

# 9.IMPROVE YIELD AND QUALITY OF SENILE ORCHARD WITH REJUVENATION AND NUTRIENT MANAGEMENT

**KIRAN S. JOTAVA**, *Department of Horticulture, College of Agriculture, Junagadh Agricultural University, Junagadh- Gujarat (India)*

## ABSTRACT

Day by day newer technologies are under implementation and become popular among the orchardists. Decades ago orchard establishment was made by varying spacing and different source of planting materials of either sexual or asexual methods. Due to the difference in source of planting material and short of application of nutrient of orchards leads to the senile or less productive. Poor management practices also brings orchards to the uneconomical zone. Overcrowding and encroachment of trees resulted in competition for nutrient absorption congestion, poor light penetration and act as good shelter house for insect-pests and disease attacks are obvious problems with older orchards, if trees are not rejuvenated. Timely rejuvenation is wise decision by orchardists which is necessary for the grower to make orchard productive. This must be followed by the balanced application of nutrients of either source. An application of organic, inorganic source of nutrients and bio fertilizers gave optimum growth, more flowering and yield with improved quality parameters like size, average weight of fruit, TSS and ascorbic acid etc. Integrated and balanced nutrient management leads to increasing the efficiency of all nutrients applied thus, decreasing the amounts of fertilizers used and finally obtaining a high yield with quality.

## KEY WORDS

Orchard, rejuvenation, organic, inorganic, biofertilizer, yield and quality.

## INTRODUCTION

Day by day newer technologies are under implementation and become popular among the orchardists. Decades ago orchard establishment was made by varying spacing and different source of planting materials of either sexual or asexual methods. Due to the difference in source of planting material and short of application of nutrient of orchards leads to the senile or less productive. Poor management practices also brings orchards to the uneconomical zone. The orchard establishment is a long term process and cannot be done in days but once the yield is reduced to such an extent that orcharding becomes non economical, the latest technology of rejuvenation is said to be essential for restoring the production potential of old unproductive orchards.

Overcrowding and encroachment of trees resulted in competition for nutrient absorption congestion, poor light penetration and act as good shelter house for insect-pests and disease attacks are obvious problems with older orchards, if trees are not rejuvenated. The internal bearing capacity of trees also decreases with time, due to overshadowing of internal

bearing wood (Singh et al., 2005). Timely rejuvenation is wise decision by orchardists which is necessary for the grower to make orchard productive. This must be followed by the balanced application of nutrients of either source. Integrated and balanced nutrient management leads to increasing the efficiency of all nutrients applied thus, decreasing the amounts of fertilizers used and finally obtaining a high yield with quality. The use of inorganic fertilizers along with bio fertilizers and organic manures, as a cheap source for supplying of available nutrient to plants, has resulted in beneficial effects on growth, yield and quality of fruit crops. During last few decades' sufficient research work related to various aspects like crop improvement, crop regulation and use of inorganic fertilizer etc. But impact of integrated nutrient management through inorganic, organic and bio fertilizer on rejuvenated orchard has been done in very limited extent.

## REVIEW OF LITERATURE

Effect of rejuvenation on growth yield and quality of fruits

**Shindeet al. (2002)** reported the effect of hard pruning (heading back up to secondary branches, heading back up to tertiary branches, thinning crowded branches) and paclobutrazol application on the rejuvenated mango cv. Alphonso. The highest flowering percentage was recorded for thinning crowded branches and centre opening with paclobutrazol application.

**Balet al. (2004)** observed that 30 year old ber tree (*Ziziphus mauritiana* Lamk.) headed back during second fortnight of May gave good response against double thinning i.e. during fourth week of August by retaining 12-18 shoot and second fortnight of September (before flowering) in respect of vegetative character (tree height and tree spread), fruit yield, fruit size and TSS content.

**Basuet al. (2007)** reported the

response of pruning on rejuvenation of old guava orchard cv. Sardar under West Bengal condition during 2003-2004. Eleven-year-old guava plants were pruned leaving only four scaffold branches per tree at monthly interval from March 2003 to July 2003. The height and spread of plant increased significantly after pruning as compared to control only rainy season crop was obtained one year after pruning and pruned plant flowered one month ahead of un pruned (control) plants. Time of pruning had significant effect on fruit set; fruit yield while physicochemical characters of mature fruit were found to be best when fruits obtained from plant pruned in April.

