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*Research Article*

## Paradoxical theory of agriculture suffer plenty of production in India: Frame of theory, proof, policy advocacy, and prophecy

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Global food production surpasses the food requirement. But the farmers suffer why? Since many decades, developing countries farmers faced declining and low agricultural prices. Hence, these countries agricultural price policies are need to examine for economic precision. This led to conception of the study. India successfully feed the rising population, despite its population getting multiplied. But the Indian farmers suffer due to debt trap, poverty and commit suicide. This is basically frame work of paradoxical theory of Indian Agricultural suffer plenty of production without receiving farmer's profitable prices. The theoretical frame, scientific approach, and political policy analysis were approached to validate the results. The proof of theory shown with estimated growth rates of MSP, WPI, domestic prices, export and import prices during 1990 - 2019. It also analyzed role of MSP in improving farmers welfare and increase in area, production and reduce poverty and inflation. The theory results show farmers are not receiving profitable prices because the duality between what farmers want against to other powerful stakeholders wish like, consumers, government, middlemen, transnational corporations, WTO. The theory says that farmers suffer because they cannot fight against strong stakeholders. The proof is that for the last 40 years most of the cereals, pulses, oilseeds crops domestic and international prices growth rates less than MSP. So farmers are not benefiting market prices. Hence, farmers are growing these crops based on MSP. The significant finding is increasing MSP of cereals, pulses, oilseeds increasing area, production, productivity and reduce poverty, inflation. Hence, Government should continue and increase MSP of cereals, pulses and oilseeds. But Indian MSP is very less compare to countries such as USA, China, Australia, Europe where farmers will get MSP is world prices+more. Government must give profitable prices and support farmers by price supporting, price loss coverage, price insurance and other risk mitigation programs. The researchers, think tank organizations and policy makers must do scientific, political, professional policies analysis then frame policies.

**Key words:** Agriculture paradoxical theory, policies, prices, proof.

### INTRODUCTION

Life is economics for farmers whereas economics is life for profit makers. Global food production surpasses the food requirement. But the farmer's welfare is questionable why. The reason is being is that the paradoxical theory of global agriculture suffers plenty of production. This is because the duality between farmer's desires against strong stakeholders like, consumers, government, middlemen, MNC's and WTO. During 2018-19, world total production grains, 2,625.5 M.MT, oilseeds 600.0 m.mt.

Globally, agriculture and farmers fate decided by agricultural prices. Agricultural prices play important role in

living economics. Especially, developing countries farmer model is a vicious circle of traps, which involves livelihood, poverty and debt traps leading to farmer's suicides. For last 50 years, declining prices and last 20 years, low prices were faced by developing countries farmers (Dastagiri, 2019). Since 1950, policy makers and development economist's advocacy is that low agricultural prices reduce poverty in developing countries as in these nations major share of household income is from agriculture (Aksoy and Beghin 2004). Similarly, Hertel and winter 2006 reported that higher agricultural prices adversely affect poorest people and poverty reduction in developing countries.

In many developing countries, crop Minimum Support Price (MSP) is a subsidy scheme to:

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(i) Improve farmer welfare by safeguarding farmers' incomes against vagaries in crop price, and (ii) improve consumer surplus by ensuring sufficient crop production (Chintapalli et al., 2020). Promoting diversification in the production of high-value commodities can play an important role in raising the small-holders' income (Fan and Chan-Kang, 2005). Many studies showed that sustainability standards help poor farmers to improve their production and livelihoods (Jones and Gibbon, 2011; Kleemann et al., 2014; and Qiao et al., 2016). Certified farmers receive 20%-30% higher prices and obtain 16%-22% higher household incomes (Meemken, 2020). Pulses contributes immensely towards doubling farmer's income through diminishing cost of production, scaling per unit productivity, efficient marketing networks, increased minimum support price and post-harvest value addition (Kavita et al., 2020).

