

Original Research Article

<https://doi.org/10.20546/ijcmas.2020.909.427>

## Training Need of MPKV Ph.D. Students towards Application of Drone Technology in Agriculture

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### ABSTRACT

#### Keywords

Training Need,  
Ph.D. Student,  
Application of  
Drone Technology  
and Agriculture

#### Article Info

##### Accepted:

24 August 2020

##### Available Online:

10 September 2020

The Present Investigation was carried out in Post Graduate Institute of Mahatma Phule Krishi Vidyapeeth Rahuri. To study the Training Need of MPKV Ph.D. Students towards Application of Drone Technology in Agriculture. Thus total 60 Ph.D. students were comprised from ten departments for the present study. The results revealed that, majority (43.33%) of the respondents belong to middle aged group, 50.00 per cent were male and female, 33.33 per cent from educated up to Ph.D. I, II and II rd year respectively , 73.34 per cent were having training received (0),61.67 per cent were having medium information seeking behaviour,78.34 per cent were having medium innovative proneness, 68.33 per cent were having medium achievement motivation, 65.00 per cent were having medium scientific orientation, 66.67 per cent were having medium risk preference, 66.67 per cent were having medium awareness, Whereas Training need revealed that majority of (68.33%) of the Ph.D. students had training is mostly needed followed by (25.00%) of Ph.D. students training is needed and remaining (6.67%) of the Ph.D. students had training is least needed.

### Introduction

Agriculture is the crucial sector of the Indian economy, predominantly because the majority (64.2%) of the rural population of India is dependent on it. The world population has increases day by day and projected to reach 9 billion people by 2050, so the expert expect that the agricultural consumption will also increase in the same time period. In order to feed this larger, more urban and richer population, food production (net of food used for biofuels) must increase by 70 percent.

Agriculture sector is the most promising sector and challenging sector because it is depending on climate or weather, condition of the soil, irrigation, water quality and quantity and their application rate.

This report argues that the required increase in food production can be achieved by adopting the advance technologies in agricultural production. In the last five years, the total volume of investments in the agricultural sector has increased by 80%. The goal of these investments is to achieve

productivity growth of at least 70% by 2050 to meet the increased needs of the population of the Earth considering the fact that the area under cultivation will decrease.

UAV (Unmanned Aerial Vehicle) is a Flying Robots, no on-board pilot and Remotely controlled, semiautonomous or autonomous or combination. flying device that can fly a pre-set course with the help of an autopilot and GPS coordinates. The use of UAVs to monitor crops offers great possibilities to acquire field data in an easy, fast and cost-effective way compared to previous methods.

The Use of advanced technologies such as drone in agriculture offer potential for facing several major or minor challenges. Using the information acquired by the UAVs several decisions can be made to handle the problem(s) detected and/or optimize by several things. UAV-based IoT technology is considered as the future of a advanced technologies have been successfully employed in a variety of applications for Precision Agriculture such as, Field analysis, Identification of water deficiency, Crop spraying, Weed mapping, Herbicide applications, Irrigation management, Vegetation growth monitoring, Diseases detection, Yield estimation.

### **Materials and Methods**

The Present study was carried out in Post Graduate Institute of Mahatma Phule Krishi Vidyapeeth Rahuri was purposively selected. There were fifteen departments in Post Graduate Institute, MPKV, Rahuri. Out of which Ten department was purposively selected namely Agronomy, Animal Husbandry, Agril. Botany, Dairy Science, Extension Education, Agril. Economics, Agril. Entomology, Plant Pathology, Horticulture and Soil science & Agril. Chemistry. From each selected department six

Ph.D. students i.e. two from each year i.e. first year, second year, third year students were selected from equal proportionate sampling method.

Thus total 60 Ph.D. students comprised from ten departments for the present study and Explorative research design was adopted for this study. Keeping in the view the objectives of the study a structured interview schedule was prepared.

After finalizing the research design and interview schedule, the data were collected by using the personal interview method. Collected data were classified, tabulated, analysed by using frequency and percentage. Therefore, for the present study having following specific objectives was undertaken

#### **Profile of Ph.D. students**

Training needs of MPKV Ph.D. students towards application of drone technology in agriculture.

### **Results and Discussion**

#### **To Study the Profile of Ph.D. Students**

##### **Age**

It was clear from the Table 1 that, 43.33 per cent of the Ph.D. students belong to the 'middle' age group, followed by 31.67 per cent of the Ph.D. students are 'young' age and 25.00 per cent of Ph.D. students from 'old' age group.

