

**RESEARCH ARTICLE :** **Farmers knowledge of IPM practices in cabbage**

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**SUMMARY :** The study was an “*expost-facto*” research carried out in Belagavi and Haveri districts of Karnataka State during the year 2017- 18. Three taluks were selected in each district based on the highest area. The total sample size was 150. The results revealed that cent per cent of farmers have correct knowledge about summer ploughing. Most (92.66 %) of the farmers were having high knowledge on regular destruction of damaged plants and 80.00 per cent of farmers have knowledge on spraying of NSKE. Almost all (98.66 %) the farmers having knowledge about using chemical for control of diamond black moth. The overall knowledge of farmers about IPM practices in cabbage showed that 51.33 per cent of the respondents belonged to medium level of knowledge about IPM practices in cabbage followed by low (28.66 %) and high (20.00%). The probable reasons might be that less education level, lack of training, non-utilization of mass media and less extension contact. So there is a great scope to design more number of skill trainings, demonstration and exposure visits by the development departments.

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**KEY WORDS:**

Integrated pest management (IPM),  
*Neem* seed kernal extract (NSKE)

**BACKGROUND AND OBJECTIVES**

Cole crops which include cabbage, cauliflower, knol-khol etc. are the most abundantly consumed vegetables all over the world. They belong to the genus *Brassica* of the family *Brassicaceae*. This group includes a wide variety of vegetable crops. Cabbage [*Brassica oleracea* (L.) var. capitata] is one of the most important group of vegetable crops and commonly cultivated in winter.

Karnataka produces about 2.4 per cent of the total production of cabbage in the country. The production of cabbage in the State is 0.18 million tones from an area of

0.09 million hectares having productivity of 19.8 tones/ha (Anonymous, 2016). Major cabbage producing belts in the State are Belgavi, Haveri, Dharwad, Hassan, Bellary, Mysore and some other districts of north Karnataka. It also contributes 4.6 per cent of production and 4.5 per cent of area of vegetable. In Belagavi 612 hectares of cabbage is grown and 460 hectares of cabbage is grown in Haveri district.

In the recent past, efforts have been made to increase the production of vegetables by developing large number of high yielding, good quality and disease resistant varieties/ hybrids and other required cultivation

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packages. The high yielding varieties/hybrids are more input responsive. The critical input *viz.*, fertilizer, if applied in excess, makes the plants to become succulent and thus, prone to attacks by more of pests. To minimise the pest attack, farmer resorts to usage of chemical pesticides and their indiscriminate use is creating many problems like resurgence of pest species, destruction of natural enemies, more so of beneficial insects and decrease the quality of food.

Thus, the IPM is a broad ecological approach which aims at keeping pest population below economic threshold level by blending more than one method of pest control such as, cultural, mechanical, biological, chemical and legislative in a compatible and environmentally sound manner. This method is considered to be economical, effective, practical, protective and eco-friendly. But, the farmers are not adopting these practices due to lack of knowledge or for other several causes.

## RESOURCES AND METHODS

The study was an “expost-facto” research carried out during the year 2017-18 in Belagavi and Haveri districts of Karnataka. These districts were purposively selected for research study as area under cabbage crop is first and second rank in Karnataka state. From Belagavi and Haveri districts six taluks namely Bailhongal, Gokak, Belagavi, Hirekerur, Ranebennur and Byadgi were selected based on highest area and production under cabbage crop cultivation. From the each taluk five villages were selected. From each of the selected village, five cabbage growers were selected as respondents for the present investigation thus, making a total of 150 respondents for the study following random sampling method. A pre-tested structured interview schedule was used to collect the data from the respondents by personal interview method. The data collected from respondents were tabulated and analyzed using appropriate statistical tools such as frequency, percentage mean and standard deviation.

Knowledge in IPM practices of cabbage was operationally defined as the amount of factual information possessed by a farmer regarding the IPM practices. Based on the extensive review of literature and consultation with the scientists of entomology and pathology departments and referring the package of practices of UHS Bagalkot. The important practices which were directly or indirectly related to the IPM

practices in cabbage were selected to know the knowledge level of the farmers. Thus, totally 19 practices were selected for the study. The responses provided by the respondents were measured as known and unknown about IPM practices in cabbage.

The following score was given for known and unknown of improved cultivation practices.

Knowledge level	Score
Known	1
Unknown	0

The maximum score that respondents could obtain was 32 and the minimum was zero. Depending upon the total score obtained by each of the respondent, they were grouped into three categories with mean and standard deviations as a measure of check and are expressed as below.

Category	Score
Low	Less than (Mean – 0.425 SD)
Medium	Between (Mean $\pm$ 0.425 SD)
High	More than (Mean + 0.425 SD)

Further frequency and percentage were calculated to present the data.

## OBSERVATIONS AND ANALYSIS

The results obtained from the present study as well as discussions have been summarized under following heads:

### Knowledge of recommended IPM practices of cabbage growers :

It was evident from Table 1 which indicates that cent per cent of the farmers possessed correct knowledge about summer ploughing. Similarly majority of farmers possessed the knowledge on cleaning of field bunds (96.00%), crop rotation (93.33%) and raised nursery bed (91.33 %). This shows that farmers were sound in practicing cultural practices which may be due to past experience.

