Original Research Article

Agronomic Practices followed by the Farmers in Kharar Division (SAS nagar) Punjab

ABSTRACT

The agriculture industry plays a significant part in the Indian economy, accounting for around 20% of Gross Domestic product (GDP). Around 62 percent of India's population is reliant on it for survival (Gupta & Nagar,(2017). Agriculture is a crucial sector of Indian economy as it contributes about 20.19 percent of GDP (DAC&FW Annual Report, 2020-21). Agronomical practices includes all the practices which are followed by the farmer from seed to seed i.e. from seed sowing to seed harvesting and storing. The study was conducted in Kharar block, district SAS nagar (Punjab). Three villages were selected randomly. A questioner was prepared to interview the farmers. After the collection of the data from respondents data were classified and analysed with the help of suitable statical measures. As per the data collected overall 100% farmers grow wheat and about 98% of respondents grows paddy crop in their fields. Apart from these two crops around 52% farmers grow cauliflower crop in their fields overall 46% farmers cultivate mustard crop. Overall amount of fertilisers used by the respondents is more than the recommended dose. *Phalaris minor* is the major weed, apart from this about 92% farmers face the problem of Grasshopper insect in the paddy crop. Average yield of wheat, paddy and cauliflower is 52, 75,243 qtls/ acer respectively.

Keywords: Agronomic practices, farmer, yield, average, production, crops

INTRODUCTION:

Agriculture plays a vital role in the socio- economic development. In India, agriculture is the primary source of livelihood for about 58 percent of the population (IBEF, 2021) and approximately 70 percent of the rural households depend on agriculture only. The agriculture industry plays a significant part in the Indian economy, accounting for around 20% of Gross Domestic product (GDP). Around 62 percent of India's population is reliant on it for survival (Gupta & Nagar, (2017). Agriculture is a crucial sector of Indian economy as it contributes about 20.19 percent of GDP (DAC&FW Annual Report, 2020-21). Early in the history, agriculture was done for the domestic purpose only, as the time passes new technologies in agronomic practices and developments were made to enhance the crop production and people started earning from agriculture too. But there are several adversities that emerged in the socio- economic areas along with the environmental hazards (Bhatt et al., 2019).

Agricultural technology is a vital part of food system sustainability. The Green Revolution exemplifies how scale-independent technology reshaped agricultural productivity. The Green Revolution has resulted in higher yields, poverty reduction, infrastructure development, increased food availability, and lower food prices, among other benefits (McCullough et al., 2012). Agronomical practices includes all the practices which are followed by the farmer from seed to seed i.e. from seed sowing to seed harvesting and storing. Agronomical practices are directly proportional to the yield of the crop. In order to obtain good yield farmer must follow best agronomical practices according to the season and agro- climatic zone. These practices varies from region to region. It played a crucial role in guaranteeing agricultural output with better practices in countries such as India, as well as easing concerns that we had reached the point of food excess capacity, which occurs when the population exceeds agricultural production. India has just a little

percentage of the world's agricultural area, the country ranks second among agricultural production worldwide.

MATERIAL METHOD

The study was conducted in Kharar block, district SAS nagar (Punjab). Three villages were selected randomly (Hasanpur, Kalewal and Singhpura).

Total 140 farmers were selected on the random basis for interview. Total 58 respondents were selected form village Hasanpur, 45 from Kalewal and 37 respondents from village Singhpura. A detailed interaction was directed with the farmers regarding their social status, Agronomical practices they follow throughout the year. The respondents were interviewed at their home and in their fields. To cover each and every aspect regarding the agronomical practices followed by the farmers a questioner was prepared to interview the farmers and to analyse the each parameter properly in a sequence.

After the collection of the data from respondents data were classified and analysed with the help of suitable statical measures such as percentage, graphical representation, bar graphs and Pie charts.

