

## A Study on Land use Pattern Followed by the Farmers in Western U. P., India

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### ABSTRACT

The present investigation was done with the objective to know the land use pattern followed by the farmers of western Uttar Pradesh. The study was conducted in Meerut and Bulandshahar districts of Western Uttar Pradesh. From each district two blocks, from each block four villages and from each village 10 respondents were selected randomly. Thus, the total sample size was of 160 respondents. The data were collected by personal interview through structured schedule and analyzed through proper statistical techniques.

Results regarding land use pattern followed by the farmers revealed that the majority (75.00%) of the respondents had medium cropping intensity, Majority (63.80%) did not use pest and disease resistant varieties, Most of the respondents did not use light traps, sticky traps or bird scares for pest control, Most of the farmers were ignorant about biological control of pests and most of respondents *i.e.* 88.80 percent always avoided the repeated use of same pesticides. Regarding nutrient management, majority never applied bio-fertilizer, Neem cake coated urea, green manure or rock phosphate to their field. About weed management, majority of the farmers never followed summer ploughing, proper seed rate and proper water management. The important water management practices like use of mulches and cover crops, lining channels with concrete/polythene sheets and land leveling and shaping were also not adopted by majority of the respondents.

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Figures : 02

References : 02

Tables : 03

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### Introduction

Land use involves the management and modification of natural environment or wilderness into built environment such as settlements and semi-natural habitats such as arable fields, pastures and managed woods. LAND USE is referred to "man's activities which are carried on land" whereas LAND COVER is referred to "natural vegetation, rock/soil artificial cover and other noticed on the land" (NRSA 1989). The rapid population growth along with economic development, urbanization and industrialization create tremendous pressure on the limited natural resource based on a country as well as state like Uttar Pradesh. This makes serious challenge to us like researchers and policy makers to strike a balance in the use of natural resources, keeping in mind the need for their conservation of sustainable development and food and livelihood security.

Land management refers to the way in which humans use the land, along with the plants and animals living on it, as a resource to fulfill the needs of the society. For a farmer, Land use pattern indicates the problems and prospects of technology available and adopted by

them on a particular area. Farmers' yield and income depends on what type of crops they choose, crop rotation followed and land use efficiency *i.e.* cropping intensity of the farm. People's awareness about recommended agricultural technology and improved land use practices affects the level of adoption and ultimately productivity of their farms. In 2020, it was reported that in order to meet future food production demands, agricultural lands are likely to expand, and existing farmlands need to be intensified. However, both processes will result in biodiversity losses. It was stated that because of unprincipled use of natural resources, the component of the environment is getting spoiled raising threats to the survival of human beings. Unscientific use of agricultural input (either man made or natural) and inefficient farming system are resulting in the aggravation of many environmental deservers, like contamination of ground water, acid deposition in the air, greenhouse effect, depletion of ozone layer in the atmosphere, soil erosion and loss of diversity of flora and fauna species. Thus, keeping all these facts in mind this study was undertaken with the objective to know the land use pattern practices followed by the farmers in western U.P.

**TABLE-1 : Distribution of respondents according to pest management practices.N=160**

S. No.	Practice followed	Always		Sometimes		Never	
		No.	%	No.	%	No.	%
<b>I</b>	<b>Cultural practices</b>						
a)	Selection of right season	56	35.0	72	45.0	32	20.0
b)	Summer ploughing and recommended tillage operation	33	20.6	13	8.1	53	33.1
c)	Used pest and disease resistant varieties	18	11.3	40	25.0	102	63.8
d)	Maintaining weed free field	16	10	63	39.4	81	50.6
<b>II</b>	<b>Mechanical practices</b>						
a)	Removal and destruction of pest and infected parts	12	7.5	60	37.5	88	55.0
b)	Use of light traps	03	1.9	31	19.4	126	78.8
c)	Use of sticky traps	00	00	34	21.3	126	78.8
d)	Use of bird scares	00	00	29	18.1	131	81.9
<b>III</b>	<b>Biological practices</b>						
a)	Use of natural enemies (recommended)	00	00	04	02.50	156	97.50
b)	Using pheromone traps	00	00	08	05.00	152	95.00
c)	Use of bio pesticides	00	00.00	41	25.60	119	74.4
<b>IV</b>	<b>Chemical practices</b>						
a)	Seed treatment with chemicals	10	6.3	60	37.5	90	56.3
b)	Use of recommended dose of herbicides	12	7.5	40	25.0	108	67.5
c)	Use of recommended dose of insecticides/ fungicides	28	17.5	34	21.3	98	61.3
d)	Avoiding repeated use same pesticide	14	88.8	47	29.4	99	61.9
e)	fertilizer application after soil testing	08	5.0	30	18.8	122	76.3

