest percentage (42.50%) for cultivation, most of the respondents (65.83%) were not participated any formal training programme. A large percentage of the respondents (81.67%) practices to reduced pesticide residue in cereals and pulses but a very negligible percentage (6.67%) of respondents sprayed pesticides as per the economic threshold basis.

INTRODUCTION

Agriculture is the primary occupation of 70 per cent of Indian population. After green revolution much emphasis was given to agriculture. With new innovations and new techniques sustainable progress has been made in food grain production. It has been estimated that about 30 per cent of the potential of food production is lost due to insect pest and disease. Pesticide has contributed significantly in improving food security through increased food production and reducing post harvest losses. But farmers commonly use pesticide according to a predetermined calendar schedule rather than the basis of requirement. The consumption of the pesticide is rising by 8 per cent every year. People are using more and more amount of pesticides without giving attention towards proper dosages and methods of application (Vani et al. 2005). Though people use various types of pesticides, majority of them were not aware about toxicity level. Most of the users of pesticide cannot even understand the colour codes given on the label which represent toxicity level of pesticide (Devi 2007). Due to the overuse and misuse of pesticides, the residual level on vegetables often exceeds the maximum tolerance limits, causing health hazards and other associated problems and due to

the indiscriminate use of pesticides the air, water, soil and food commodities have become loaded with "Pesticides Residues" (Changappa and Vinayak. 1997). Pesticide residues refer to amount of pesticides, chemicals or its metabolites which remain in the food commodity after the effect of weathering and are toxicologically important (Mahindra and Kaur 2003). The situation is so alarming that even mother's milk is not free from pesticides.

Over the last decades there has been increasing awareness of the extent and significance of women's activities in agriculture. One is a major role wherein the women directly handle or have first-hand exposure with the pesticides such as spraying, applying manually or mixing the chemical. In spite of these duties women's main role is taking care of the family and processing food. Women can take steps to decrease the pesticide residue from food while they prepare food for family. Therefore, it is essential to make the people, basically women, aware of the safe use of pesticides, health hazards caused by them and ways to get rid of pesticide residue from food. Keeping this in view, the present study was undertaken with the following objectives:

1. To study the socio-economic profile of the respondents.

2. To find out the existing practices of farm women to decrease the pesticide residues from foodstuff.

METHODOLOGY

The study was conducted in the Nagaon and Jorhat districts of Assam. North West Jorhat Development Block of Jorhat District and Bratradoba Development Block of Nagaon District were selected purposively for the study owing to their proximity to the researcher. From each block three villages were selected in consultation with block officials of the respective block. From the selected villages 20 respondents were selected who engaged in crops and vegetable production. Thus, the total of 120 numbers of respondents were selected randomly for the study. Lists of variables were prepared on the basis of the objectives of the study. Data were collected with the help of interview schedule by personal interview method. The first part of the schedule dealt with the profile of the respon-

dents. The second part of the interview schedule was constructed for studying the existing practices of farm women to decrease the pesticide residues from foodstuff. The statements were finalized and included in the schedule after through discussion and recommended by the experts of Entomology department of Assam Agricultural University, Jorhat-13, progressive farmers and reviewing related literature. The interview schedule was pre-tested with a group of 20 respondents in non sampling area. Based on the experience gained and information obtained, necessary modifications were made before administering the research tool to the respondents. Collected data were analyzed by applying frequency and percentage.

RESULTS

Table 1 depicts the socio- personal characteristics of the respondents. This finding of the study revealed that 39.17 % of respondents were in the age group of 31-45 years and majority of

Table1: Distribution of the respondents according to their socio-economic profile

S. No.	Item	Group	Frequency	Percentage
1	Age	Young (16-30 years)	30	25.00
		Middle (31-45 years)	47	39.17
		Old (45 and above)	43	35.83
2	Marriage Status	Married	84	70.00
		Unmarried	16	13.33
		Divorced	6	5.00
		Widow	14	11.67
		Separated	0	0.00
3	Education	Primary	61	50.83
		HSLC	33	27.50
		HSLC Passed	21	17.50
		HSSLC passed	4	3.33
		Degree	1	0.83
4	Caste	ST	14	11.67
		SC	31	25.83
		OBC/ MOBC	74	61.67
		General	1	0.83
5	Occupation	Farming	83	69.17
		Daily wage earner	4	3.33
		Business	6	5.00
		Services	21	17.50
		others	6	5.00
6	Land Holding	Small (below 7.5 bigha)	51	42.50
		Medium (7.5 -15 bigha)	40	33.33
		High (above 15 bigha)	29	24.17
7	Family Income	Low (< Rs. 20000)	58	48.34
		Medium (Rs.20000-30000)	43	35.83
		High (> Rs. 30000)	19	15.83
8	Organizational Membership	No membership	73	60.83
		Member of an organization	47	39.17
9	Training	participated	41	34.16
		Not participated	79	65.83

