



## THE ECONOMIC IMPLICATIONS OF FOOD INFLATION IN FARMER'S PERSPECTIVE

Muhammad Tahir Latif<sup>1\*</sup>, Muzzammil Hussain<sup>1</sup>, Ishtiaq Hassan<sup>2</sup>, Mazhar Fareed Iqbal<sup>1</sup> and Hamid Rafiq<sup>1</sup>

<sup>1</sup>Adaptive Research Farm Gujranwala, Pakistan, <sup>2</sup>Director General of Agriculture (Ext. & AR) Punjab Pakistan

\*Corresponding author email: [tahirr.uaf@gmail.com](mailto:tahirr.uaf@gmail.com)

### ABSTRACT

During 2023 the survey study was conducted to estimate the economic implications of food inflation in farmer's perspective by evaluating the economics of growing crops over time keeping in view the post Covid-19 inflation, currency devaluation and global fuel prices scenario. Based on convenience non-probability sampling method the descriptive statistics and Likert type scale was employed on collected primary data. The secondary data was also employed to compare economic ratios on crops production. The majority of the farmers considered the fuel prices (cost push inflation), Government trade policy/IMF program, increasing population (demand pull inflation), COVID-19 pandemic, present flood crises/climate change, Russia-Ukraine conflict, withdrawal of subsidies and devaluation of PKR as main reasons for prevailing food inflation. Regarding farmer's opinion to cope with food inflation it was recorded that the majority of the farmers (up to 4.29 mean response score) responded that subsidy on inputs, disease and pest free seed distribution, start to growing own country food brand/restaurant, stop urbanization on fertile land and change the types of foods (fresh only) were the solutions against food inflation. Based on the estimation of economics of growing crops over time it may be concluded that the farmers' net returns were increasing particularly for non-perishable commodities like wheat, potato, pulses, garlic etc. despite of soaring inflation scenario. However, for perishable nature of crops like spinach, onion and carrot etc. the net returns trends were declining between 2019-20 to 2022-23. Keeping in view the food security factor it is suggested that the Govt. should maintain strategic reserves of wheat, sugar and pulses for inflationary period.

**Keywords:** Covid-19, Economic, Food, Implications, Inflation, Net Returns

### INTRODUCTION

Inflation is the rate of increase in prices over a given period of time. Rising prices lead to increase in the inequalities of incomes. Food inflation has become one of the most significant issues for developing countries with huge population and low level of income (Oner, 2010).

Pakistan has been facing a severe crisis in the agriculture sector, known as the 5 F's crisis, which includes food, fuel, fertilizer, feed, and finance. The weakening of exchange rate, global commodity price surges, reduced domestic subsidies, and flood-related disruptions have significantly reduced the purchasing power of low-income households, threatening poverty and food security gains achieved in the last decade.

Inflation has risen from 13.4 percent in April 2022 to 36.4 percent in April 2023, with food inflation even higher, reaching 46.8 percent in urban and 52.2 percent in rural areas. Food prices in Pakistan have rapidly increased in the second half of 2022 with wheat flour prices increased by 106.7 percent, chicken prices by 43.1 percent, pulse gram prices by 48.4 percent, rice by 87.9 percent, milk by 36.4 percent and cooking oil by 34.7 percent in April 2023 as compared to a year ago. Pakistan's reliance on imported commodities, such as edible oil, tea, pulses, wheat, and other agricultural inputs has increased due to a shortage of domestic production. The rise in international prices of commodities has exacerbated the trade deficit. The food imports increased to USD 8 billion with food exports remaining at USD 5.4 billion in 2022. The current financial crisis in the country has made it

challenging to import essential food commodities and inputs. The country is importing around 10 percent of its wheat requirement mainly from Russia and Ukraine, which has contributed to an increase in domestic prices and high support prices for wheat for the 2022-23 seasons. High fuel prices have led to higher production and transportation cost, making food more expensive, while the high cost of fertilizer has made it difficult for farmers to afford essential inputs. The poultry industry is also facing a crisis due to high import costs and restrictions on the import of soybean. Although the international prices of agriculture-related commodities have started to decrease in the third quarter of 2022, however, Pakistan's currency depreciation and high fuel prices have prevented the impact reflected in the domestic markets. Resolving the 5F crisis requires not only the stabilization of international prices but also the implementation of supportive policies and measures that can address the domestic factors, which are driving up inflation. In comparison to core inflation values the food inflation values are on rising trend over time with 46% value during third quarter of FY 2023 (Govt. of Pakistan, 2023). The detail is given in figure below:



The current Russia-Ukraine conflict and all the potential human security repercussions have worsened the already fragile situation due to the factors like COVID-19 pandemic, a crisis in energy supplies, maritime limitations, and current catastrophic weather conditions brought on by climate change (Nicas, 2022). It should be noted that in June 2023 CPI food inflation in neighboring countries stood at 2.3% for China, 4.5% for India, and 9.7% for Bangladesh (Fishstein and Farahi, 2023).

Inputs are things that put into the production process such as land, labour, implements, seed, mechanization (tractors) fertilizer, pesticides. Outputs are the things that are produced like harvested crops, milk, meat, eggs. Fertilizers as inputs are essential contributor towards the agriculture sector of the country. The Agriculture sector's economic significance is high as it plays a vital role in ensuring food security across the country. Crop outputs, credit disbursement of agricultural sector, government policies, weather conditions and soil health are a few of the main drivers of demand for the fertilizers sector.

Input price inflation creates cash flow problems for farmers and increases the necessity of a high level of operational management and conservative financial strategies. Therefore the present study was planned to estimate the economic implications of food inflation in farmer's perspective to evaluate the economics of growing crops over time keeping in view the post Covid-19 inflation, currency devaluation and global fuel prices scenario.

## MATERIAL AND METHODS

The survey study was conducted in Adaptive Research Gujranwala zone, Govt. of the Punjab, Pakistan during year FY 2023. The soil and climate of the selected areas is favorable for the cultivation of wheat, rice, maize, oil seeds, vegetables and fodder crops but the general crop rotation is rice-wheat. Basmati rice is the principal crop in the Khraif (June-November) season and occupies about 25% of the total cropped area in the season. Wheat is a major staple crop of the Rabi (November-April) season and occupies 75% of the cultivated area in Rabi season (Latif et al., 2018).

To select the respondent farmers, convenience non-probability sampling method was adopted due to time and cost constraints. Thus a total of 100 respondent farmers were interviewed. A well-structured and pretested questionnaire was employed for data collection.

The data collected were subjected to descriptive statistical analysis such as frequently counts, percentage and mean derived from five point Likert's type scale as the following: 5 = strongly agree, 4 = agree, 3 = Undecided, 2 = disagree, and 1 = strongly disagree. The Likert's scale was done by asking some statements. To which the responses were rated according to their perceptions and the cut-off mean score was determined by adding the ratings up ( $5 + 4 + 3 + 2 + 1 = 15$ ) and dividing the sum by 5 to give 3 as the cut-off mean score. For each statement, the total score was divided by the number of respondents, for instance a statement like 'Farmer's opinion to cope with food inflation is "Subsidy on inputs"' may have responses of strongly agree ( $f=71$ ); agree ( $f=25$ ); undecided ( $f=4$ ); disagree ( $f=0$ ) and strongly disagree ( $f=0$ ). It will now be worked as  $71 \times 5 = 355$ ,  $25 \times 4 = 100$ ,  $4 \times 3 = 12$ ,  $0 \times 2 = 0$  and  $0 \times 1 = 0$ . Then  $355 + 100 + 12 + 0 = 467$ . The sum was divided by the total  $f$  thus,  $467/100 = 4.67$ . In this case, 4.67 were the mean score which was greater than the cut-off mean score of 3. The ranking was done according to the mean values, with the one with the highest mean ranking '1'.