**Singh et al. (2007)** conducted an experiment on restoring yield and quality production from exhausted tree of guava cv. Allahabad Safeda and Sardar with eighteen-years-age severely pruned orchard for three consecutive years (2002-05) at Lucknow (U.P.). Topping, heading back and thinning generally increased the number of new shoot (below the cut portion) good growth of remaining shoots reduced tree height by 34 to 43 percent over the control trees without adversely affecting yield. Enhancement in yield, i.e. 82.39 kg plant<sup>-1</sup> in cv. Allahabad Safeda and 53.10 kg plant<sup>-1</sup> in Sardar as against unpruned trees were observed after first year of topping, heading and thinning. Further yield enhancement in the range of 104-112 kg plant<sup>-1</sup> and 74.90-79.20 kg plant<sup>-1</sup> over the control trees was recorded in cv. Allahabad Safeda and Sardar respectively after second year of pruning as a result of topping and heading back vegetative to reproductive balance begins to stabilize. The fruit produced from pruned tree had better quality as compared to control trees in both the varieties.

## **EFFECT OF ORGANIC SOURCES ON GROWTH, YIELD AND QUALITY OF FRUITS**

The application of sulphur coated urea had significantly increase fruit diameter, length and weight in guava cv. 'Sardar'. Similar beneficial effect on fruit weight due to application of 75 per cent RDF with 10 kg vermicompost was recorded by Athaniet al. (2005a) in guava.

Naik and Babu (2005) observed that fruit TSS was highest with animal manures (20 kg/tree) as compared to lowest at control in guava cv. 'Sardar'. Athaniet al. (2005b) found maximum TSS (10.83°B) in guava cv. 'Sardar' treated with 10 kg vermicompost + 75 per cent recommended dose of fertilizers followed by the treatments in situ vermiculture @ 50 worms per plant + 100 per cent recommended dose of fertilizer per plant. Madhavi et al. (2005) obtained highest TSS (8.2°B) by the application of 5 kg neemcake with 250 g N + 250 g P<sub>2</sub>O<sub>5</sub> + 250 g K<sub>2</sub>O per tree per year in three year old guava plants cv. 'L-49'.

## **EFFECT OF INORGANIC SOURCES ON GROWTH, YIELD AND QUALITY OF FRUIT**

Application of organic N either alone or in combination with the inorganic form was very effective in improving the growth, yield, leaf nutrient composition and berry quality of vines as compared to the complete application of N as an inorganic form. The increment was associated with increasing the amount of each organic manure. Organic N fertilizer alone was superior to inorganic one in this respect. Applying 75 or 100% of the N requirements for Roumi Red grape vine in an organic form was very useful in improving yield and fruit quality (Wasfy et al. 2006). Ahmad et al. (2009) reported that application of FYM and NPK fertilizers for improving yield and fruit quality of Psidium guajava cv. Larkana Surahi in winter crop. The maximum yield per plant (63.78 kg), single fruit weight

(193.52 g), pulp weight (190.04 g), fruit size (length x diameter = 9.74 x 7.63 cm), number of seeds (200.80/fruit) and TSS (11.35%) were obtained by guava plants when applied with 40 kg FYM + 1 kg each of N-P2O5-K2O per plant during August- September for winter season from 10-12 year old plants.

Integrated and balanced nutrient management leads to increasing the efficiency of all nutrients applied thus, decreasing the amounts of fertilizers used, and finally obtaining a high yield with good quality (Nofalet et al. 2009).

## **EFFECT OF BIO FERTILIZERS ON GROWTH, YIELD AND QUALITY OF FRUIT**

The highest number of fruits (195.2), fruit weight (170.5 g/fruits), total soluble solids (20.8%), beta-carotene (150- 900 g /100 g) and ascorbic acid (36 mg / 100 g) in mango cv. Amrapali with the application of FYM (50 kg) + vermicompost (16.5 kg) + Azotobacter (10 g) + PSB (10 g) / plant under New Delhi condition as reported by Patel et al. (2005).

Ram et al. (2005a) recorded maximum TSS (13.5°B) and ascorbic acid content (34 mg / 100 g), however, variation was found to be non-significant. Maximum reducing sugar (3.58%) as compared to minimum (2.285%) in untreated tree. The maximum acidity was recorded in fruits harvesting from Azospirillum, 10 kg FYM, 250 g N, 100 g P<sub>2</sub>O<sub>5</sub> and 250 g K<sub>2</sub>O and minimum (0.33%) in 100 g P<sub>2</sub>O<sub>5</sub> g, 250 g K<sub>2</sub>O and Azospirillum treated plants of guava cv. 'Sardar'.