RESULT AN DISCUSSION

Major crops grown by the farmers in both seasons:

Sr.no	Parameters	Hasanpur	Kalewal	Singhpura	Overall
	Crop	No. of farmers (%)	No. of farmers (%)	No. of farmers (%)	Percentage %
1	Wheat	58 (100%)	45 (100%)	37 (100%)	100%
2	Paddy	58 (100%)	42 (93%)	37 (100%)	98%
3	Sugarcane	22 (38%)	15 (33%)	10 (27%)	34%
4	Maize	30 (52%)	17 (38%)	14 (38%)	44%
5	Sorghum	52 (90%)	40 (88%)	33 (90%)	89%
6	Barseem	50 (86%)	39 (86%)	32 (86%)	86%
7	Cauliflower	31 (53%)	22 (49%)	20 (54%)	52%
8	Cabbage	17 (29%)	14 (31%)	15 (40%)	33%
9	Mustard	26 (46%)	25 (55%)	13 (35%)	46%
10	Tomato	27 (46.%)	18 (40%)	18 (30%)	45%

Table.1: Represents the crop distribution in percentage of respondents

As per the data collected overall 100% farmers grow wheat and about 98% of respondents grows paddy crop in their fields. Apart from these two crops around 52% farmers grow cauliflower crop in their fields overall 46% farmers cultivate mustard crop. Crops like potato, sugarcane, chilli and pulses were grown less in this region. Sorghum and barseem are the two major fodder crop of respective season are mainly cultivated in this region. About 89% respondents grow sorghum and about 86% of the respondents grow barseem as fodder crop in their fields.

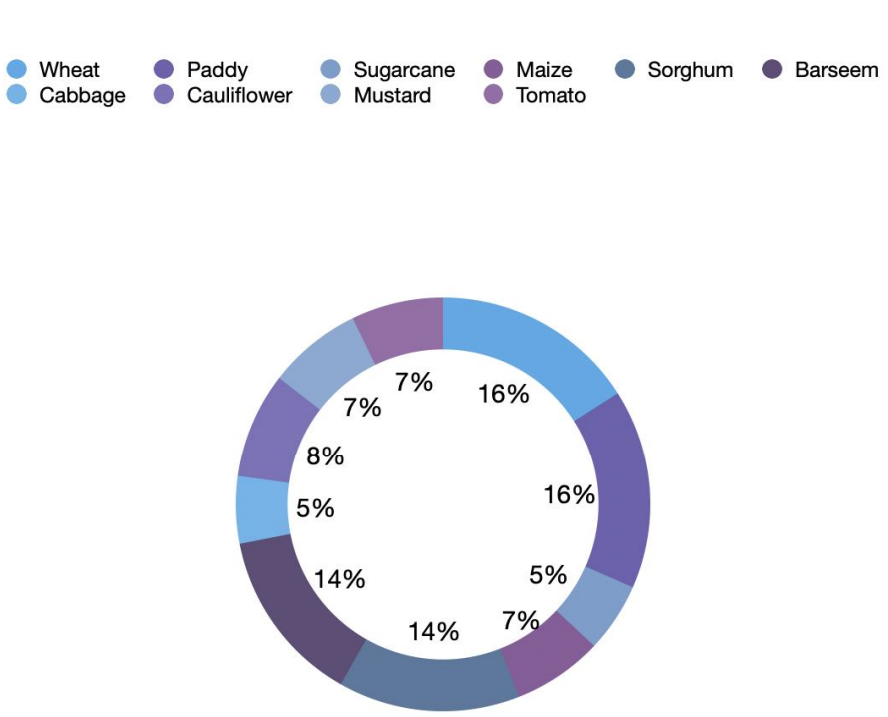
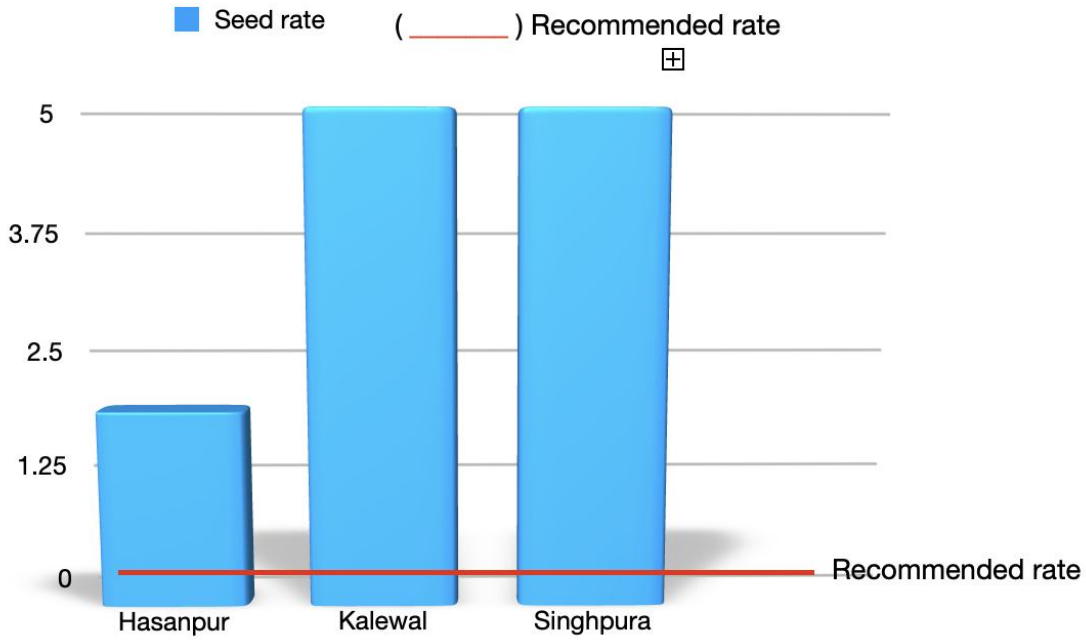


