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Use of chemical fertilizers in farming

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Abstract
Green revolution was the time when India started the use of chemical fertilizers. These fertilizers enhance the crop production but with that there are negative effects of these also. Soil toxicity, soil infertility, pollution of land and ground water are some negative results of chemical fertilizers. So, the present study was conducted in two districts of Haryana state. Total 240 respondents (120 males and 120 females) from four villages were selected for the study. Results shows that in *Rabi* season cereals D.A.P., Urea, Zinc, Sulphur, Phosphate were used. In pulses, oilseeds, fruits and green fodder mainly D.A.P. and Urea were used. Vegetables and cash crops were not grown commercially. In *Kharif* season, , Zinc, Sulphur, Phosphate wers used in wheat and barley, while in other crops only D.A.P. and Urea were preferred. In this season vegetables and fruits were not grown.

Keywords: Green revolution, chemical fertilizer**,** D.A.P., urea, zinc, sulphur, phosphate

Introduction
After independence, India's population was increasing and there was a scarcity of food for increasing population of India. To cater to the population's food need hybrid seeds were introduced and natural and organic fertilizers replaced by chemical fertilizers. Which results in "Green Revolution" under the leadership of M.S. Swaminathan in 1966. Green revolution is a coin with two faces, positive as well as negative effects. Positive effect was high production which leads to self-sufficiency of food in India. But there are many negative effects of green revolution due to long time use of synthetic inputs. Some of these are loss of soil fertility, soil toxicity, pollution, increase toxicity in food, increase incidence of human and livestock diseases (Rahman and Saidur, 2015). For more production, farmers are still using the synthetic inputs in a high amount. Chemical fertilizers provide nitrogen, phosphorous, potassium, calcium and sulphur etc. to plants. These are helpful in plant growth. For small and marginal farmers, it is necessity to grow the sufficient food, for which they are using these chemical inputs.

Methodology
The study was conducted in two districts Sirsa and Hisar from Haryana state. One block from each district and two villages from each block were selected randomly. Sixty respondents (30 males and 30 females) from each village were selected randomly. In this way, we took a sample size of 240 respondents.

Results
In India a wide variety of crops are grown with seasons. Mainly there are two seasons *Rabi* and *Khrif* in which covers all types of crops.

Major crops grown traditionally with type of fertilizer
Rabi crops
Table 1 revealed that in *Rabi* crops,cent percent respondents grown wheat as a cereal with application of chemical fertilizers D.A.P., Urea, Zinc, sulphur and phosphate and they also used FYM. More than half of the respondents grown barley also as a cereal crop by applying D.A.P., Urea, Zinc, sulphur and phosphate. No FYM use was reported for barley crop.
Out of 240 respondents, majority of the respondents (88.7%) had grown mustard by applying D.A.P. urea and sulphur and 13.7 percent respondents grown toria without application of chemical fertilizers. Cent percent respondents not grown any commercial crop and vegetables.

In fruits, only kinnu (5.8%) was grown with urea, D.A.P. and phosphate. In Green fodder, majority of respondents had grown *Barseem* (96.6%) followed by oats (90.4%) and *Rijka* (85.0%) respectively with the application of chemical fertilizers D.A.P. and urea with use of FYM.

Table 1: Major crops grown traditionally with types of fertilizers used

Sr. No.	Crops	F (%)	Chemical Fertilizers	Manure
	Rabi			
1	**Cereals**			
	Wheat	240(100.0)	D.A.P., Urea, Zinc, Sulphur, Phosphate	FYM
	Barley	146 (60.8)	D.A.P., Urea, Zinc, Sulphur, Phosphate	
2	**Pulses**			
	Lentil	75 (31.2)	D.A.P.	
	Chickpeas	132 (55.0)		FYM
3	**Oil seeds**			
	Mustard	213 (88.7)	D.A.P., Urea, Sulphur	
	Toria	33 (13.7)		
4	**Cash crops** (not grown)	240 (100.0)		
5	**Vegetables** Not grown	240(100.0)		
6	**Fruits**			
	Kinnu	14(5.8)	D.A.P., Urea, phosphate	
7	**Green fodder**			
	Oats	217(90.4)	D.A.P., Urea	FYM
	Barseem	232(96.6)	D.A.P., Urea	FYM
	Rijka	204(85.0)	D.A.P., Urea	FYM
	Kharif			
1	**Cereals**			
	Paddy	92(38.3)	D.A.P., Urea, Zinc, Sulphur, Phosphate, magnesium	
	Pearl millet	182(75.8)		FYM
2	**Pulses**			
	Green beans	48(20.0)	D.A.P.	
	Pigeon peas	156(65.0)	D.A.P.	
3	**Oil seeds**			
	Groundnuts	72(30.0)	D.A.P., Urea, Sulphur,	
	Sesame seeds	24(10.0)		
4	**Cash crops**			
	Cotton	237(98.7)	D.A.P., Urea, Zinc, Sulphur, Phosphate, magnesium	
	Cluster beans	208(86.6)		
5	**Vegetables** (not grown)	240(100.0)		
6	**Fruits** (Not grown)	240(100.0)		
7	**Green fodder**			
	Sorghum	229(95.4)	D.A.P., Urea	
	Corn	86(35.8)	D.A.P., Urea	
	Pearl millet	193(80.4)		

Multiple response Table

Crops

Table 1 revealed that majority of the respondents (75.8%) had grown Pearl millet with application ofonly FYM and 38.3 percent respondents grown paddy as a cereal with chemical fertilizers D.A.P., Urea, Znic, sulphur, phosphate and magnesium. Pigeon peas (65.0%) and green beans (20.0%) were the main pulses grown in Khrif season with D.A.P. In oil seeds, around 30.0 percent respondents had grown groundnuts with D.A.P., urea and sulphur and sesame seeds (10.0%) without any chemical fertilizers. The main commercial crop i.e. cotton (98.7%) had grown with chemical fertilizers D.A.P., Urea, Znic, sulphur, phosphate and magnesium and cluster beans (86.6%) without any fertilizers. Cent percent respondents did not grown any vegetable and fruits in this season. Sorghum (95.4%), pearl millet (80.4%) and corn (35.8%) were grown as green fodder by applyng Urea and D.A.P. fertilizers.

References

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