Ram et al. (2005b) found maximum increase in number of fruits (985 per plant) and yield (135.45 kg/tree) in guava cv. 'Sardar' were recorded by application of 10 kg FYM, 250 g N, 100 g P<sub>2</sub>O<sub>5</sub>, 250 g K<sub>2</sub>O and Azotobacter treatment in guava cv. Allahabad Safeda over the control.

Sahoo and Singh (2005) reported that maximum values such as number of leaves (14.08), yield (242.30 g/plant)

ascorbic acid (52.80 mg/100 pulp), TSS (8.6°B) by the application of Azotobacter (6 kg/ha) in strawberry. Madhavi et al. (2005) recorded the higher vitamin C content 197 mg /100 g pulp in guava fruit cv. L-49 with the application of 25 g N + 100 g P<sub>2</sub>O<sub>5</sub> + 250 g K<sub>2</sub>O + 10 kg FYM + 250 g Azotobacter per tree per year treatment.

Umar et al. (2009) found the increasing the rates of organic manure up to 75 % + 25 % mineral N, the obtained results was improved particularly the yield, fruit quality and vegetative properties strawberry cv Chandler. The application of 25 per cent nitrogen through FYM augmented with Azotobacter and was at par with the plants supplied with cent per cent nitrogen in the form of urea in combination with Azotobacter. The fruit quality viz. total soluble solids, total sugars, ascorbic acid and anthocyanin content was highest in fruits obtained from plants supplied with 25 per cent nitrogen through FYM + 75 per cent nitrogen in the form of urea + Azotobacter recording 6.81 °Brix, 4.73 per cent, 73.71 mg / 100g fresh berries and 0.191 OD, respectively. Maximum yield of 372.89g per plant was obtained with the application of cent per cent nitrogen in the form of urea along with Azotobacter whereas 358.43g fruits per plant were recorded with the application of 25 per cent nitrogen in the form of FYM + 75 per cent through urea + Azotobacter and were at par with each other.

Effect of inorganic and organic fertilizer on leaf nutrient status

Ram et al. (2005b) reported the maximum content of leaf nitrogen (2.66%) and potassium (1.89 % ) were recorded in plants of guava cv. 'Allahabad Safeda' treated with 10 kg FYM + BD 500 followed by 5 kg vermicompost (2.59 %), while phosphorus was maximum with 500 g CPP (cow pat pit) and 5 kg FYM.

Naik and Babu (2005) reported that the leaf nitrogen content remains

same before and even after application of different treatments viz., one chemical fertilization treatment (NPK 250:350:200 g/tree), Vermicompost (10 kg/tree), FYM, pig, sheep, goat manure, poultry manure and guava leaf litter (each 20 kg/tree) in guava cv. 'Sardar'. They further observed the leaf P and K content showed an increase after the termination of trial due to various treatments except control. Kumar et al. (2005) found that the different levels of N, P and K fertilizers significantly influenced the leaf nutrient status of guava cv. 'Pant Prabhat' analysed during the months of June and January, with the maximum leaf nitrogen (2.16 and 1.71 %), potassium (1.23 and 0.87%) and phosphorus (0.135 and 0.118 %).

Naik and Babu (2005) observed highest acidity in guava cv. 'Sardar' under FYM (20 kg/plant) treatment which was closely followed by vermicompost. Acidity in freshly harvested guava fruit varies from 0.35 to 0.54 per cent. Maximum was recorded in fruits harvest from 10 kg FYM + 250 g N + 100 g P<sub>2</sub>O<sub>5</sub> + 250 g K<sub>2</sub>O and Azospirillum, while minimum value (0.33 %) in 100 g P<sub>2</sub>O<sub>5</sub>, 250 g K<sub>2</sub>O and Azospirillum treated plant (Ram et al. 2005a).

## CONCLUSION

The orchard establishment is a long term process and cannot be done in days but once the yield is reduced to such an extent that orcharding becomes non economical, the latest technology of rejuvenation is said to be essential for restoring the production potential of old unproductive orchards. Timely rejuvenation is necessary for the grower to make orchard productive. This must be followed by the balanced application of nutrients of either source. An application of organic, inorganic source of nutrients and bio fertilizers gave lucrative growth, more flowering and yield with improved quality parameters like size, average

weight of fruit, TSS and ascorbic acid etc. The sources includes application of chemical fertilization, vermicompost, FYM, pig, sheep, goat manure, poultry manure, neem cake, sunn hemp, guava leaf litter and in situ vermiculturing. It also includes application of Azospirillum and Azotobacter to the plant. Integrated and balanced nutrient management leads to increasing the efficiency of all nutrients applied thus, decreasing the amounts of fertilizers used and finally obtaining a high yield with quality.