the respondents were married (70 %), and 61.67 per cent respondents were from More Other Backward Caste (MOBC). Most of the respondents (50.83%) were educated upto primary level and farming was the main occupation of 69.17 % of respondents' family. Respondents' from small land holding accounted highest percentage (42.50 %) for cultivation and maximum percentage of families (48.34 %) belonged to low income category. From the findings it was clear that majority (60.83%) of the respondents had no membership in any organization. Majority (65.83%) of the respondents did not participate in any formal training.

Existing Practices to Reduced Pesticide Residue in Cereals and Pulses

Table 2 showed that a large percentage of the respondents (81.67%) cooked rice after thorough washing, followed by 67.50 % respondents who avoided mixing the new and old grains whereas 51.67 % of respondents obeyed the waiting period between the spray and harvesting, 47.50 % of the respondents sun-dried the grains before storage to reduce pesticide residues whereas 28.33 % of the respondents cooked rice in pressure cooker to reduce pesticide residues and a very negligible percentage (6.67%) of respondents sprayed pesticides as per the economic threshold basis. Not a single respondent followed the tips related to Integrated Pest Management (IPM). Similar finding was also reported by Mohindra and Kour (2003).

Table 2: Distribution of the respondents according to existing practices to reduced pesticide residue in cereals and pulses

S. No.	Measure	No. of farm women	Percentage
1	Obey the waiting period between the spray and harvesting	62	51.67
2	Sundry the grains before storage	57	47.50
4	Cook rice after washing thoroughly	98	81.67
5	Avoid mixing the new and old grains	81	67.50
6	Cook rice in pressure cooker	34	28.33
7	Spray pesticides as per economic threshold basis	8	6.67
8	Follow the tips of Integrated Pest Management	-	-

Existing Practices of the Respondents to Reduced Pesticide Residue in Vegetables

Table 3 revealed that 68.33 % of the respondents washed vegetables properly before peeling followed by 67.50 % who washed and peeled off the vegetables thoroughly to be eaten as raw, 60 % of respondents did not use green leaves as food after immediately spraying pesticides, 37.50 % of the respondents soaked vegetables in salt solution before cooking, 30.83 % avoid purchase of off-season vegetables due to application of high amount of pesticide, 25.83 % washed vegetables after peeling 11.67 % applied pesticides only at recommended dose and a very negligible (8.33%) respondents cooked vegetables in pressure cooker to reduce pesticide residue. It can be concluded that the respondents were to some extent practicing the steps to reduce pesticide residues from food-stuff. Majority of the respondents (68.33%) washed vegetables properly before peeling. This finding is supported by Adachi and Okan (2006), Sharma (2011) that some extent of pesticide residues were removed from fruits and vegetables by washing with water.

Table 3: Distribution of respondents according to existing practice to reduced pesticide residues in vegetables

S. No.	Measures	Frequency	Percentage
1	Do not use green leaves as food after immediately spraying pesticide	72	60.00
2	Soak vegetables in salt solution before cooking	45	37.50
3	Wash vegetables after peeling	31	25.83
4	Wash and peel off the vegetables thoroughly to be eaten as raw.	81	67.50
5	Avoid purchase of off season vegetables	37	30.83
6	Wash vegetable properly before peeling	82	68.33
7	Cook vegetables in pressure cooker	10	8.33
8	Apply pesticides only at recommended dose	14	11.67