Fig. 1: Depicts the crop distribution percentage of crops

Seed Rate followed by the Respondents:



Graph 1: Demonstrates the seed rate followed by respondents

As seen above most of the farers follow recommended rate set by agricultural department for seed sowing. Only 2% extra of the recommended seed rate is used for seed sowing in village Hasanpur whereas village Kalewal and Singhpura use 5% extra than the recommended seed rate for sowing.On an average about 4% extra seed is used than the recommended dose for sowing.

Fertiliser dose applied by the respondents:

As per table (Table 1) only wheat and paddy are the two main cereal crops and cauliflower is the only major vegetable crop grown in these villages. Date collection regarding the nutrient management is concerned with these crops only.

Sr.no	Parameters	Hasanpur	Kalewal	Singhpura	Overall %	Recommended / ha
Wheat						
1	Urea/ ha	300kg/ha	275 kg/ha	315kg/ha	296.7%	120 N
2	DAP/ ha	250kg/ha	187 kg/ha	200 kg/ha	212kg/ha	60 P
3	Potassium/ ha	-	-	-	-	40 K
Paddy						
1	Urea/ ha	325kg/ha	300 kg/ha	300kg/ha	308kg/ha	125 N
2	DAP/ ha	187kg/ha	150kg/ha	125kg/ha	154kg/ha	30 P

3	Potassium/ ha	-	-	-	-	30 K
Cauliflower						
1	Urea/ ha	250 kg/ha	250 kg/ha	200 kg/ha	233 kg/ha	125 N
2	DAP/ ha	250 kg/ha	225 kg/ha	225 kg/ha	233 kg/ha	60 P
3	Potassium/ ha	125 kg/ha	125kg/ha	125kg/ha	125 kg/ha	60 K

Table2: Represents data of N:P:K amount applied by the respondents

This table depicts that the overall amount of fertilisers used by the respondents is more than the recommended dose. Recommended dose for wheat crop is (120 N:60 P: 40K), recommended dose for cauliflower crop is 125N: 60P: 60K and recommended dose for paddy crop is 125N: 30P: 30K .Use of imbalanced fertiliser is seen according to the data collected. Less importance is given to the potassic fertilisers whereas more emphasis is given on the nitrogenous fertilisers followed by phosphoric fertilisers. Few farmers also apply micro- nutrient to their fields but most of them are unaware about the soil N,P,K requirements.