## REFERENCES

1. Ahmad, M. B. M., Salik, M. R. and Awan, M. Z. 2009. Manure and fertilizers effect on yield and fruit quality of guava (*Psidium guajava* L.). *Journal of Agriculture Resources*, 3: 247- 251
2. Athani, S.I., Prabhuraj, H.S., Ustad, A.I., Swamy, G.S.K., Patil, P.B. and Kotikal, Y.K. 2005a. Effect of organic and inorganic fertilizers on vegetative growth parameters, fruit characters, quality and yield of 'Sardar' guava. 1st International Guava Symposium, Dec. 5-8, CISH, Lucknow pp. 70.
3. Athani, S.I., Ustad, A.I., Kotikal, Y.K., Prabhuraj, H.S. Swamy, G.S.K. and Patil, P.B. 2005b. Variation in growth parameters, fruit characters, quality and yield of 'Sardar' guava as influenced by vermicompost. 1st International Guava Symposium, Dec. 5-8, CISH, Lucknow pp. 71.
4. Bal, J.S., Randhawa, J.S. and Jagjit, S. 2004. Studies on the rejuvenation of old ber trees of different varieties. *Journal of Research, Punjab Agricultural University*, 41: 210-213.
5. Basu, J., Das, B., Sardar, S., Mandal, K.K., Bank, B.C., Kund, S., Hasan, M.A and Jha S.K. 2007. Studies on the response of pruning for rejuvenation of old guava orchard. *Acta Horticulture*, 735: 303-309
6. Kumar, P., Tiwari, J.P. and Lal, S. 2005. Effect of varying levels of N, P and K fertilization on plant growth, yield, and fruit quality and leaf nutrient status of guava (*Psidium guajava* L.) cv. 'Pant Prabhat'. 1st International Guava Symposium. Dec. 5-8, CISH, Lucknow pp. 80.
7. Madhavi, A., Prasad, M., Prabhakar Reddy, I. and Girwani, A. 2005. Integrated nutrient management for increased productivity and quality in guava. 1st International Guava Symposium, Dec. 5-8, CISH, Lucknow pp. 83.
8. Nofal, O.A. and Rezk, A.I. 2009. Role of fertilization in improving quality of some Agricultural crops. *International Journal of Academic Research*, 1: 59-65
9. Naik, M.H. and Babu, R.S.H. 2005. Feasibility of organic farming in guava. 1st International Guava Symposium, Dec., 5-8, CISH, Lucknow pp. 69.
10. Patel, V.B., Singh, S.K., Asrey, R. and Sharma, S.K. 2005. Response of organic manures and biofertilizer on growth, fruit yield and quality of mango cv. Amrapali under high-density orcharding. *Karnataka Journal of Horticulture*, 1: 51-56
11. Ram, R.A., Bharguvanshi, S.R. and Pathak, R.K. 2005a. Integrated plant nutrient management in guava (*Psidium guajava* L.) cv. 'Sardar'. 1st International Guava symposium, Dec. 5-8, CISH, Lucknow pp. 85.
12. Ram, R.A., Bharguvanshi, S.R., Garg, N. and Pathak, R.K. 2005b. Studies on organic production of guava (*Psidium guajava* L.) cv. 'Allahabad safeda'. 1st International Guava Symposium, Dec. 5-8, CISH, Lucknow pp. 69-70.
13. Sahoo, S.K. and Singh, D.B. 2005. Effect of different levels of biofertilizers on growth, yield and quality of strawberry (*Fragaria annanass* Duch.) cv. Sweet charley. *Orissa Journal of Horticulture*, 33: 82-85
14. Shinde, A.K., Waghmare, G.M., Godse, S.K. and Patil, B.P. 2002. Pruning for rejuvenation of overcrowded, old 'Alphonso' mango (*Mangifera indica*) gardens in Konkan, *Indian Journal of Agricultural Sciences*, 72: 90-92
15. Singh, G., Mishra, R. and Singh, G. P. 2005. Guava rejuvenation Extension Bulletin CISH, Lucknow. 28: 1-4.
16. Singh, G., Mishra, R., and Gupta, N. 2007. Modifying existing guava tree canopies for increased production efficiency. *Acta Horticulture*, 735: 243-248
17. Umar, I., Kumar, V., Ravi, W. and Jamwal, K.M. 2009. Effect of Farm yard manure, Urea and Azotobacter on growth, yield and quality of strawberry Cv. Chandler. *Not. Bot. Hort. Agrobot. Cluj (Notulae Botanicae Horti Agrobotanici Cluj-Napoca)* 37: 139-143
18. Wasfy, Al., Abd-El-Galil, M.M. and Masry, H.A. 2006. Effect of organic nitrogen Fertilization on growth, nutrient status and fruiting of Roumi Red grapevines. *Assiut Journal of Agricultural Sciences*, 37: 161