In case of mechanical control measures, most (92.66 %) of farmers have knowledge on regular destruction of damaged plants followed by majority (78.66%) of farmers have knowledge about pheromone trap but only 39.33 per cent of farmers exhibited the knowledge of using number of pheromone traps required per acre. The lack

of information and technical knowledge regarding the use of pheromone traps and complexity to practice and lack of skill to practice might have favoured the situation. And also it was not much popular compared to chemicals,

so farmers are not aware about the usage of traps.

With respect to biological control measures, a large majority of farmers (80.00%) had correct knowledge about spraying of NSKE. But only 38.00 per cent of

**Table 1 : Knowledge of recommended IPM practices of cabbage growers**

Sr. No.	Statements	Knowledge (n=150)	
		f	%
1.	<b>Cultural practices</b>		
	Summer ploughing	150	100.00
	Trap crop (mustard)	115	76.66
	25 rows of cabbage: 1 row of mustard	42	28.00
	Crop rotation (Pulse)	140	93.33
	Raised nursery bed (15-20 cm height)	137	91.33
	Cleaning of field bunds	144	96.00
2.	<b>Mechanical practices</b>		
	Use of light traps	81	54.00
	Light trap 3/Acre	43	28.66
	Use of pheromone trap	118	78.66
	Pheromone trap 2/Acre	59	39.33
	Regular destruction of damaged plants at each harvest	139	92.66
3.	<b>Biological practices</b>		
	Spraying of NSKE 5%	120	80.00
	600 to 1000 litres spray solution per hectare	57	38.00
	Spraying of <i>Bacillus thuringiensis</i> var. <i>kurstaki</i>	48	32.00
	<i>Bacillus thuringiensis</i> var. <i>kurstaki</i> (200g/Acre)	27	18.00
	Use of <i>Cotesia plutellae</i> eggs	60	40.00
	6,000 eggs/Acre	22	14.66
	3-4times weekly interval	23	15.33
	Growing of pulses on the bunds to buildup natural enemy fauna	103	68.66
4.	<b>Chemical method</b>		
	Number of recommended sprays of chemicals (4 sprays)	91	60.66
	Spray mustard with dichlorovos at high pest population	45	30.00
	0.5ml/litre	39	26.00
	<b>Major pests and control measures</b>		
	Chemical used for control of DBM	148	98.66
	Dosage	83	55.33
	Chemical used for control of Head borer	133	88.66
	Dosage	97	64.66
	Chemical used for control of Aphids	138	92.00
	Dosage	90	60.00
	<b>Major diseases and control measures:</b>		
	Chemical used for control of Black rot	125	83.33
	Dosage	82	54.65
	Chemical used for control of <i>Alternaria</i> leaf spot	135	90.00
	Dosage	86	57.33

Category	f	%
Low (<17.60)	43	28.67
Medium (17.63-21.57)	77	51.33
High (>21.57)	30	20.00
Mean = 19.46		SD =4.60

farmers had knowledge about quantity of spraying solution required per hectare. Whereas, majority (68.66%) of farmers had knowledge on growing of pulses on bunds to buildup natural enemy. The knowledge of using *Cotesia plutellae* is known to 40.00 per cent of farmers. This situation focuses that farmers were very much lacking the knowledge of bio agents. This might be due to lack of guidance and technical knowledge about IPM practices, non-availability of bio-agents in agriculture departments, university and other extension offices, lack of conviction among farmers and the tendency towards indiscriminate use of insecticides for immediate control.

With regard to chemical control measures, a highest number of farmers (60.66 %) possessed knowledge of taking recommended sprays. Almost all (98.66 %) the farmers had knowledge of using chemicals for control of diamond black moth, but 55.33 per cent of farmers had correct knowledge about dosage. A large majority (90.00%) of farmers had knowledge on control of alternaria disease. But 54.65 per cent of farmers had correct knowledge on dosage for controlling of alternaria. Whereas majority (83.33%) had knowledge on control of black rot and 54.65 per cent had knowledge on dosage for control of disease. This might be due to people are aware on control of pest and disease. In majority of cabbage growers adopt chemical methods then other practices they thought that chemical method was good for control of pest and disease in early stage. But indiscriminate use and temptation of farmers to control pest and disease farmers lacks knowledge on correct dosage.

### **Overall knowledge of farmers about recommended IPM practices in cabbage :**

The data presented in Table 2 revealed that about half of farmers (51.33 %) had medium level of knowledge about IPM practices in cabbage followed by low (28.66 %) and high (20.00 %) knowledge level, respectively. This clearly depicts that the vegetable growers possessed average knowledge about IPM

practices which may be due to less education level, lack of training, non-utilization of mass media and less extension contact as expressed by them. These findings are in conformity with the research findings of Noorjehan (2004) and Reddy (2006).

### **Conclusion :**

In the intention of controlling pests and diseases farmers resort to usage of chemical pesticides indiscriminately thus, leading to resurgence of pests, destruction of natural enemies and beneficial insects, reduction in fruit quality and residual effect of pesticides in the produce. Integrated pest management (IPM) approach which has been globally accepted for achieving sustainability in horticulture, with the advantages like safety to environment, low input based production and pesticide-free food commodities.

Majority of the cabbage growers fell under medium level of knowledge about IPM practices, so, there is a great scope to design more number of skill trainings, demonstrations and exposure visits by the development departments.

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