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Scientific Survey

Imbalance of Farmers and Indian Government to Improve Agricultural Yield by Plant Pathogens at Vir, Taluka Purandar, District Pune of Maharashtra State of India

[1]Kadam SS, [2]Javalkar P, [3]Mulani A, [4]Shere P, [5]Dhokale S, [6]Dumal Y, [7]Sherkar ST, [8]Shivankar P, [9]Phatke S, [10]Khadke J, [11]Mali RR, [12]Danawale S, [13]Kale S, [14]Kumbhar S, [15]Khatate A,[16] Ghule S, [17]Shinde GG, [18]Jagtap HR, [19]Jagtap H, [20]Wadkar H, [21]Jadkar I, [22]Sanas AS, [23]Sasane A, [24]Autade CH, [25]Gate VD, [26]Ingale VT, [27]Gazi A, [28]Sonawane DG, [29]Gavate S, [30]Kayande A, [31]Parde A, [32]Panchal P, [33]Katkar S, [34]Nanwate SM, [35]Sutar SS, [36]Latthe V, [37]Shelke S, [38]Sarade P, [39]Shinde G, [40]Devkate N, [41]Kusal P, [42]Salve D, [43]Awale S
[1-43]Department of Microbiology, Jayawantrao Sawant Commerce and Science College, Hadapsar, Pune, Maharashtra, India.

Survey Info

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Corresponding Author: Kadam SS **Email:**drsonalisantosh0807@gmail.com

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1. Background:

The viral diseases that are transmitted by vectors damaging the vegetable crops have been increased in both tropical and subtropical countries [1]. This condition, in addition with other diseases, leads to imbalance between food supply and demand causing the social instability. The proposed survey has been undertaken to address the problem under question and find its probable solution. A survey was conducted in the village, namely, Virgaon of Taluka Purandar, district Pune of Maharashtra state, India with latitude $18^0 08' 58''$N and longitude $74^0 05' 15''$ E (figure 1).

2. Questionnaire:

Since when the farmer practices farming?

When he detected the diseases? Which were the symptoms of the disease? Which pesticides he used till now? If he used these in combination, what was a dilution ratio? How much was cost? Which is expensive and which is cost effective? Which pesticide was more effective? Which disease was not cured by the pesticides? Which efforts were taken by farmers to treat resistant diseases? What were the expectations of farmers from Microbiology researchers?

What were expectations of farmers from Indian Government? What were probable solutions?

Figure 1: Location of Virgaon, Taluka Purandar, District Pune, Maharashtra state of India. https://earth.google.com/web/@18.14944686,74.0876959,611.81963691a,401.02415497d,35y,0h,0t,0r)

3. Methods Used:

Questionnaire method was implemented by directly visiting the farmers and their farms. The questions were framed in such a way that sufficient information could be collected and the respondents could be felt comfortable. The farmers responded positively and co-operated to the questionnaire.

4. Result:

The 59 farmers were investigated (table 1). Of them, 33 provided answers of all questions, 26 did not provide answers of all questions. The major cultivated and infected crops were sugarcane, onion, wheat, and chili.

5. Conclusion:

Farmers have expectations from Microbiology researchers to make the new and effective fertilizers and pesticides and from Indian government; they expect funding for farming within time and good prices to the crops.

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PJ, AM,PS, DS, YD,ST,PS,SP,JK, RRM,SD, SK, SK, AK, SG, GGS, HJ, HJ, HW, JI, ASS, AS,CHA, VDG, VTI, AG, DGS, SG, AK, AP, PP, SK, SMN, SSS, VL, SS, PS, ND, PK, DS,SA: Worked on filed and collected the data, SSK: Verified the manuscript.