The secondary data was also employed due to the study objectives at large level. The data from Economic Survey of Pakistan 2023, Crop Reporting Service, Agriculture Department, Govt. of Punjab, Pakistan was considered for economic analysis. The ratio employed to calculate the economics of growing crops over time according to Latif et.al, (2022) is given below as:

$$\text{Net returns} = \text{Gross income} - \text{Total operational cost}$$

USD is the most reserved currency in the world because it is said that America is the safest place to invest (Truman and Wong, 2006). The worldwide business of oil is done on USD and Pakistan is a huge importer of oil. That's why we need to keep foreign exchange reserves and compare our currency with dollar. Furthermore, one of the reasons for inflation in Pakistan is fluctuation of PKR parity with US dollar. Hence, it was decided to compare the economic figures like gross income, operational cost and net returns associated with crops production calculations in US dollar; so that a clear picture may be drawn to estimate the economic implications of food inflation in farmer's perspective.

## RESULTS AND DISCUSSION

The average age (year) and education (schooling year) of respondent farmers were estimated at 44.50 and 8.06, respectively. The average land holding size was recorded as 10.38 acre. In studied area, the soil type was estimated as sandy (20%), clayey (34%) and clayey loam (46%) and source of irrigation was recorded as canal (15%), tubewell (75%) and combined (10%).

The Factors/reasons for food inflation during field survey was recorded. The majority of the farmers declared the reasons of Fuel prices (Cost push inflation), Government trade policy/ IMF program, Increasing Population (Demand Pull inflation) and COVID-19 pandemic among other reasons. The detail is given in Table 1.

Oil prices have fluctuated enormously in recent years. Strong volatility in oil prices has serious implications for Pakistan's economy given its substantial dependence on imported fuels. Energy prices have a crucial role behind inflation rates in Pakistan (Malik, A. 2016).

Changes in trade policies, for example, can alter the costs of raw materials and the import and export tariffs to which they're subject. This will change their price and profitability on business markets, and could lead to attempts to find alternative sources or materials. Pakistan's trade policy is formulated with the aim of maximizing gains from international trade through the promotion of freer trade in the context of a global multilateral trading system and the encouragement of efficient and competitive domestic production activities. In response to IMF demands, on January 29, the government increased fuel prices and removed a cap on the foreign exchange rate, leading to a drastic depreciation of the Pakistan rupee's value, including a 9.6 percent loss in one day in January.

Population growth drives both supply and demand in a variety of ways, raising the possibility for it to affect inflation. In the first year of Covid-19 the inflation rate in Pakistan increased and reached to 10.7% in spite of the fact that crude oil prices remained lowest at \$39.68 per barrel in international market. The inflation rate in Pakistan was much higher than in all neighboring countries. After COVID-19 took Pakistan into its grasp, forcing major disruptions in the country's economic activities, the result was that for the second time in Pakistan's history, after 1951–1952, it experienced a negative GDP growth rate; -0.4 percent for the fiscal year 2020 (Saad, 2020).

Between 1992 and 2021, according to the World Bank Group, climate- and weather-related disasters in Pakistan resulted in a total of US\$29.3 billion of economic losses (inflation-adjusted to 2021 US dollars) from damage to property, crops, and livestock, equivalent to 11.1% of 2020 GDP. Climate impacts are already harming health, through air pollution, disease, extreme weather events, and forced displacement, pressures on mental health, and increased hunger and poor nutrition in places where people cannot grow or find sufficient food. Climate change has become a great challenge for the agrarian economy of Pakistan. A serious threat is to the crop sector which is vulnerable to change in temperature and rainfall. Climate change refers to any change in climate overtime, whether due to natural variability or as a result of human activity (Change, 2001). The climate conditions prevailing within the top soil and atmosphere influence the growth and performance of crops (Ayoade 2002). The rains these days are unpredictable. The world’s average temperature has increased since the last century (Shah and Ameta 2008). This is leading to rising sea surface and drastic changes in rainfall patterns, affecting the production potential of rural areas. According to Winarto *et al.* (2008), farmers have always responded to climate change with respect to their choice of crops, crop varieties, planting, and other cultural measures.