##### **Gender**

Data presented in Table 1 revealed that, almost half (50.00%) of the Ph.D. students are male and half (50.00%) of the Ph.D. students are female.

**Education**

Results pertaining from Table 1 indicate that, more than one fourth (33.33%) of the Ph.D.

students from Ph.D. I<sup>st</sup> Year, (33.33%) of the Ph.D. II<sup>nd</sup> Year and (33.33%) of the Ph.D. III<sup>rd</sup> Year respectively.

**Table.1** Distribution of Ph.D. Students according to their profile

Sl.No.	Category	Respondents (N=60)	
		Frequency (F)	Percentage (%)
<b>1.</b>	<b>Age</b>		
1.	Young (up to 25 years)	19	31.67
2.	Middle (26 to 27 years)	26	43.33
3.	Old (28 & above years)	15	25.00
<b>2.</b>	<b>Gender</b>		
1.	Male	30	50.00
2.	Female	30	50.00
<b>3.</b>	<b>Education</b>		
1.	Ph.D. I <sup>st</sup> Year	20	33.33
2.	Ph.D. II <sup>nd</sup> Year	20	33.34
3.	Ph.D. III <sup>rd</sup> Year	20	33.33
<b>4.</b>	<b>No of Training Attended</b>		
1.	Training received (0)	44	73.34
2.	Training received (1)	05	8.33
3.	Training received (2)	11	18.33
<b>5.</b>	<b>Information Seeking Behaviour</b>		
1.	Low (up to 41)	8	13.33
2.	Medium (42 to 51)	37	61.67
3.	High (52 and Above)	15	25.00
<b>6.</b>	<b>Innovative Proneness</b>		
1.	Low (up to 15)	6	10.00
2.	Medium (16 to 20)	47	78.34
3.	High (21 and Above)	7	11.66
<b>7.</b>	<b>Achievement Motivation</b>		
1.	Low (up to 13)	08	13.33
2.	Medium (14 to 18)	41	68.33
3.	High (19 & Above)	11	18.34
<b>8.</b>	<b>Scientific Orientation</b>		
1.	Low (up to 11)	8	13.33
2.	Medium (12 to 15)	39	65.00
3.	High (16 & Above)	13	21.67
<b>9.</b>	<b>Risk Preference</b>		
1.	Low (up to 11)	9	15.00
2.	Medium (12 to 14)	40	66.67
3.	High (15 and Above)	11	18.33
<b>10.</b>	<b>Awareness</b>		
1.	Low (up to 08)	06	10.00
2.	Medium (09 to 11)	40	66.67
3.	High (12 & Above)	14	23.33

**Table.2** Training area wise Distribution of the Ph.D. students according to their need (N= 60)

Sl. No	Training area	Mostly Needed		Needed		Least Needed	
		F	%	F	%	F	%
1.	Basics of Drone Technology	60	100.00	00	00.00	00	<b>00.00</b>
2.	Land Management/ Field Analysis	48	80.00	12	20.00	00	<b>00.00</b>
3.	Varietal Identification of crop	40	66.66	13	21.67	7	<b>11.67</b>
4.	Seed Planting	41	68.33	19	31.67	00	<b>00.00</b>
5.	Irrigation Management	48	80.00	12	20.00	00	<b>00.00</b>
6.	Crop Spraying&Crop Monitoring	48	80.00	12	20.00	00	<b>00.00</b>
7.	Harvesting and Yield Estimation	48	80.00	12	20.00	00	<b>00.00</b>
8.	Tree Canopy Management	25	41.67	25	41.67	10	<b>16.67</b>
9.	Crop mapping and surveying	48	80.00	12	20.00	00	<b>00.00</b>
10.	<b>Livestock Monitoring</b>	<b>25</b>	<b>41.67</b>	<b>25</b>	<b>41.67</b>	<b>10</b>	<b>16.67</b>

**Table.3** Distribution of the Ph.D. students according to their overall training needs towards application of drone technology in agriculture (N=60)

Sl.N o.	Catego ry	Frequen cy	Percenta ge
1.	Least needed (up to 23)	04	<b>6.67</b>
2.	Needed (24 to 25)	15	<b>25.00</b>
3.	Mostly needed (26 & Above)	41	<b>68.33</b>
	<b>Total</b>	<b>60</b>	<b>100.00</b>

### Number of Training attended

It is observed from the Table 1 that, more than half 73.34 per cent of the Ph.D. students training received (0), followed by 18.33 per cent Ph.D. students training received (2) and 8.33 per cent Ph.D. students training received (1).