The studies on trade and development assumed that in low income countries, high food prices bad for poor and rural people due to as they are net food buyers (Ravallion, 1990). Ivanic and Martin, 2008 and World Bank 2008 reported that based on household data food price hikes in 2008 have pushed worldwide additionally 100 million poor in to poverty. The trade flows and competitiveness between producing and exporting countries influenced by change in policies by Satyanarayana.V, Wilson.WW, Johnson.DD, Dooley.FJ 1998. David Hallam, 2003 reported that most of the agricultural commodities have inelastic demand leading to lower world prices and lower export earnings for developing countries. In general export instability more in LDC's than in DC's causes more negative effect on economic growth in LDC's than DC's (Glezakos, 1973). Nurkse, 1958 and Caine, 1958, Chaudhary and Qaisrani, 2002 reported that economic growth badly effected by export instability.

India could successfully feed the rising population, despite its population getting quadrupled. The current population of 1.36 billion is projected to rise to nearly 1.51 billion in 2030 and 1.65 billion by 2050. The main aim of agricultural policy in India is farmers' welfare. Ministry of Home Affairs stated that Indian welfare is possible only through the farmers' welfare. The main aim of agricultural policy in India is farmers' welfare. At present, we don't need just another green revolution. But, we need a more comprehensive income revolution for Indian farmers' (Ashok Dalwai, 2018). Improving the farmer's welfare and rise in agricultural income is very important to assure the future of agriculture and increase the livelihood of the Indian population. Agriculture is the primary source of national income for India, and also an importance source of livelihood. Agriculture is the backbone of the Indian economy and provides employment opportunities to the large number of population along with provision of raw material and food (Agri News Net, 2019). Agricultural sector contributes nearly 15.9 percent of the country's GDP in India and 49 percent of total employment during 2018-19. At the global level, distribution of farmland was quite seeming unequal (Lowder et al., 2014). In India, development of economy entirely depends on the agricultural growth rate. Export trade of the nation relies mainly on the agricultural sector. Agriculture made the farmers' to earn income that was crucial to refer an agrarian distress

and enhance the welfare of farmers' (Chand, 2016). In Indian context, a study by UNCTAD (2009) concluded that Indian exports are highly responsive to world income changes and found that 1% decline world GDP will reduce 1.88% of India's exports.

Existing price supporting mechanisms in the countries could not immune farmers with economic losses, hence necessitating a new approach. Either researchers, policy makers, governments or think tank institutes are worrying about farmer's welfare. Market players are under high risk with volatility of prices. MSP is helping Indian farmers many multidimensional ways. This is not understood policy makers and multistate holders. The main focus of the paper is to frame paradoxical theory of plenty production and shows the proof with empirical research growth rates of prices. Finally, to demonstrate the benefits of MSP support to farmers' welfare.

### **Objectives**

1. To Frame theoretical frame work of paradoxical theory of Indian agriculture suffer plenty of production without farmers receiving profitable prices.

2. To show proof of theory with empirical research with estimates of growth rates of MSP, WPI, domestic prices, export and import prices of India's agricultural commodities.

3. To find the effects of MSP and food prices on area, production, trade, poverty and inflation of India's cereals, pulses and oilseeds.

4. To suggest polices and strategies for boosting Indian farmer's welfare.

### **MATERIALS AND METHODS**

This is basically frame work of paradoxical theory of Indian agriculture suffer plenty of production and shown proof with empirical research. The selected commodities for study were India's cereals (rice, wheat, sorghum and maize), pulses (gram, arhar/tur and moong) and oilseeds (groundnut, soybean and sunflower). The period of study is from 1990-91 to 2018-19. Data on area, production, export and import quantity, values and prices of cereals, pulses and oilseeds and also inflation and poverty of India were collected. Domestic prices, international prices of cereals, pulses and oilseeds along with consumer price general index and consumer price food index were collected. The main secondary data sources were Directorate General of Commercial Intelligence (DGCIS), Food and Agricultural Organization of the United Nations (FAO), Directorate of Economics and Statistics (DES), Centre for Monitoring on Indian Economy (CMIE), International Food Policy Research Institute (IFPRI), Economic Survey 2017-18, Planning commission reports and World Bank.