# 10. THE IMPACT OF THE NATIONAL LOCK DOWN ON MIGRANT WORKERS

**MRS.S.SARASWATHI**, Ph.D. *Research Scholar, PG and Research Department of Economics, Quaid-E-Millath Government College for Women (A), Chennai.*

**DR. J. MAHESWARI**, *Assistant Professor & Research Supervisor, PG and Research Department of Economics, Quaid-E-Millath Government College for Women (A), Chennai.*

## ABSTRACT

A migrant worker is a person who either migrates within their home country or outside it to pursue work. Migrant workers usually do not have the intention to stay permanently in the country or region in which they work. The International Labour Organization estimated in 2014 there were 232 million international migrants worldwide who were outside their home country for at least 12 months and approximately half of them were estimated to be economically active, i.e. being employed or seeking employment (Mainstreaming of Migration in Development Policy and Integrating Migration in the Post-2015 UN Development Agenda). In India about 120 million people or more are estimated to migrate from rural areas to urban labour markets, industries and farms. Migration has become essential for people from regions that face frequent shortages of rainfall or suffer floods, or where population densities are high in relation to land. Areas facing unresolved social or political conflicts also become prone to high out migration. Poverty, lack of local options and the availability of work elsewhere become the trigger and the pull for rural migration respectively.

During this after the their widespread of pandemic Covid-19 every one and especially migrant workers wish to go back to their home station because the workers think their lives are important than earning money for their livelihood. Beside the migrant workers were scared that COVID-19 would take a couple of more years to subside and the safest thing was to be at home. So many migrant workers expressed a fear of returning their native place. The purposes of this paper are to examine the problems and challenges faced by migrant workers while travelling to their hometown and the measures taken by Government of India to ensure their safety. The present study is based on primary data collected from the sample population who moved from Chennai district of Tamilnadu to their native rural areas. Structured Questionnaire was used for survey and information were collected with the sample respondents through telephonic conversation. Chi-Square test has been employed to identify the issues and challenges of migrant workers.

## KEYWORDS

Migrant workers, Government scheme, Frequency, Descriptive statistics, Chi-square test.

## INTRODUCTION

Migrant people often migrate from one place to another for livelihood improvement. Some of the reasons for the migration are population growth, political instability, civil wars, education, unemployment and marriage. So, people migrate to different places because of unemployment. Migrant workers thus suffer from overtime, isolation by society, low income, and lack of basic amenities. In some parts of India, three-fourths of the households are displaced. Labour laws for them are not properly enforced.

## MIGRATION WORKERS IN INDIA

Migrant workers constitute backbone of Indian economy as migration is a livelihood strategy of millions of people in India. Out of 482 million workers in India, about 194 million are permanent and semi-permanent migrant workers as per 2011 Census. In addition, there are about 15 million short-term migrant workers of temporary and circulatory nature. At the state level, in-migration rates are higher in high-income states such as Delhi, Goa, Haryana, Punjab, Maharashtra, Gujarat and Karnataka. Some of them are badly affected by the COVID-19 compared to low-income states such as Bihar, Uttar Pradesh, Jharkhand, Rajasthan and Odisha with relatively higher rates of out-migration. (4)

Indian migrant workers during the COVID-19 outbreak have faced multiple hardships. With factories and workplaces were shut down due to the lockdown imposed in the country, millions of migrant workers had to deal with the loss of income, food shortages and uncertainty about their future. Their families went hungry so thousands of them return their native place. Migrant workers majorly comprise of daily wage labourers working in the informal sector. They are mostly come from rural areas but live in cities for work for most of the year.

Objectives of the study

- To explore the challenges faced by migrant workers during their returning hometown
- To outline Government measures implemented to help migrant workers.

## METHODOLOGY OF THE STUDY

The study is based on primary data. The research has taken a random sample of 15 migrant people from Chennai district in Tamil Nadu. The primary data were collected from the sample respondents with the help of structured interview schedule through phone contact. The data is analysis by using Frequency, descriptive statistics and chi-square test. Data were processed and analysis were made using SPSS.