Major weed observed throughout year:

Sr. No	Name	Crop	No. Of farmers (Overall Percentage)
Major weeds			
1	*Echinochloa crus-galli*	Paddy	136 (97%)
2	*Cyperus rotundus*	Paddy	103 (73%)
3	*Amaranthus viridis* Hook. F.	Cauliflower	56 (40%)
4	*Chenopodium album* L.	Cauliflower	63 45%
5	*Phalaris minor*	Wheat	138 (98%)
6	*Avena ludoviciana*	Wheat	115 (82%)

Table 3: Major weeds observed by the respondents

Sr. no	Parameters	Crop	Hasanpur No. of farmers (%)	Kalewal No. of farmers (%)	Singhpura No. of farmers (%)	Overall (%)

Plant Diseases						
1	Sheath blight	Paddy	40 (69%)	32 (71%)	27 (72%)	70%
2	Dwarf Plant disease	Paddy	42 (72%)	29 (64%)	25 (67%)	68%
3	Yellow rust	Wheat	42 (72%)	30 (66%)	26 (70%)	70%
4	Loose smut	Wheat	20 (34%)	18 (31%)	12 (32%)	36%
5	Black rot	Cauliflower	14 (24%)	18 (40%)	10 (27%)	30%
Insect/ pests						
1	Grasshopper	Paddy	56 (96%)	39 (86%)	34 (92%)	92%
2	Leaf folder	Paddy	41 (71%)	20 (44%)	13 (35%)	53%
3	Aphids	Wheat	35 (60%)	30 (66%)	22 (60%)	62%
4	Bettle	Wheat	25 (43%)	19 (42%)	18 (49%)	44%
5	Borers	Cauliflower	21 (36%)	14 (31%)	8 (22%)	31%

Table 4: Depicts the major insects and pests observed by respondents

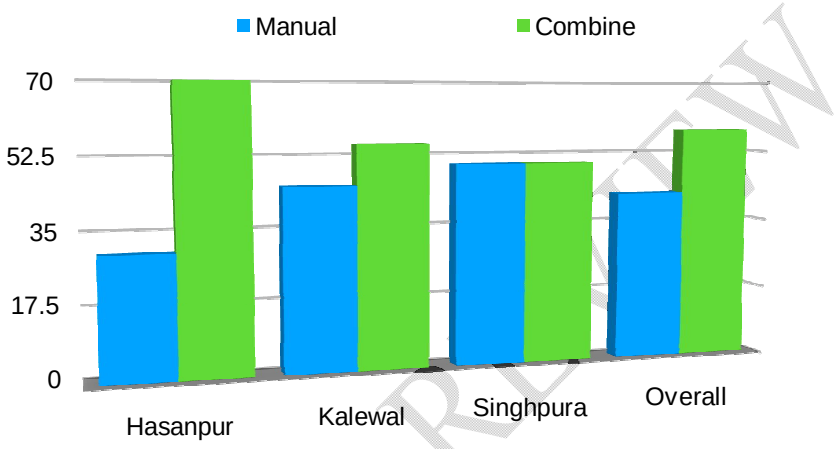
As seen in the above (Table 3) all the farmers face major problem in weeds in their fields through out the year. *Phalaris minor* is the major problem of all the respondents (98%). According to them this weed shows resistance towards most of the chemicals used to eradicate or eliminate this weed. It reduces the yield upto a significant level. This is the major concern of the farmers during the Rabi season especially in wheat crop. Another major weed is swank (*Echinochloa crus-galli*) which is faced by around 97% of respondents in paddy crop, kharif season.

As per the table (Table 4) about 70% of the respondents face the problem of sheath Bligh in paddy crop and yellow rust in wheat crop. This two disease reduces the crop yield as well as the quality of the grains. Another major disease which was faced by the farmers was dwarf paddy plants. About 68% of the respondents witness this disease in their fields. This disease reduce the yield upto 70% due to this farmers have to bear big economical loss.