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Appendix 1

Sr. no.	Farming practice since	Crop	Pesticide; Cost (Rs./)	Resistant diseases	Efforts by farmers to treat resistant diseases	Farmer expectations from Microbiology researchers; Indian government
1	Since2017	Wheat	NA;300-400	Not answered	Not answered	Make new and effective fertilizers and pesticides; Funding to farming within time, Good price to the crops
2	30 years	Sugarcane	15,000-25000	Mava	Not answered	Not answered
3	50 years	Sugarcane	15,000-25000	Mava	Not answered	Not answered
4	Since 2017	Sugarcane, Wheat	500	Sugar cane: White Mava Wheat:Tambira Karapya Symptoms: Leaf injury, Yellow larvae on leaf, Leaf scratches	Pesticide: Koradi, Lower the watering of plants to prevent the disease Karpya	Crops should be protected and productivity should be increased. Research to propose new fertilizers; Funding to farming by Indian government
5	50 years	Jowar	200	Mava	Spray of B.A.C powder	Lower the price of pesticide
6	Since 2017	Onion, Chili, Wheat Sugar cane	Koradi; 100-150	Onion-Karpya, Thrips, Chili-Murkuta Wheat-Kambarya Sugar cane-White Mawa Symptoms: Leaf injury, yellow larvae on the crop	Lower watering the plants to prevent Karpya	Crop protection and up the mark productivity, Research to present new fertilizer; Funding for agriculture, Monetary recovery after a crops loss
7	Since 1995	Not Answered	1026,1146 fertilisers; 11146-Rs.1900	Mava, Turturi Symptoms: Small insects, Leaf infection by small insects	Not answered	Research on new fertilizers should be implemented; Funding in case of crop loss, Lower the price of fertilizers
8	Since 1982	Wheat	Rogor, Hamla, Indofil M45 Fungicide; Rs.200-250/-, Dilution: Pesticide-30ml + 15 ml water	Karpya	Spraying of Indofil M45 Fungicide, Providing less water to prevent a disease	Co-operation in the efficient growth of the crops; Funding in case of a crop recovery, Availability of the pesticides in the cost-effective price
9	15 years	Onion	Chloropyrifos (250-300 per liter)	Basal rot; Symptoms: Yellowing of leaves	Not answered	Facility of proper electricity and water
10	26 years	Sugar cane	Algicide; 2000, Dhanuka pesticide is more effective	Ratoon stunt disease caused by microorganism in the water vessel; Symptoms: Shoots are affected	Not answered	Study of pathogens; Availability of proper light and water

11	Last 20 years	Onion	Koragen; 930/- Dilution: 15 Liter water and + 5ml Coragen	Mawa disease	Coragen sprayed on the infected crop. Recovery reported after 5-6 days. Coragen is a more effective pesticide. Twice spraying of Coragen on the infected crop with the gap of 10 days.	Don't know about Microbiologists. Only heard them; Government of India should pay the recovery after a crop loss.
12	25 years	Tomato	Horticulture oil; 125/2 litre	Late blight, Leaf curl	Abamectin is more effective.	Study on microbes; proper electricity.
13	4-5 years	Sugarcane	Insecticide	No disease	Not answered	Finding out best pesticides that can kill the pathogens that cause disease.
14	25-30 years	Sugarcane	Not applicable	White smut, Fungi occurs on leaves	No answered	Make good pesticides that are more useful for farmers since they help to produce more foods; Make pesticides, insecticide available in low rate/price.
15	Since 22 years	Jowar, Ground nut	EcoVengar ant and Crawling insect killer	Not answered	Not answered	Make good pesticides that are more useful for farmers; Make pesticides and insecticides available in low cost.
16	20 years	Onion	Saaf (fungicide, Goal (pesticide) +Targa (super herbicide)	Reddish color on onions, Stunted growth, Black mold on crop disease by *Alternaria porri*	Benevia insecticide is effective; Purple blotch is no cured by used pesticides.	Crop rotation; Increase subsidy on pesticides
17	10 years	Wheat	600	Barley yellow dwarf, leaf rust	Vaccination and biosecurity	Study on microbes. & Insects
18	9 years	Onion	500	Damping off, purple blotch, black mould	Coragen sprayed on the infected crop	Facility of proper electricity and water
19	10 years	Sugarcane	500	Yellow leaf virus, mosaic virus	The steps including practicing good farm hygiene	Job relevance of smart farming tools in agriculture
20	3 years	Soyabean	2,400	Pest infestation	Getting advice before buying and using pesticides	To get propose raw material at large scale
21	10 years		200	Reddish brown colour	Farmers find the pest , pesticides for their crop to reduce disease	Microbiologist should find good pesticides for crops to cure diseases
22	3 years	Soyabean	Not answered	Pest infestation	The steps including practicing good farm hygiene	Not answered
23	10 years	Cucumber, tomato	900	Yellow spots on leaves	Application of calcium and boron	Research on microbes
24	10 years	Jowar	300/400	Yellow spots on leaves	Spreading of pesticides at time to time	Pesticides are less effective
25	10 years	Maize	Not answered	Larva	Not answered	Not answered
26	25 years	Not answered	Not answered	Yellow leaves	Not answered	Not answered