### Information seeking behaviour

Data pertaining to the information seeking behaviour presented in Table 1 shows that, 61.67 per cent of the Ph.D. belongs to medium level of information seeking behaviour, while 25.00 per cent and 13.33 per cent were high and low information seeking behaviour.

### Innovative proneness

It was elucidated from the Table 1 that, majority (78.34%) of Ph.D. students had medium innovative proneness followed by (11.66%) had high and (10.00%) had low level innovative proneness.

### Achievement motivation

The data with regard to achievement motivation presented in Table 1 indicated that, more than half 68.33per cent of the Ph.D. students had medium achievement motivation while 18.34 per cent of them had high achievement motivation. only 13.33 per cent had low level of achievement motivation.

### **Scientific orientation**

The information in respect of scientific orientation of the Ph.D. students is presented in Table 1 revealed that, majority (65.00%) of students had medium level of scientific orientation followed by (21.67%) and (13.33%) of students had high to low scientific orientation

### **Risk preference**

It is observed from Table 1 that, more than half 66.67 per cent of respondents had medium risk preference, while 18.33 per cent had high risk preference and only 15.00 per cent of them were found in low risk preference category.

### **Awareness**

Data from the Table 1 the results awareness of Ph.D. students towards application of drone technology in agriculture shows that, 68.33 per cent of Ph.D. students had medium awareness, followed by 21.67 per cent of Ph.D. students had high awareness, and 10.00 per cent of Ph.D. students had less awareness towards application of drone technology in agriculture.

### **To find out the training needs of Ph.D. students towards application of drone technology in agriculture**

The results of Table 2 regarding the training need of Ph.D. students towards application of drone technology in agriculture revealed that, majority of the Ph.D. students were mostly needed training in basics of drone technology (100.00%) followed by land management/ field analysis (80.00%), irrigation management (80.00%), crop spraying & crop monitoring (80.00%), harvesting and yield estimation (80.00%), and crop mapping and surveying (80.00%), seed planting (68.33%),

varietal identification of crop (66.66%), tree canopy management (41.67%) and livestock monitoring (41.67%).

It was seen that, majority of the Ph.D. students needed training towards application of drone technology in agriculture such as tree canopy management (41.67%), livestock monitoring (41.67%), seed planting (31.67%), varietal identification of crop (21.67%), land management/ field analysis (20.00%), irrigation management (20.00%), crop spraying & crop monitoring (20.00%), harvesting and yield estimation (20.00%) crop mapping and surveying (20.00%), and none of them basics of drone technology.

It was seen that, majority of the Ph.D. students least training towards application of drone technology in agriculture such as tree canopy management (16.67%), livestock monitoring (16.67%), varietal identification of crop (11.67%), and none of them basics of drone technology, land management/ field analysis, seed planting, irrigation management, crop spraying & crop monitoring, harvesting and yield estimation and crop mapping and surveying.

Data pertaining to the overall training need of Ph.D. students towards application of drone technology in agriculture is presented in Table 3. Results indicate that, majority of (68.33%) of the Ph.D. students had training is mostly needed followed by (25.00%) of Ph.D. students training is needed and remaining (6.67%) of the Ph.D. students had training is least needed.

In conclusions the application of drone technology in agriculture is necessary when we see the growing population recent trends and advantages of application of drone technology in agriculture. The study indicated that, profile of the respondents was middle aged group, male and female, qualification is

Ph.D. I, II and II<sup>rd</sup> year respectively, training received (0), medium information seeking behaviour, medium innovative proneness, medium achievement motivation, medium scientific orientation, medium risk preference, medium awareness and Training need revealed that Ph.D. students had training is mostly needed followed by training is needed and remaining had training is least needed.

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### How to cite this article:

Anarase, M. S., G. K. Sasane, S. A. Dhenge, S. D. Gorantiwar P. A. Ghadage and Kalamkar, R. B. 2020. Training Need of MPKV Ph.D. Students towards Application of Drone Technology in Agriculture. *Int.J.Curr.Microbiol.App.Sci.* 9(09): 3443-3448.  
doi: <https://doi.org/10.20546/ijcmas.2020.909.427>