Apart from this about 92% farmers face the problem of Grasshopper insect in the paddy crop. In village Hasanpur 96% farmers witness the present of this insect in their fields. Another pest is the major pest of wheat crop, faced by 62% of farmers was aphid. About 66% respondents of village

Kalewal faced the yield losses due to aphid infestation in their wheat fields. Major pest responsible for the yield loss is the Borer in the cauliflower crop i.e (31%), it is the major pest of all Cole crops.

Harvesting Methods:



Graph 2: Represents the data regarding crop harvesting method

As per the data collected most of the farmers prefer combine harvester for the harvesting of the cereal crops such as Wheat and Paddy. As it consume less time and also do not require labour. About 58% respondents use combine harvester for the harvesting of wheat and paddy crop whereas only 42% of respondents go for manual harvesting. About 70% of the respondents fro Hasanpur prefer harvesting by the combine and only 30% farmers prefer manual harvesting. In case of paddy farmers generally prefer manual harvesting of varieties like Basmati, 1121 etc. as the grains of these varieties are long and thin. So to avoid any damage to the grains farmers do manual harvesting.

Yield Record:

Sr. no	Crop	Hasanpur	Kalewal	Singhpura	Overall
1	Wheat	55 qtls/ha	50 qtls/ha	52 qtls/ha	52.3 qtls/ha
2	Paddy	72.5 qtls/ha	77.5qtls/ha	75qtls/ha	75qtls/ha
3	Cauliflower	240qtls/ha	237.5 qtls/ha	225 qtls/ha	243 qtls/ha

Table 5: Depicts the Yield of the major crops grown by the respondents

As per table (Table 5) average yield of the wheat crop is around 52 qtls per acer, Village Hasanpur has the highest productivity (55 qtls) in case of wheat crop whereas village Kalewal has the lowest productivity (50 qtls) rate in wheat crop. But village Kalewal has highest productivity of paddy crop and village Hasanpur has the least productivity rate (72.5 qtls) and overall production is about 75 qtls/ha. Average production of cauliflower is 243 qtls/ha and village Hasanpur has the highest productive (240 qtls).

CONCLUSION

On the basis of findings and the data collected it is concluded that variety of crops are grown in this region (Wheat, paddy, sugarcane, maize, mustard, cauliflower, carrot, cabbage, sorghum, barseem etc). Wheat and paddy are the two main cereal crops and cauliflower is the major vegetable crop cultivated in this area. Most of the farmers use around average of 4% more amount of seed than the recommended seed rate. Mainly farmers apply excess amount of DAP and Urea in their fields whereas less emphases is given to Potassic fertilisers such as MOP. Majorly farmers faced the problem of Phalaris minor commonly known as "Gulli danda" in Punjabi language. This is mainly due to not adopting crop rotation practice by the farmer in their fields. Farmers have to bear high economic losses due to dwarf paddy plant disease because this disease reduce the yield upto 70% . Average yield of he paddy is around 75qtls per hectare in this region, average yield of wheat crops about 52 qtls/ha which demonstrates that proper agronomic practices followed by the farmers.

REFERENCE

Gupta,G. & Nagar, M. (2017). Agriculture Sector in India: As a Career. International Journal on Arts, Management and Humanities 6(2): 01-06

Acharya Balkrishna. et. al., 2021; Current Status of Indian Agriculture: Problems and Challenges

India Brand Equity Foundation (IBEF) (2021). Indian agriculture and allied industries industry report
https://www.ibef.org/industry/agriculture-india.aspx

Department of Agriculture, Cooperation & Farmers 'Welfare(DAC&FW). Annual Report (2020-21).
https://agricoop.nic.in/en/whatsnew

Bhatt, H., Bhushan, B., & Kumar, N. (2019). IOT: the Current Scenario and Role of Sensors Involved in Smart Agriculture. International Journal of Recent Technology and Engineering, 8(4), 12011-12023

McCullough, E. B., Pingali, P. L., & Stamoulis, K. G. (2012). Small farms and the transformation of food systems: an overview. The Transformation of Agri-Food Systems: 27-70