The theoretical frame, scientific approach, and political policy analysis were approached to validate the results.

Theoretical Frame of paradoxical theory of plenty of production → Analysis of the duality between Farmers not getting profitable prices against other strong stakeholder's consumers, government, middlemen, transnational corporations and WTO want lower prices → Proof of theory with agricultural price growth rates of MSP, domestic prices, export and import prices → Effects of Agricultural

prices on area, production, productivity, poverty and inflation  
 →Formulation of Policies for Farmers welfare.

**Framework of analysis**

Policy analysis is an important factor in identification of a policy issues and helps to solve those with possible solutions (Cairney, 2020) (Aksoy, 2008) (Mir A, 2010).

Mainly three types of analysis approached to achieve the objectives of current study, which are represented below:

1. Theoretical framework
2. Scientific analysis, and
3. Political analysis

The theory is basic building block of science and theory to try and describe economic phenomena. The scientific approach of policy analysis helped to look for truth and build theory about policy actions of different stakeholders. In the current study, mainly scientific analysis (Figure 1).

**Growth rate formulae:** The compound growth rate (r) will be calculated by fitting exponential function to the variables of interest viz., exports, and prices for the period 1990-91 to 2014-15.

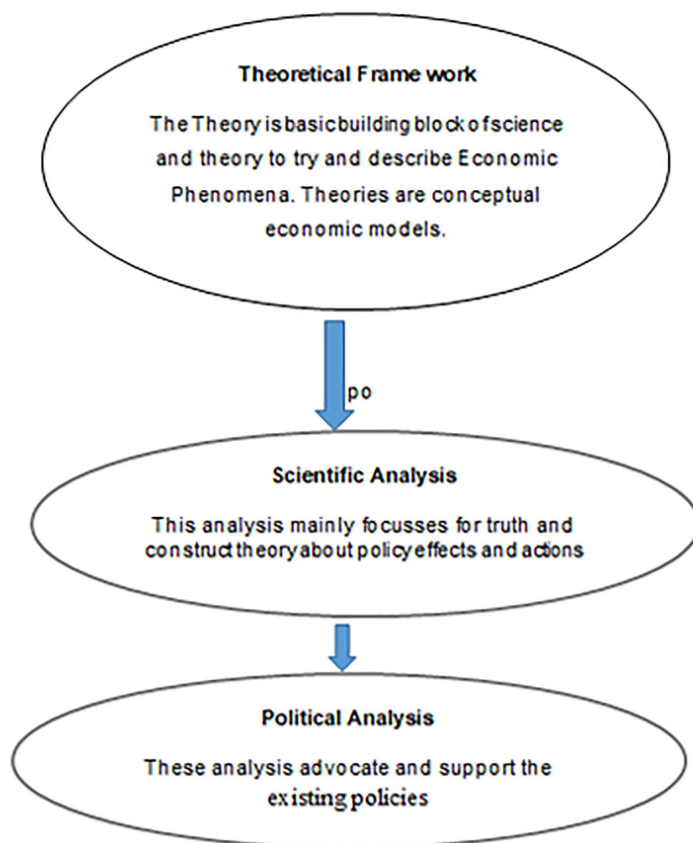
$$Y_t = Y_0(1+r)^t \text{ -----1}$$

Assuming multiplicative error term in the equation1, model may be linearized by logarithmic transformation

$$\ln Y_t = A + Bt + \epsilon \text{ -----2}$$

Where, A (=lnA<sub>0</sub>) and B (=ln(1+r)) are the parameters to be estimated by ordinary least square regression, t=time trend in year, r=exp(B)-1

Regression analysis was performed to study how domestic and international price of cereals, pulses and oilseeds effecting on the production, trade, poverty and inflation. The results on relevant variables are encouraging with expected sign and magnitudes of coefficients. The regression coefficient expresses



**Figure 1.** Frame work of Analysis in the current study.

the functional relationship among the dependent variable and one or more independent variables. Denoting the dependent variable by Y and the set of explanatory variables by X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>... and X<sub>n</sub>, the regression model can be generally formulated as

**The model fitted here is**

$$PY = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_n X_n + \epsilon$$

Where Y=dependent variable such as area, production, total agricultural exports, total agricultural imports, poverty, inflation, consumer price general index and consumer price food index.