## HYPOTHESIS OF THE STUDY

To examine the stated objective the following objective has been framed:

$H_0$ : There is no association between level of education and awareness about measures implemented by Government for the welfare of migrant workers

$H_1$ : There is association between level of education and awareness about measures implemented by Government for the welfare of migrant workers

## ISSUES AND CHALLENGES OF MIGRANT WORKERS

### *Native place*

They are mostly come from rural areas but live in cities for work for most of the year. More people came from rural to urban for Employment.

**Table 1**

### *Native place*

Rural	Frequency	Percent
	15	100.0

Source: primary data

Table (1) showed that the 100 percent of the respondent came from rural areas.

## EMPLOYMENT AND EDUCATION

Migrant workers majorly comprise of daily wage labourers working in the construction and household workers, factories and others. The workers are respectively illiterate people. Many of them work in the informal sectors.

**Table 2**  
**Employment and Education**

Education	Frequency	Percent	Employment	Frequency	Percent
			Construction	6	40.0
Illiterate	7	46.7	Household Workers	3	20.0
Literate	3	20.0	Factories	2	13.3
Graduate	5	33.3	Others	4	26.7
Total	15	100.0	Total	15	100.0

Source: primary data

Source: primary data

The table (2) explore the majority of the migrant population is uneducated and they work mostly in informal sectors. Graduates work in other fields.

## ASSETS AND PLACE OF ASSETS

The study revealed that the prolonged lockdown has left most of them without any savings and forced many to take loans. The number of property holders is low. Their Immovable assets are in their hometowns. So those who affected during the lockdown they are returning home town.

**Table 3**  
**Assets and Place of assets**

Immovable Assets	Frequency	Percent	Place of assets	Frequency	Percent
			Urban	1	6.7
No	7	46.7	Rural	7	46.7
Yes	8	53.3	Missing	7	46.7
Total	15	100.0	Total	15	100.0

Source: primary data

Table (3) conclude frequency of property holder is low at 8 out of 15. Their frequency of Immovable assets is in hometown at 7 out of 8.

## REASON FOR TRAVELLING

Migrant workers faced some problem during lockdown. The migrant people most of them dealing with unemployment problems and people's fears. They faced assault and harassment from the people. So they ready to travel during the lockdown.

**Table 4**  
**Migrant problem**

Travelling Reason	Sum	Mean	Std. Deviation
Unemployment	12	.86	.363
Quarantine	5	.36	.497
People fear	11	.79	.426
Food and Accommodation	5	.36	.497

Source: primary data

The table (4) indicate sum of the respondent encountered at unemployment 12 members, quarantine 5 members, people fear 11 members and food and accommodation. Some respondent meet all problems mentioned in the table.

### REASON FOR MIGRANT

People migrate for a number of reasons. Some of the reasons for the migration are population growth, political instability, civil wars, education, unemployment and marriage. So people migrate to return home because of unemployment.

**Table 5**  
**Reason for Migration**

<b>Migrant reason</b>	<b>Frequency</b>	<b>Percent</b>
Safety	1	6.7
Lack of Employment	13	86.7
Others	1	6.7
Total	15	100.0

Source: primary data

Table (5) explain most migration occurs for employment. 86.7 percent of the respondent has been displaced for lack of employment. 13.4 percent respondent displace for other reasons.

### LACK OF TRANSPORTATION FACILITIES

Lockdown restrictions putting a stop to public transport, thousands of migrant workers were seen walking or bicycling hundreds of kilometres to go back to their native villages, some with their families. The quarantines and other containment measure which may drastically reduce public and private transportation services. Respondent's travel mode.

**Table 6**  
**Mode of Travel**

<b>Travel by</b>	<b>Frequency</b>	<b>Percent</b>
Walking	4	26.7
Bicycle	2	13.3
Public Transport	4	26.7
Private Transport	5	33.3
Total	15	100.0

Source: primary data

Table (6) explain during the lockdown, he returned to his hometown through at the walking (30Km), two-wheelers (50Km), public transport (150Km) (ex: bus, rain) and private vehicles (150Km) (ex: car, lorry, van). This table shows that people travel with through the native places by walking at the percentage of the respondent 26.7 percent, by bicycle 13.3 percent, by public transport 26.7 and private transport 33.3 percent.