Ukraine exports wheat, sunflower oil, and other agricultural products. The conflict has disrupted the supply of these goods, which has led to higher prices and food shortages in Pakistan. Rapid urbanization can cause rampant inflation through several mechanisms: Like a surge in population, which results in increased demand for housing. As a result, property prices skyrocket, leading to higher rental and housing costs. Every round of currency depreciation is followed by an inflationary wave led by energy and food price hikes. Hence, the recent devaluation is also expected to have an impact on inflation rates, potentially surpassing 28% for August 2023.

**Table 1: Factors/reasons for food inflation: farmer’s viewpoint**

Opinion	Percent response					Mean	Rank
	Strongly disagree	Disagree	Undecided	Agree	Strongly agree		
Fuel prices (Cost push inflation)	0	0	5	38	57	4.52	1
Government trade policy/IMF program	0	2	6	30	62	4.52	2
Increasing Population (Demand Pull inflation)	0	1	4	39	56	4.50	3
COVID-19 pandemic	0	5	4	40	51	4.37	4
Present Flood crises/climate change	0	5	5	45	45	4.30	5
Russia-Ukraine conflict	2	5	3	48	42	4.23	6
Consumers’ stockpiling	4	4	10	32	50	4.20	7
Supply chain issues	5	5	10	35	45	4.10	8
Urbanization	8	4	6	35	47	4.09	9
Devaluation of PKR	0	8	6	60	26	4.04	10
Withdrawal of subsidies	0	8	6	60	26	4.04	10

Regarding the effects food inflation across location factor; it was recorded that majority (> 80%) of the farmers were of view that the suburban areas near a large city were adversely affected. While the residents of large cities were not affected as such with food inflation (Table 2).

**Table 2: Effects of Food Inflation across location**

Location	Percent response					Mean	Rank
	Strongly	Disagree	Undecided	Agree	Strongly		

	disagree				agree		
Peri urban area	0	0	2	30	68	4.66	1
A rural area	0	0	5	31	64	4.59	2
A small city or town	0	3	3	35	59	4.50	3
A large city	0	2	10	42	46	4.32	4

Regarding the changes in purchasing pattern of food form; it was recorded that mostly people (69%) responded that they purchased fresh food item more and purchased frozen/canned/dried/package food items less (Table 3). The rising prices of food items, particularly fresh fruits, milk, and chicken are having a major impact on the livelihoods and nutrition levels of all families. But much of the burden of this falls on the poor as higher prices put protein and vitamin-rich foods out of their reach.

**Table 3: Changes in purchasing pattern of food form due to food inflation**

Food Form	Purchased More	No Change in Purchasing	Purchased Less
Fresh	69	15	16
Frozen	12	14	74
Canned	11	15	74
Dried/Package	10	11	79

Regarding farmer's opinion to cope with food inflation it was recorded that majority (up to 4.29 mean response score) of the farmers responded that Subsidy on inputs, Disease and pest free seed distribution, Start to growing own country food brand/restaurant, Stop urbanization on fertile land and Change the types of foods (fresh only) were the solutions against food inflation. While other farmers responded Wise & balanced fertilizer use, Start to buy a cheaper, brand/store brand, Corporate farming, Start to buy from cheaper grocery store/location, Construction of dam/pond/water bodies, Start to spending less money on non-food items, Reduced the visit to outside/restaurants during short supply, Stop deforestation, Training/awareness about climate change and Desilting of distributaries/canal as possible solutions to cope with food inflation (Table 4).