X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub> and X<sub>n</sub> are independent variables such as minimum support prices, international prices, domestic market

prices, export quantity, import quantity, export prices, import prices and producer price index.

$$\beta_i (i=0,1,2 \text{ and } 3 = \text{Regression coefficients})$$

ε=Error or the random disturbance, which represents the discrepancy between the observed response variable and the estimated regression line.

**RESULTS**

**Farmer's suffer from paradoxical theory of plenty production in Indian agriculture**

The frame and concept of farmers' suffer from paradoxical theory of plenty production in Indian agriculture shown in Table

1. The theory says that the farmers are not receiving profitable prices because the duality between what farmers want against to other powerful stakeholders want like, consumers, government, middlemen, transnational corporations and WTO then the farmer's survival is questionable? The theory is basic building block of science and theory to try and describe economic phenomena. Theories are conceptual economic models.

As per above theory, farmers want higher and profitable prices. This will make farmers to increases income, area, production, productivity and reduce poverty. Contrastingly, the consumers want lower prices because of 70% poor and low income people. Whereas, Government also wanted lower prices to reduce inflation, poverty, inequality and increase GDP, economic growth, political survival, votes and to meet obligations of WTO and to make globally competitive and attract FDI. Middlemen and crony capitalists want lower prizes to make more profits. They manipulate D and S and price pubble and price crash, make formal economy, hoarding and black market. The theory says that farmers cannot fight to get profitable prices against other strong stakeholder's consumers, government, middlemen, transnational corporations and WTO want lower prices (Table 1).

**Table 1.** Paradoxical Theory of Plenty Production in Indian Agriculture (or) Farmers' Suffer from Paradoxical Theory of Plenty Production in Indian Agriculture: Is It Farmer Sustenance?

Different stakeholders perceptions	Effects On Indian Agriculture
The theory says that farmers suffer because they cannot fight to get profitable prices against other strong stakeholder's consumers, government, middlemen, transnational corporations and WTO want lower prices.	
Farmer wants	Higher prices → Increase in area, production, productivity, Farm Income, reduce poverty
Consumer wants	Lower prices → 70%-poor and low income people wanted (Food security)
Government wants	Lower prices → To reduce Inflation, poverty, inequality, inter parity disparity in sectors and increase GDP, Votes, Political survival, WTO obligations, Economic growth, Food security, global market competition, and FDI. Food grain prices and poor food entitlement affects
Middlemen wants	Lower prices → sell high price and create price bubble and price crash in the markets
Crony capitalist/ MNC's, TNC's wants	Lower prices → manipulate D&S and price pubble and price crash, Formal economy, black market

WTO wants	Lower prices → Consumer protection, Trade facilitation, World price transmission
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**The proof of paradoxical theory of plenty production in Indian agriculture without receiving profitable prices**

**Growth rates of MSP, WPI, domestic prices, export and import prices of India's agricultural commodities during WTO regime:** The proof of paradoxical theory of plenty production in Indian agriculture without farmers receiving profitable shown with the estimated growth rates of MSP, WPI, domestic prices, export and import prices growth rates of India's agricultural commodities during 1990-2019 shown in Table 2. It is found that there is no negative growth rate found in MSP of agricultural commodities in India. The results show that for the last 40 years MSP growth rates of cereals, pulses and oilseeds except rice are more than domestic prices, WPI, export and import prices. The study conclude that Indian farmers are for the last 40 years benefiting more from MSP than market prices such as domestic prices, export, import prices. But Indian agricultural commodity MSP prices far less than China, USA, Australia, Europe and other developed countries. These countries support farmers by providing MSP as world prices +25% extra.