**TABLE-2 : Distribution of respondents according to nutrient management practices**

S.No.	Practice	(F-frequency)					
		Always follow		Sometimes follow		Never follow	
		F	%	F	%	F	%
1.	Pre-sowing treatment of seeds / seedling / suckers	106	66.25	42	26.25	12	07.50
2.	Use of Farmyard manure	101	63.10	46	28.80	13	8.10
3.	Use of bio fertilizers	00	00.00	28	17.50	132	82.5
4.	Use of green manure	15	09.38	35	21.87	110	68.75
5.	Neem cake treated urea	00	00.00	26	16.25	134	83.75
6.	Rock phosphate application	00	00.00	19	11.90	141	88.10

### Methodology

The study was conducted in Meerut and Bulandshahar districts of Western Uttar Pradesh. From each district two blocks, from each block four villages and from each village 10 respondents were selected randomly. Thus the total sample size was of 160 respondents. The data were collected by personal interview through structured schedule and analyzed using statistical techniques like percentage, average, rank order etc. To make data more visible, diagrammes were also used wherever felt necessary.

### Results and Discussion

Major findings of the study are explained through following Tables.

It is obvious from Fig. 1 that the majority 75.0 percent of the respondents had medium cropping intensity followed by 13.8 percent of respondent who follow low cropping intensity and only 11.20 percent respondents could achieve high level of cropping intensity.

The above Table-1 indicates that 35.00 percent of respondents always follow the selection of right season for sowing of crops followed by 20.60 percent always go for summer ploughing, 11.30 per cent of respondents who always raise pest and disease resistant varieties.

Under mechanical practices, only 7.50 percent of respondents always remove and destruct the pests and infected parts of plants. Respondents who occasionally remove and destruct pests and infected parts and use of light traps were 37.5 percent and 21.3 percent respectively

whereas none of the respondents always follow the sticky traps and bird scares.

In context to biological practices, none of the respondents always follow natural enemies, pheromone traps and bio-pesticides, whereas 25.60 percent respondents occasionally use the Bio-pesticides followed by 5.00 percent occasional users of pheromone traps. Regarding chemical practices, most of respondents (88.80%) always avoid the repeated use of same pesticides while only 6.30 percent of respondents always followed the seed treatment with chemicals.

From above results it can be inferred that mostly farmers were not aware with biological and mechanical control methods whereas some awareness about proper use of cultural practices and chemical control was there. Workers<sup>1</sup> observed that. Organizational participation, extension contact and agricultural knowledge had significant positive correlation with knowledge, attitude and practice of Integrated Pest Management.

Table-2 shows about nutrient management practices that majority of respondents always go for farm yard manure and pre-treatment of seeds. It was also found that 9.38 percent respondents used green manure. Among some times followed practices, 16.25 percent used neem cake treated urea and only 11.90 percent respondents were found using rock phosphate.

Table-3 reveals that out of 10 weed management practices majority of respondents 62.50 percent apply proper crop rotation followed by 61.30 percent always go

**TABLE-3 : Distribution of respondents according to weed management practice****N=160**

S.No.	Practice	Always follow		Sometimes follow		Never follow	
		F	%	F	%	F	%
1	Proper crop rotation	100	62.50	44	27.50	16	10.0
2	Summer ploughing	16	10.00	48	30.00	96	60.0
3	Timely sowing of crops	98	61.25	52	32.50	10	6.25
4	Use of certified seeds	46	28.75	104	65.00	10	6.25
5	Proper seed rate	15	9.40	45	28.10	100	62.50
6	Proper Water management	25	15.63	41	25.62	94	58.75
7	Use of proper tools	89	55.60	59	36.90	12	7.50
8	Use of biological agents	03	1.90	21	13.10	136	85.00
9	Hand weeding at recommended intervals	97	60.60	45	28.10	18	11.30
10	Recommended dose of herbicides	05	3.10	23	14.40	132	82.50

for timely sowing of crops, 60.60 percent respondents who always go for hand weeding at recommended intervals, 55.60 percent used proper tools and 28.80 percent always used certified seeds. Other practices like proper water management, summer ploughing, proper seed rate, and use of biological agents were mostly ignored. It was also found that weed management practices sometimes done by the farmers were certified seeds 65.00 percent, use of tools 36.9 percent, timely sowing of crops 32.50 percent, summer ploughing 30.00 percent, proper seed rate and hand weeding 28.10 percent, water management/ submergence 25.62 per cent, recommended dose of herbicides 14.04 percent and only 13.010 percent farmers used biological agents respectively.