### RATE OF UNEMPLOYMENT

Migrant workers say they just want to go home. Because the workers think our lives seem more important than money now. Beside the migrant workers were scared that during the corona virus lockdown would take a couple of more years to subside and the safest thing was to be at home. So many migrant workers expressed a fear of returning their native place. So in cites facing unemployment during the lockdown.

**Table 7**  
**Unemployment rate**

Month	Unemployment rate (%)		
	India	Urban	Rural
March 2020	8.75	9.41	8.44
April 2020	23.52	24.95	22.89
May 2020	23.48	25.79	22.48
Jun 2020	10.8	12.1	10.2

Source: CMIE Report for Unemployment Monthly Rate 2020

From the Table (7) shows the rate of unemployment during the lockdown period from March 2020 to Jun 2020. Unemployment rate high significantly to 23.48 per cent in May compared to 8.75 per cent in March. The unemployment rate is also high during the lockdown the urban from 9.41 percent in March to 25.79 percent in May and the rural area from 8.44 percent in March to 22.48 percent in May. Urban unemployment rate higher compare to rural. Unemployment rate fell significantly to 10.99 per cent in Jun compared to 23.48 per cent in May, showing signs of improvement in the job scenario in the country and return to the pre-lockdown period, the Centre for Monitoring Indian Economy (CMIE) data suggests. The unemployment rate in urban areas for the month stood at 12.01 per cent, while it was recorded at 10.2 per cent in rural areas.

### **STATUS OF EMPLOYMENT**

During the corona virus lockdown the migrant workers that going to their hometowns they could return to farming and take up small jobs. These situations create Overcrowding in agriculture. In other words it refers to a situation of employment with surplus manpower in which some workers have zero marginal productivity.

**Table 8**  
**Disguised Unemployment**

Descriptive Statistics			
	Sum	Mean	Std. Deviation
Agriculture	11	.73	.458
Animal husbandry	9	.60	.507
Factories	0	.00	.000
Companies	3	.20	.414
100 days work	2	.13	.352

Source: primary data

Table (8) explain after returning home town the people do work like agriculture, animal husbandry, factories, companies and 100 days work. Table view mean value for the migrant people most of them depend on agriculture at .73 percent and animal husbandry at .60 percent.

### **LOSS OF INCOME**

Low income workers in developing countries face a higher risk of income loss during the Covid-19. Migrant workers majorly comprise of daily wage labourers working in the manufacturing and construction industries. In the lockdown period the government not allow to work so no work and no money, beside in the period

worker loss their income. And decline in wages is unlikely for salaried. The income shock will negatively affect the food security and nutrition.