The results of the cereals show that wheat (5.47), maize (6.23) domestic prices growth rates less than MSP, WPI and export price growth rates less than imports price growth rates. Whereas rice (9.59), sorghum (10.12) domestic price growth rates are more than MSP, WPI growth rates. In case of rice export price growth rate is less than import price growth rates. Whereas pulses such as gram (6.18), arhar (4.67), moong (6.03) domestic price growth rates less than WPI, MSP growth rates. For all three crops export price growth rates higher than imports price growth rates. The results of oilseed price growth rates show that groundnut (6.94) domestic price growth rates less than MSP and soyabean domestic price growth rates less than WPI and sunflower domestic price growth rates less than MSP. Groundnut, soyabean and sunflower exports growth rates very impressive.

The variation in MSP growth rate of paddy, wheat, sorghum, maize, gram, arhar, moong, groundnut, soybean and sunflower was found to be stable in India during the period of 1990-91 to 2018-19. During the period of 1990-91 to 2016-17, the variation in the WPI of rice, wheat, sorghum, maize, gram, arhar, moong, groundnut and soybean was found to be stable except sunflower crop (111.42) where the variation in WPI was found to be unstable. The study found that the WPI growth rate of pulse crops was found to be greater than the cereal and oilseed crops except sorghum. The variation in WPI of all major agricultural commodities in India was found to be stable except sunflower.

The study found that most of the crops domestic prices growth rates less than MSP. Hence, the cereals, pulses and oilseeds farmers are growing these crops based on MSP. But Indian MSP is very less compare to other countries such as USA, China, Australia, Europe where the farmers will get MSP is world prices +25% extra (Table 2).

**Table 2.** Growth rates of domestic prices, WPI, MSP, export and import prices and instability of India's Agricultural commodities (in terms of percentage); Source: FAOSTAT, CMIE Figure in parenthesis indicate CV (independent of units).

❖ Crops	Growth Rate and Instability of India's Major Agricultural Commodities (%)				
	Average domestic prize 2000-01 to 2018-19	WPI 1990-91 to 2016-17	MSP 1990-91 to 2018-19	Average Imports 1900-91 to 2017-18	Average Exports 1900-91 to 2017-18
<b>Cereals</b>					
Rice	9.59 (40.11)	7.29 (50.82)	7.96 (60.21)	3.67	0.51
Wheat	5.47 (32.49)	7.42 (50.16)	7.57 (54.49)	0.51	2.94
Sorghum	10.12 (49.07)	9.09 (62.04)	8.28 (19.39) 2012-19	0.00	0.00
Maize	6.23 (39.60)	7.51 (53.64)	8.35 (63.12)	4.41	0.00
<b>Pulses</b>					
Gram	6.18 (51.06)	9.02 (64.54)	8.67 (69.73)	3.04	4.37
Arhar	4.67 (51.70)	8.21 (62.37)	9.22 (76.63)	1.58	1.06
Moong	6.03 (46.15)	8.57 (67.34)	10.03 (79.36)	0.00	0.00
<b>Oilseeds</b>					
Groundnut	6.94 (40.97)	6.66 (54.64)	7.91 (66.80)	0.00	2.09
Soybean	6.16 (41.97)	6.18 (54.79)	0.00 (63.77)	0.00	3.75
Sunflower	5.19 (34.42)	0.00 (111.42)	7.94 (65.79)	-7.06	7.11

### The role of MSP in improving farmers welfare and increase in area, production and reduce poverty and inflation

MSP is helping Indian farmers many multidimensional ways. This is not understood policy makers and multistake holders. To demonstrate the benefit of MSP support this paper is conceptualized.