Some important weed management practices mostly ignored by the majority of the farmers, were use of biological agents 85.00 percent followed by recommended dose of herbicides 82.50 percent, proper seed rate 62.50 percent, summer ploughing 60.00 percent and proper water management 58.75 percent farmers respectively.

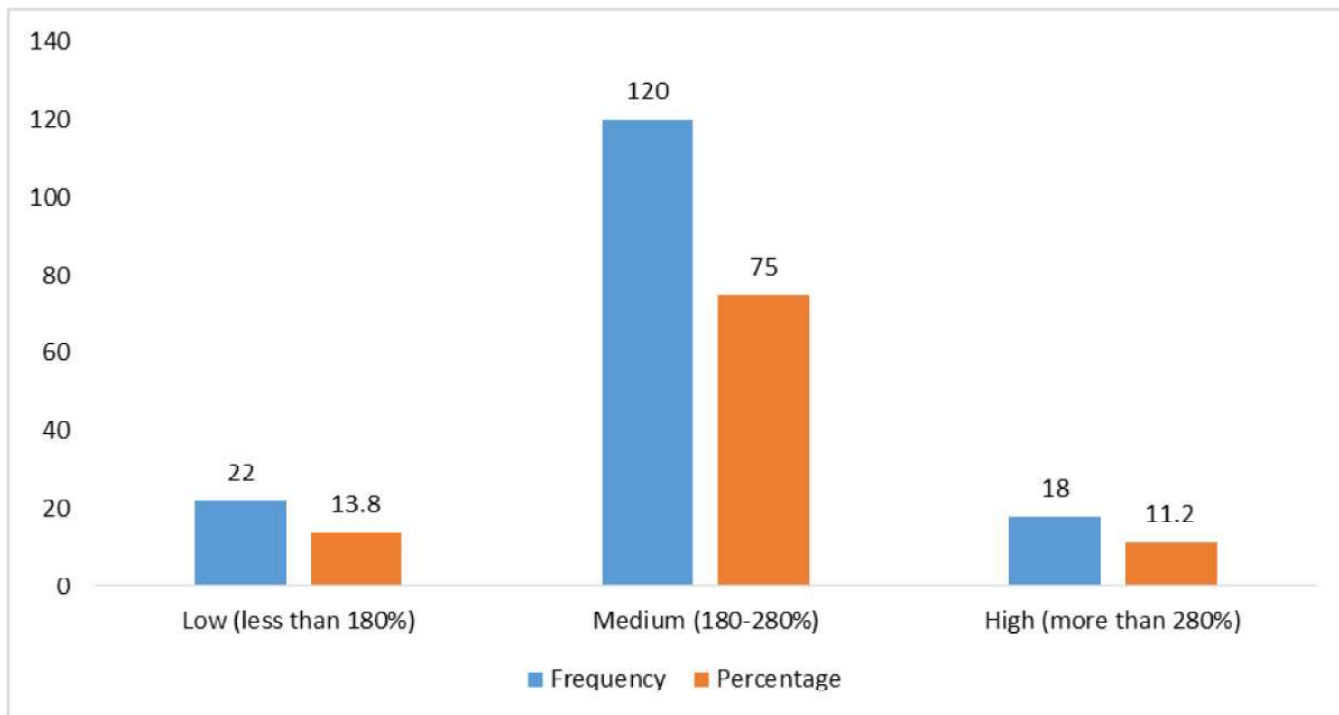
Some workers<sup>2</sup> found that majority of the respondents had medium extent of adoption of IWM

practices with reference to rice (56%), soybean (49%), greengram (50%) and wheat (55%).

The inference can be drawn from above data that the farmers did not bother much about weed management and that clearly shows their unawareness regarding importance of these practices whereas they lose huge amount of production unknowingly. Gist is that they should be provided with proper and intensive training of integrated weed management practices.