27	10 years	Sugarcane	750	Yellow leaf virus	Use fertilizer in proper proportion	The cost of fertilizer is less and fertilizers are should be effective
28	30 years	Potato	8000	Early blight	Use of resistant varieties have adopted by some potato	Study of microbes
29	38 years	Pumpkin	450-550	Sungii	Use of pesticides in proper proportion	Not answered
30	15 years	Onion	300	Basal root , yellow leaves	Pathogens survive on infected crops	Study of microbes
31	22 years	Brinjal	1200-	Skin of infected fruit turns in brown colour	Proper fertilizer are used to cure the disease	Study of microbes
32	26 years	Sugarcane	2000	Ration stunt	AESA (important decisions are taken by farmers)	Study of microbes
33	30 years	Sugarcane	15000-25000	Mava	Not answered	Not answered
34	50 years	Sugarcane	15000-25000	Mava	Not answered	Not answered
35	20 years	Onion	1060	Mava	Not answered	Not answered
36	22 years	Sugarcane	Not answered	Yellow leaves	Use fertilizer in proper proportion	The price of pesticides should be reduced
37	25 years	Tomato	1250	Leaf curl virus	Use fertilizer in proper proportion	Study of microbes
38	23 years	Not answered	1500	Black spots on leaves	Keeping observation	To prepare more effective pesticides
39	30 years	Sugarcane	250-400-	Spots on leaves	Use fertilizer in proper proportion	To prepare more effective pesticides
40	28 years	Onion	15000	Mava	Keeping observation	To prepare more effective pesticides
41	80 years	Sugarcane	2000	Spots on leaves	Keeping observation	To prepare more effective pesticides
42	23 years	Onion	1200	Mava, leaf curl virus	Keeping observation	To prepare more effective pesticides
43	10 years	Tomato	3000	Leaf curl viruses	Not answered	Not answered
44	40 years	Sugarcane	1500	Spots on leaves, white mava	To avoid leaf curl virus, give less water to crop	Reduce the cost of pesticides
45	25 years	Bajara	500	Spots on leaves, fungus	Use fertilizer in proper proportion	Prepare more effective pesticides
46	50 years	Jowar	Not answered	Mava	Spreading fertilizer time to time	Not answered
47	22 years	Sugarcane	Not answered	White mava	Not answered	Prepare more effective pesticides
48	20 years	Wheat	300	Mava , spots on leaves	Not answered	Study of microbes
49	6 years	Onion	1500	Yellow leaves	Use fertilizer in proper proportion	Reduce cost of pesticides
50	15 years	Chilli	500	Leaf curl virus, yellow leaves	Keeping observation	Not answered
51	26 years	Not answered	1900	Mava, leaf curl viruses	Give less water to avoid the Leaf curl virus	Prepare more effective pesticides
52	25 years	Wheat	200	Not answered	Keeping observation	Need suggestions to prepare a disease free crop
53	20 years	Pumpkin	1000	Pest infestation	Use saap powder to reduce the pests	Not answered

54	23 years	Tomato	2500	Leaf curl viruses, spots on leaves	Spreading fertilizer time to time	Study of microbes
55	30 years	Beans	3000	Spots on leaves	Use fertilizer in proper proportion	Reduce the cost of pesticides
56	20 years	Tomato	2500	Leaf curl viruses	Not answered	Not answered
57	22 years	Onion	2000	Yellow leaves	Pesticides and fungicide are used in proper proportion	To reduce the cost of pesticides and fungicide
58	15 years	Tomato	Not answered	Not answered	Spreading fertilizer time to time	Not answered
59	22 years	Brinjal	Not answered	Fungus, spots on leaves, yellow leaves	Use fertilizer in proper proportion	Give information regarding pesticides and fungicide to farmers and reduce the cost of pesticides and fungicide