**Table 4: Farmer's opinion to cope with food inflation**

Opinion	Percent response					Mean	Rank
	Strongly disagree	Disagree	Undecided	Agree	Strongly agree		
Subsidy on inputs	0	0	4	25	71	4.67	1
Disease and pest free seed distribution	0	1	8	20	71	4.61	2
Start to growing own country food brand/restaurant	0	2	7	39	52	4.41	3
Stop urbanization on fertile land	0	3	8	42	47	4.33	4
Change the types of foods (fresh only)	0	5	8	40	47	4.29	5
Wise & balanced fertilizer use	0	5	11	44	40	4.19	6
Start to buy a cheaper brand/store brand	5	8	14	28	45	4.00	7
Corporate farming	0	4	30	32	34	3.96	8
Start to buy from cheaper grocery store/location	0	14	15	33	38	3.95	9
Construction of dam/pond/water bodies	5	7	13	45	30	3.88	10
Start to spending less money on non-food items	8	12	15	30	35	3.72	11
Reduced the visit to outside/restaurants during short supply	9	11	16	34	30	3.65	12
Stop deforestation	11	8	28	28	25	3.48	13
Training/awareness about climate change	15	12	25	23	25	3.31	14
Desilting of distributaries/canal	10	10	35	33	12	3.27	15

Pakistani Government has announced Kissan package to boost the agriculture in the aftermath of floods. The package includes subsidized loans to flood affected farmers and youth of rural areas, subsidy on DAP as well as import of used tractors and relaxation of duties for tractor manufacturing. These measures will enhance agriculture produce & supply of food items will improve (Govt. of Pakistan, 2023).

Based on average of annual values of the exchange rate of US dollar to PKR by Govt. one dollar was equated as 168.88 PKR, 223 PKR, 226.59 PKR and 278.90 PKR for the years 2020, 2021, 2022 and 2023 respectively.

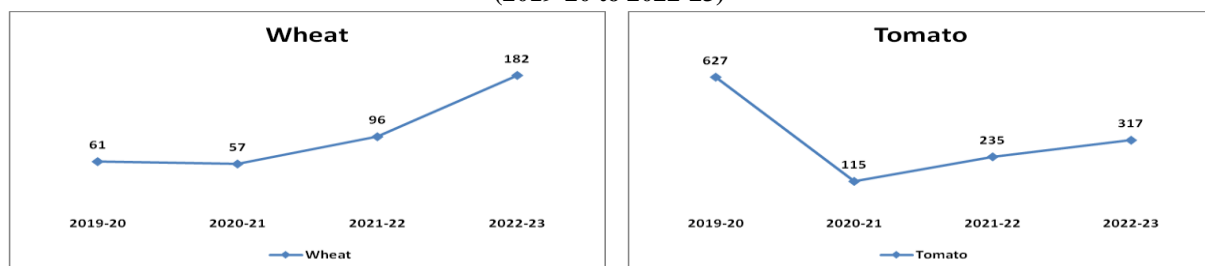
To estimate the economics of growing crops over time keeping in view the post Covid-19 inflation, currency devaluation and global fuel prices scenario the Comparison of Net Returns (US \$/Acre) Of Crops in Rice-Wheat Cropping System Over Time was conducted (Table 5 and Figure 2). In case of wheat crop the net returns were significantly increasing from 61 US \$/acre in 2019-20 to 182 US \$/acre in 2022-23 over years period. The possible reasons behind high returns might be subsidies on inputs like seed, fertilizer, and the reasonable support price increase from 1400 PKR/mound to 3900 PKR/mound along with shortage of wheat at country level and Russia-Ukraine conflict.