DISCUSSION

Table 1 showed that majority of the respondents were educated upto primary level (50.83%). The educational level of the respondents was poor as well as it was seen that their social partic-

ipation also very less (39.17%). This was the cause that the respondents were not aware about pesticide residue. Similar finding was also reported by Ameriana et al. (2006) in Bundung, awareness level about pesticide residues on tomato were influenced by motivation. The knowledge of the respondents is always influenced by information received and the level of formal education attended. Asante and Ntow (2009) also supported this finding that majority of the farmers in the State of Ghana used pesticides to reduce pest and disease problems and to increase agricultural production. Most of the farmers were illiterate and even they had received no training in application technique and handling equipments. They were not aware that uses of highly toxic pesticides which were often badly labeled, poorly package were the cause of pesticide residue. It is evident from the above finding that respondents were to some extent practicing the steps to reduce pesticide residues from foodstuff. Mahindra and Kaur (2003) supported that farm women had medium level of awareness about pesticide residue and accordingly they take measures to reduce pesticide residues from foodstuff. A very negligible 11.67 % applied pesticides only at recommended dose which is the major cause of pesticide residues. Rao and Dubay (2001) supported that frequent use of pesticides destroyed not only target pests but also naturally present beneficial predators which help keep pest populations in cultivated and wild areas in check. Without their natural enemies the secondary pests present in the crop were able to reach outbreak levels. Another serious and costly side-effect of heavy pesticide used had been the development of pesticide resistance in pest insects, pathogens and weeds. Farmers use excessive amount of pesticides in a wrong manner with disproportionate dosage, which leads to a higher cost of cultivation as well as ecological imbalance.

CONCLUSION

On overall analysis it can be concluded that large number of farm families used chemical pesticides to control pest and diseases of crop and vegetables without following scientific norms, which causes pesticide residue on foodstuff. To make the farm women fully aware about pesticide residue in foodstuff, vigorous publicity is essential through electronic media such as radio, television as the education level of the re-

spondents is low. Extension agents should draw special attention in organizing training regarding safe use of pesticide on crops and vegetables at the door step of the farmers as majority (65.83%) of the respondents had not participated in any pesticide related training programme and to increase the yields and productivity in traditional, marginal agricultural system by using Indigenous Technical Knowledge (ITK) without harming the environment.

The concern authority may also take appropriate steps to educate the farm women with the Integrated Pest Management (IPM) techniques for the purpose of reducing pesticide residue in foodstuff. They may help in the development of quality life of the people as in the present study we have not found a single respondent followed the tips related to IPM. The extension functionaries may also organized a series of training on improved production technology for crops and vegetable for improving existing knowledge of the target group.

RECOMMENDATIONS

Study on any one aspect tends to several manifold manifestations. Therefore with the hindsight of the present study the researcher forwarded the following recommendations:

1. A comparative KAP (Knowledge Attitude Practice) study may be conducted with urban and rural housewives on effect of pesticide residues in foodstuff in different agro-climatic zones of Assam.
2. Information on effect of pesticide residue could be disseminated through electronic mass media such as radio, television, internet etc. and awareness workshop/camp/campaign can be organized for creating awareness towards safe use of pesticides and integrate and develop local and indigenous knowledge.
3. Consumer awareness and consumption patterns that support alternative production must be developed and protect consumers from residues from synthetic pesticides and other agricultural inputs which can cause acute or long-term health effects.

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REFERENCES

- Adachi A, Okano T 2006. Pesticide residue reduction in selected vegetables using rice-bran. *Journal of Health Science*, 52(3): 320-323.
- Ameriana M, Natawidjaja RS, Arief BR, Karmana MH 2006. Factors influencing the consumer's awareness of safe pesticide residue level on vegetables - A case study on tomato in Bandung. *Baliisa Journal*, 16(1):111-117.
- Asante KA, Ntow WJ 2009. Status of environmental contamination in Ghana, the perspective of a research scientist. *Interdisciplinary Studies on Environmental Chemistry-Environmental research in Asia*, 18: 253-260.
- Changappa R, Vinayak R 1997. The killing fields. *Agril News*, 4: 120-121.
- Devi PI 2007. Health damage due to pesticide use – a study. *Leisa India*, 9(3): 28.
- Mahindra R, Kaur N 2003. Extent of awareness of farm women regarding pesticide residues in cereals, vegetables, milk and milk products. *Agricultural Extension Review*, 15(4): 16-21.
- Rao AS, Dubay PR 2001. Study on pesticide residues in vegetables. *Indian Journal of Environmental Science*, 19(4): 661-664.
- Sharma U 2011. Khadyat kitnashak oushdar bisokiar pora bashi tokar upai. *Prantik, Monthly, January* 2011, P. 26.
- Vani S, Srilatha, Malik BS 2005. Problem faced by farmers in optimum utilization pesticides. *Agricultural Extension Review*, 17(6): 18-19.