The findings pertinent to the integrated water management behavior of respondents are presented in Fig. 2. From perusal of Table it is clear that majority of the respondents 76.90 percent always follow selection of suitable varieties followed by selection of suitable crops 75.00 percent; whereas recommended land based tillage practices and summer ploughing were done only by 13.10 percent and 11.90 percent farmers respectively.

Further, it can be noted that respondents who follow different water management practices on some time basis were recommended land based tillage practices (70.00 per cent), selection of suitable varieties 20.00 per cent, agronomic management practices 25.00 per cent, land leveling and shaping 36.30 per cent.



**Fig. 1: Distribution of respondents according to their Cropping intensity**

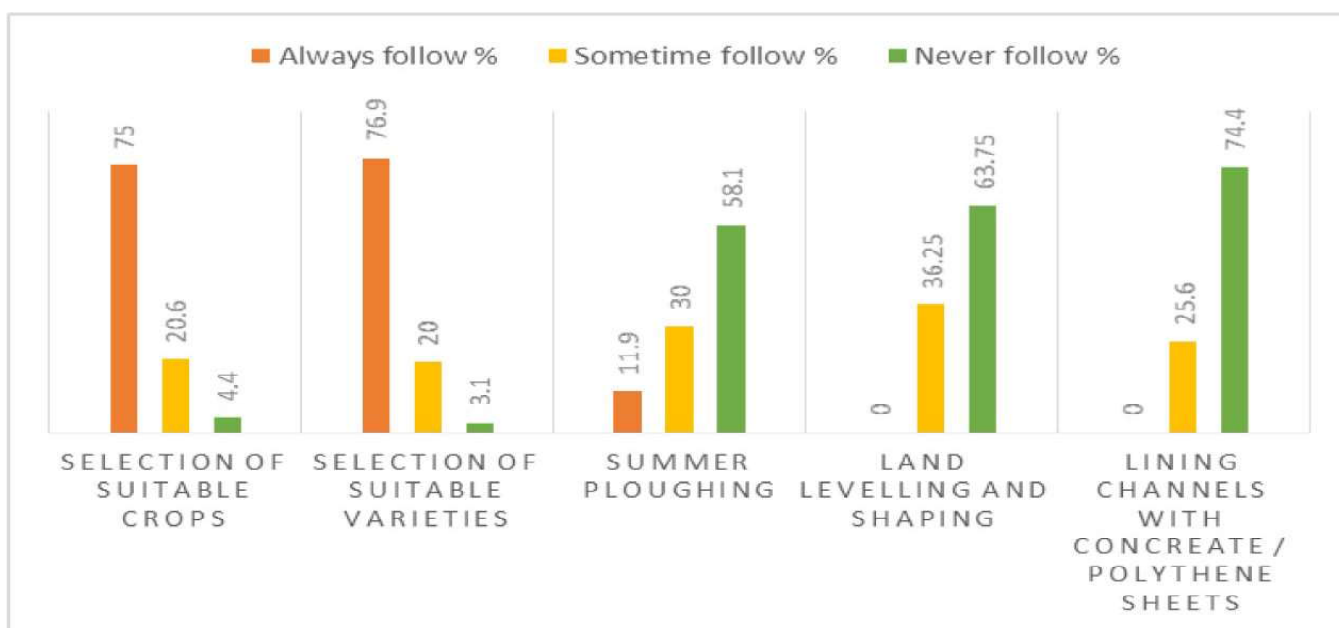
Among never followed practices that majority ignored, were seed hardening methods by 81.25 percent followed by practices like use of mulches, cover crops *etc.* by 75.00 percent, lining of channels with concrete/polythene sheets by 74.40 per cent land leveling and shaping by 63.75 percent and summer ploughing by 58.10 percent farmers respectively.

Above findings indicate that although all the

practices were known to farmers but still they were not aware about importance of these practices. They need sufficient training and motivation to make full utilization of all the modern water management technologies.

**Conclusion**

It can be inferred from present study that socio-economic status of the farmers certainly affected the level of awareness and ultimately adoption of recommended



**Fig. 2: Distribution of respondents regarding water management practices N=160**

land use practices in the area under study. It was found that variables viz. education, social participation, material possession and information sources had highly significant and positive correlation with extent of knowledge of land use pattern. The variables having non-significant positive relationship were age, housing pattern, land holding

annual income and occupation; whereas marital status, type of family and size of family were negatively correlated with general knowledge of land use pattern. So, any extension worker/researcher or policy maker should always consider these facts during efforts to transfer the agricultural technology.

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