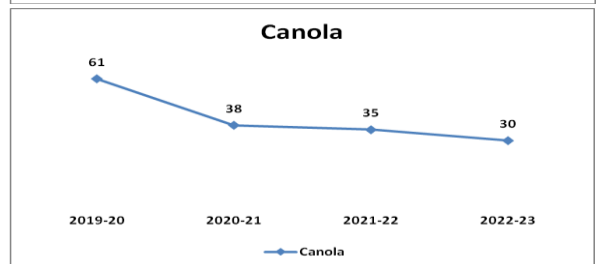
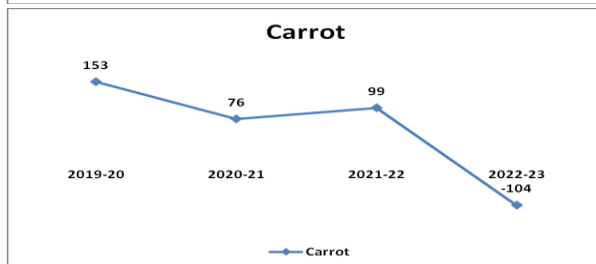
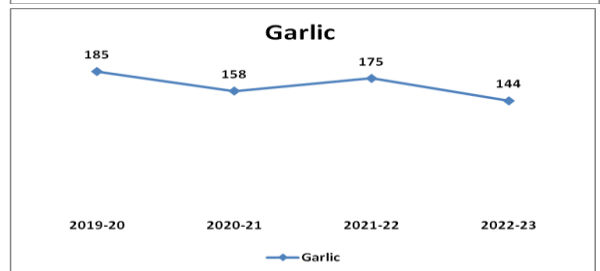
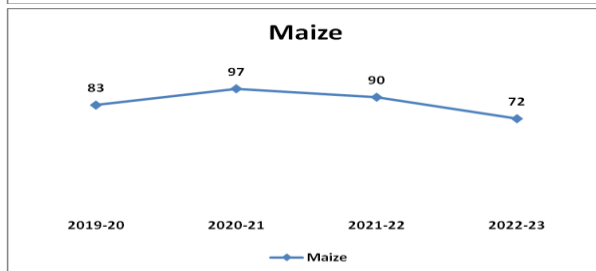
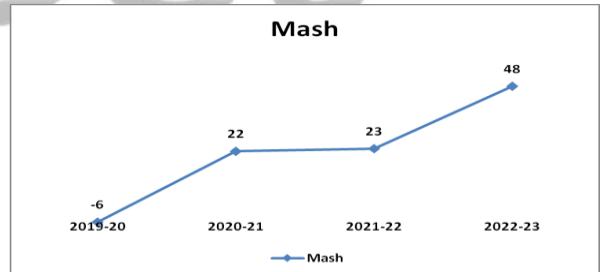
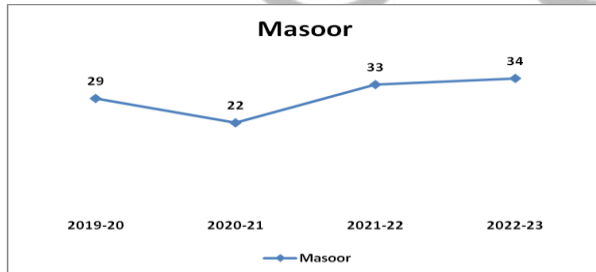
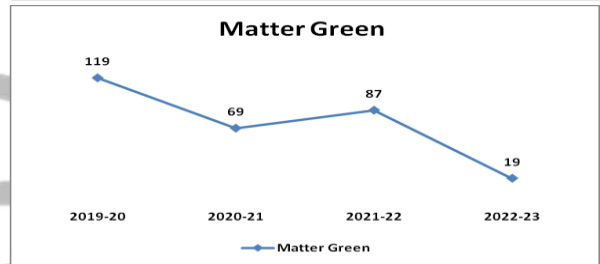
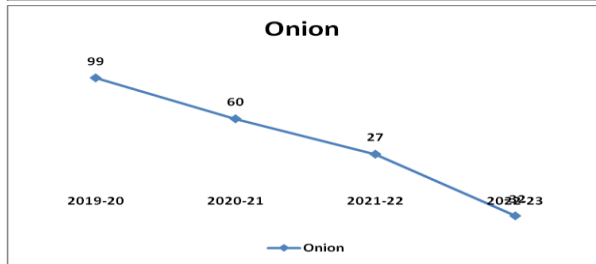
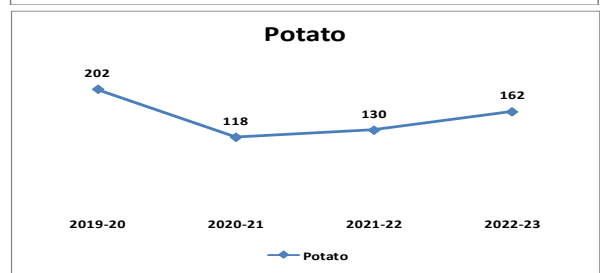
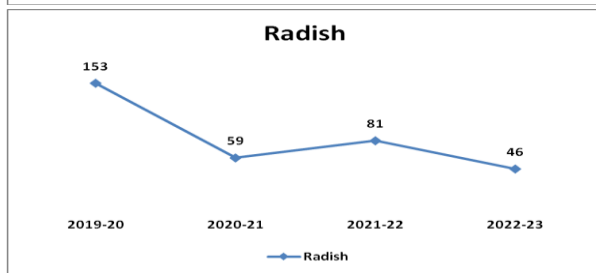
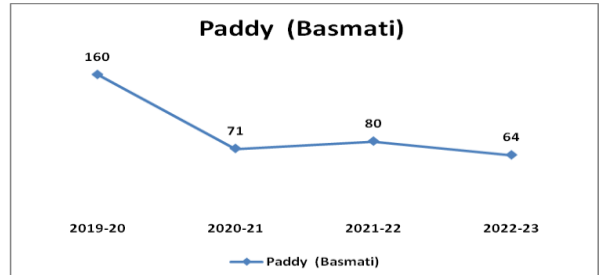
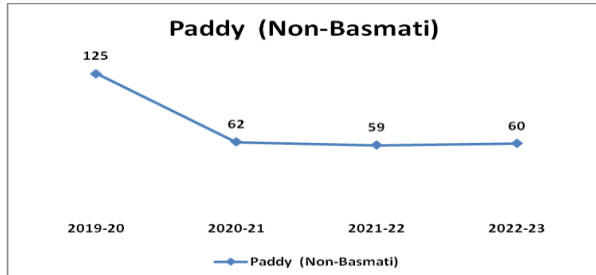
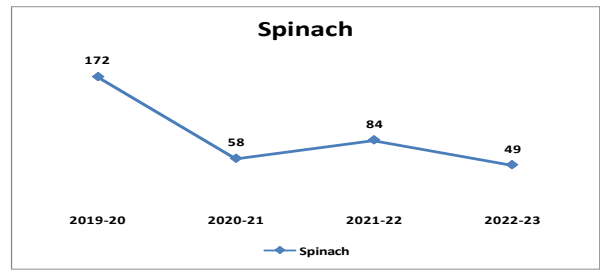
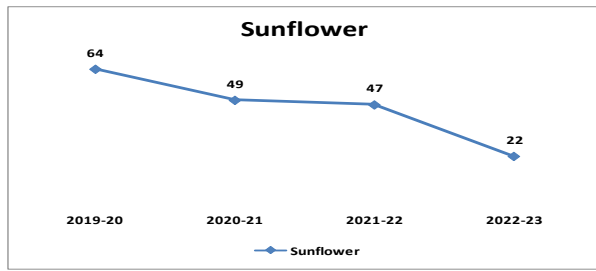
Similarly, for tomato, Paddy, potato, masoor, mash, maize and garlic the net returns trends were increasing over period. During high Inflation situation agrarian economy reaps the benefits due to higher profits (since producers can sell at higher prices), better investment returns (since investors and entrepreneurs receive incentives for investing in productive activities), increase in production and more employment. However, for sunflower, spinach, radish, onion, canola and carrot the net returns trends were declining over period; with the possible reasons of perishable nature of crops and lack of value addition culture along with other reasons. Inflation impact on agriculture is not just a domestic concern, but it's a global one as well. In many developing countries, agriculture is a major source of income and employment, and high inflation can make it difficult for farmers to make a profit and can lead to food insecurity. Inflation can be good or bad depending on the business. An essential business with low competition and high loyalty will be less affected by rising prices, but any business will have to compensate for rising costs by raising prices, cutting costs or restructuring.