The results of effects of Agricultural prices on area, production, poverty and inflation shown in Table 3. The proof of empirically and how MSP support the theory, research analysis results shown in annexure i to iii. The area and production increased by increasing MSP of arhar and moong, inflation would be slightly reduced by increasing MSP of rice and production of maize. Poverty reduced by increasing the production of cereals except sorghum, gram, and soybean. And the same can be reduced by reducing the production of sunflower. Poverty can be reduced by increasing the export price of sunflower and soybean. The key research finding is increasing MSP of cereals, pulses and oilseeds increasing area, production and productivity and reduce poverty and inflation. The major policy recommendation is that Government should continue and increase MSP of cereals, pulses

and oilseeds as they increase area, production and productivity and reduce poverty and inflation. The relationship between the production and MSP of agricultural commodities was positive and the same was shown in the Food Price Monitoring Analysis (2020). The findings are similar with the studies of FAO and OECD reporting that poverty would be reduced by increasing the prices of agricultural commodities. In case of relationship between poverty and production, the results are similar with the study of Phil Levy, 2019 (Table 3).

**Table 3.** Effects of Agricultural Prices on Area, Production, Poverty and Inflation.

Variables	Factors effect on area, production, poverty and inflation
Area	Area and Production increased by increasing MSP of arhar & moong
Production	Production increased by increasing MSP of rice, wheat, maize, arhar & moong

Inflation	Inflation would be slightly reduced by increasing MSP of rice and production of maize. Inflation would be slightly increased by increasing the production of gram Inflation would be slightly increased by reducing the MSP of groundnut
Poverty	Poverty can be reduced by increasing the production of cereals except sorghum, gram, and soybean. And the same can be reduced by reducing the production of sunflower. Poverty can be reduced by increasing the export price of sunflower and soybean.

## CONCLUSION

Globally, prices decide the fate of agriculture and farmers. India could successfully feed the rising population, despite its population getting multiplied. The main aim of agricultural policy in India is farmers' welfare. Agricultural prices play greater role in living economics. Life is economics for farmers whereas economics is life for profit makers. Global food production surpasses the food requirement. But the farmer's sustenance is questionable why? This is examined in developing countries in general and India in particular. The reason is being is that the paradoxical theory of Indian agriculture suffers plenty of production without farmers getting profitable prices.

The theory says that farmers cannot fight to get profitable prices against other strong stakeholder's consumers; government, middlemen, transnational corporations and WTO want lower prices. The theory says that the duality between what farmers want against to other powerful stakeholders want like, consumers, government, middlemen, MNC's, TNC's, crony capitalists and WTO then the farmer's survival is questionable? The proof of paradoxical theory of plenty production in Indian agriculture without receiving profitable prices during 1990-2019, shown with estimated growth rates of domestic prices, MSP, WPI, export and import prices. The results show that the growth rates of MSP of cereals, pulses and oilseeds growth rates except rice are more than domestic prices, WPI, export and import prices. The study conclude that Indian farmers are benefiting more MSP than market prices; domestic and international prices. MSP is helping Indian farmers many multidimensional ways. This is not understood policy makers and multistake holders. The key research finding is Increasing MSP of cereals, pulses and oilseed increasing area, production and productivity and reduces poverty and inflation. Major policy recommendation is that Government should continue and increase MSP of cereals, pulses and oilseed as they increase area, production and productivity and reduce poverty and inflation.

The study found that most of the crops domestic prices growth rates less than MSP. Hence, the cereals, pulses and oilseeds farmers are growing these crops based on MSP. But Indian MSP is very less compare to other countries such as USA, China, Australia Europe where the farmers will get MSP is world prices + 25% extra. Government must regulate

stakeholders particularly middlemen and crony capitalists; those want lower prizes to make more profits. They manipulate D and S and price bubble and price crash, formal economy, hoarding and black market. The theory says that farmers cannot fight and face against strong stakeholders. WTO trade facilitation principle is to protect consumers but not farmers. Government must support farmers by price supporting, price loss coverage, price insurance and other risk mitigation programs. Government also formulates programs to face agricultural commodities which have inelastic demand leading to lower world prices and lower export earnings for developing countries. The researchers, think tank organizations and policy makers need to do policy analysis of scientific, political, and professional analysis then frame policies.