**Table 5: Comparison of Net Returns (US \$/Acre) Of Crops in Rice-Wheat Cropping System Over Time (2019-20 to 2022-23)**

Year	2019-20	2020-21	2021-22	2022-23
Wheat	60.61	57.3	95.54	181.74
Tomato	627.18	114.7	235.41	317.03
Sunflower	64.22	49.01	46.76	21.56
Spinach	172.42	58.01	83.83	49.02
Paddy (Non-Basmati)	125.1	61.7	58.73	60.32
Paddy (Basmati)	159.69	71.37	80.12	63.68
Radish	152.55	59.4	80.81	45.6
Potato	202	118	130.41	162.46
Onion	99.34	60.27	26.54	-32.29
Matter Green	118.5	68.75	86.54	19.17
Masoor	28.95	22.41	32.68	34.33
Mash	-6.21	22.28	23.35	48.46
Maize	83.38	96.85	89.89	72.16
Garlic	184.82	158.05	175.36	144.47
Carrot	153.18	75.91	99	-103.66
Canola	60.51	37.58	35.35	30

**Figure 2: Comparison of Net Returns (US \$/Acre) Of Crops in Rice-Wheat Cropping System Over Time (2019-20 to 2022-23)**





## CONCLUSION

The majority of the farmers called Fuel prices (Cost push inflation), Government trade policy/IMF program, Increasing Population (Demand Pull inflation), COVID-19 pandemic, Present Flood crises/climate change, Russia-Ukraine conflict, withdrawal of subsidies and Devaluation of PKR as main reasons for prevailing food inflation.

Based on the estimation of economics of growing crops over time it may be concluded that the farmers' net returns were increasing particularly for non-perishable commodities like wheat, pulses, garlic etc. despite of soaring inflation scenario. However, perishable nature of crops like spinach, onion and carrot etc. the net returns trends were declining between 2019-20 to 2022-23. Keeping in view the food security factor it is suggested that the Govt. should maintain strategic reserves of wheat, sugar and pulses for inflationary period.

## REFERENCES

- Ayoade, J. O. (2002). Introduction to agroclimatology. Vintage, Publisher, Ibadan.
- Change, I. P. O. C. (2001). Climate change 2007: Impacts, adaptation and vulnerability. Genebra, Suíça.
- Fishstein, P., & Farahi, A. (2023). The World's Humanitarian, Economic, and Political Engagement with Afghanistan. Govt. of Pakistan, (2023). Economic Survey of Pakistan 2023.
- Latif, M. T., Hussain, M., Latif, A., Bajwa, M. H., Ahmad, I., Zohaib, A., ... & Hamza, M. (2022). Economic Viability and Profitability Analysis of Mechanical Transplanting of Rice in Rice-Wheat Cropping System of Pakistan. *Sarhad Journal of Agriculture*, 38(2).
- Latif, M. T., Sher, F., Hussain, M., & Asghar, M. (2018). Economics of different harvesting techniques of wheat in rice-wheat cropping pattern of Punjab, Pakistan. *Azarian Journal of Agriculture*, 5(3), 103-107.
- Malik, A. (2016). The impact of oil price changes on inflation in Pakistan. *International journal of energy economics and policy*, 6(4), 727-737.
- Oner, C. (2010). What is inflation. *Finance & Development*, 47(1), 44.
- Saad Zaidi, S. M. (2023). COVID-19: Exacerbating Pakistan's economic problems—a critical analysis using the dependency paradigm. *Asian Journal of Comparative Politics*, 20578911231162689.
- Shah, R., & Ameta, N. (2008). Adapting to change with a blend of traditional and improved practices. *LEISA Magazine*, 24(4), 9-11.
- Truman, E. M., & Wong, A. (2006). The case for an international reserve diversification standard (pp. 06-2). May.
- Winarto, Y. T., Stigter, K., Anantasari, E., & Hidayah, S. N. (2008). Climate field schools in Indonesia: Improving "response farming" to climate change. *LEISA Mag*, 24(4), 16-18.