## REFERENCES

1. Aksoy MA, Beghin JC (2004). Global agricultural trade and developing countries.
2. Aksoy MA, Isik-Dikmelik, A (2008). Are low food prices pro-poor? Net food buyers and sellers in low-income countries. *J Rural Ment. Health*, 32(2): 46-79.
3. Ashok Dalwai (2018). Farmers' welfare and income revolution: 1-22.
4. Cairney R (2020). "The politics of policy analysis". University of Stirling, Palgrave Pivot.
5. Chand R (2017). Doubling farmers' income: rationale, strategy, prospects and action plan. NITI Policy Paper No.1/2017.
6. Chaudhary MA, AA Qaisrani (2002). Trade instability, investment and economic growth in Pakistan, *Pakistan economic and social review*. 40(1): 57-73.
7. Chintapalli PT, Christopher S (2020). The value and cost of crop minimum support price: farmer and consumer welfare and implementation cost. *Management science*, forthcoming.
8. Dastagiri MB, Bhavnaga L (2019). The theory of agricultural price bubble and price crash in global economy. *Applied economics and finance*. 6(5): 168.
9. Dastagiri MB, Bhavnaga L (2019). "Planet agriculture: global commons natural resources, climate change, models and vision to feed hungry planet." *Global advanced research journal of agricultural science*, Nigeria. 8(10): 286-299.
10. Fan S, Chan-Kang C (2005). Is small beautiful? farm size, productivity, and poverty in Asian agriculture. *Agric Econ*. 32(s1): 135-146.
11. Food Price Monitoring Analysis (2020). "India raises minimum support prices for 2020 Kharif crops". Food and agricultural organization of the United Nations.
12. Glezakos Constantine (1973). Export instability and economic growth: a statistical verification. *Econ Dev Cult Change*. 21(4):670-78.
13. Hertel, Thomas W, Winters L, Alan (2006). Poverty

- and the WTO: Impacts of the doha development agenda. Washington, DC: World Bank and Palgrave Macmillan. © World Bank.
14. Ivanic M, Martin W (2008). Implications of higher global food prices for poverty in low-income countries. *Agric Econ.* 39(3): 405-416.
  15. Ivanic M, Martin W (2010). Poverty impacts of improved agricultural productivity: opportunities for genetically modified crops. *Ag Bio Forum.* 13(4).
  16. Jones S, Gibbon P (2011). Developing agricultural markets in Sub-Saharan Africa: organic cocoa in rural Uganda. *J Dev Stud.* 47(10):1595-1618.
  17. Kavita Bhadu, Praveen Bhardwaj, Nikki Bhardwaj, Neha Singh Kirar (2020). Role of pulses in doubling farmer's income: A review *J Pharmacogn Phytochem.* 9(4): 395-399.
  18. Kleemann L, Abdulai A, Buss M (2014). Certification and access to export markets: adoption and return on investment of organic-certified pineapple farming in Ghana. *World Dev.* 64: 79-92.
  19. Lowder SK, Skoet J, Singh S (2014). What do we really know about the number and distribution of farms and family farms in the world? ESA working papers. Food and agriculture organization of the United Nations. 14(2).
  20. Meemken EM (2020). Do smallholder farmers benefit from sustainability standards? A systematic review and meta-analysis. *Glob Food Secur.* 26,100373.
  21. Mir A Ferdowsi (2010). UNCTAD. United Nations conference on trade and development: 698-705.
  22. Phil Levy (2019). "Does trade reduce poverty? An analysis from our chief economist". Flexport.
  23. Satyanarayana V, Wilson WW, Johnson DD, Dooley FJ (1998). Impacts of trade and agricultural policies on the world malt and malting barley market. *Can J Agric Econ -Revue Canadienne D Agroeconomie.* 46(2): 127-147.
  24. The importance of agriculture. Farming portal. Agri News Net.
  25. Yuhui Qiao, Niels Halberg , Saminathan Vaheesan, Steffanie Scott (2015). Assessing the social and economic benefits of organic and fair trade tea production for small-scale farmers in Asia: a comparative case study of China and Sri Lanka. *Renew Agric Food Syst.* 31(3): 246-257.