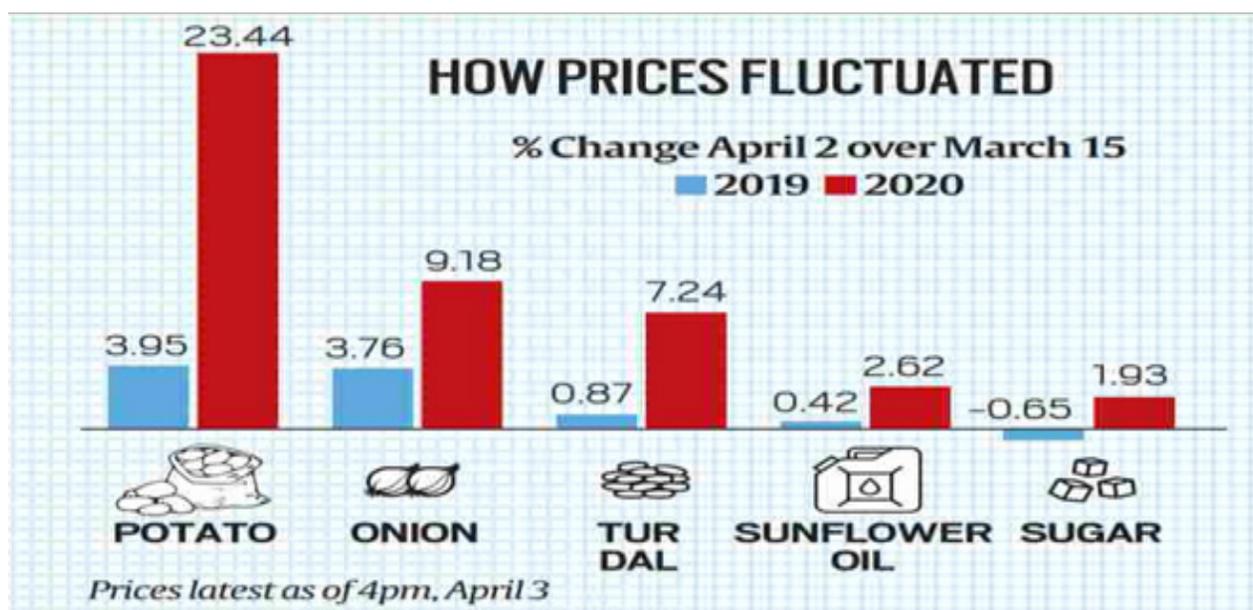
## POVERTY

Rural household tend to depend more on domestic remittances from urban migrants, economic shutdowns in urban areas will hurt the poor in rural areas. Lockdown has been created due to the spread of covid-19 in India. As a result, many people are forced into poverty, such as wage earners and low-income workers. The unemployment situation creates income shock. The income shock pushed more people

under poverty.

## CHANGE IN CONSUMPTION PATTERN

The consumption pattern has been affected and has shown a downfall due to fall income and lost jobs especially to the migrant workers. Supply chain is shock it create shortages of basic consumption goods and essentials (food, medicine). Shortage of basic consumption Increase at the same time price also rises. Food price rise and income fall historically poor household will fall back on the consumption of staples and reduce their consumption of meat, dairy and fruits and vegetables.



Source: The Indian express July-02-2020 (Wholesale price trends depend on movement of goods to consumption points.)

The Figure (1) explored the rise in prices of the essential commodities such as vegetables to purely supply-side issues, instead of production-linked problems. They also specifically pointed to the lack of transportation and labour to lift stocks from wholesale markets, leading to disruptions in the movement of stocks from production centres to the retail level, even as prices of certain commodities like edible oils have been impacted because of a slowdown in production due to factory closures and labour shortage.

## LACK OF SAVING

Migrant workers mostly depends on informal sector so no saving and lived in factory dormitories which were shut due to the lockdown.

**Table 9 - Saving**

Savings	Frequency	Percent
No	10	66.7
Yes	5	33.3

Source: primary data

Table (9) describe the saving aptitude is low for the migrant workers. The number of savers is very low. 5 members only save at 33.3 percent and other 10 members not save at 66.7 percent.

Uncertainty about their future Migrant workers who decided to stay back during the exodus faced assault from their neighbours, who accused them of being infected with COVID-19. They thus could not venture out to buy food, work, healthcare, nutrition, housing and sanitation. Migrant workers faced uncertainly future.

**EMPIRICAL ANALYSIS**

Those who are familiar with government programs on migration are graduated.

These are the beneficiaries. According to research, uneducated people are unaware of government programs.

**CHI SQUARE TEST FOR EDUCATIONAL AND KNOWLEDGE AT GOVERNMENT SCHEME OF THE RESPONDENTS**

The chi square test of analysis was carried out to know the association between education and the knowledge of government programs. Over all education is significantly associated with knowledge of government scheme. Significant level is at 0.05.

**Table 10**  
**Educational and awareness about the government scheme of the Respondents**

Education		Government Scheme		Pearson Chi-Square			
		No	Yes	Total	Value	df	Asymp. Sig. (2-sided)
Education	Illiterate	7	0	7	12.222 <sup>a</sup>	2	.002
	Literate	2	1	3			
	Graduate	0	5	5			

Source: primary data

H<sub>0</sub> sig value is 0.002 we reject the null hypothesis at 5 percent level of significance which means that we are confident of this result by 95 percent. So literacy has a significant and positive effect of knowledge about the government migrant scheme.

The table (10) show from this analysis, it is seen that the education knowledge was significant association with knowledge of government scheme and use of government scheme. The p value is less than 0.05.

**AVAILED AT GOVERNMENT SCHEME**

The government arranged transport, relief camps, labour laws and quarantine measures. To provide jobs and wages to workers, the average

daily wages under the MGNREGA, and further announced free food grains for the migrant workers. States also imposed strict measures for migrants to follow, either while leaving or after entering state borders and district boarders.

**Table 11**  
**Education and Availed at government scheme of the Respondents**

Availed government scheme	Sum	Mean	Standard Deviation
Relief camps	4	.27	.458
Transport arrangement	3	.20	.414
Labour laws	3	.20	.414
Quarantine Measure	6	.40	.507
Source: primary data			

The table (11) explain respondent follow this type of government policies after returning home town. In the sum of availed relief camps 4 members, transport arrangement 3 members, labour laws 3 members and quarantine measures 6 members.

To assess Government policies and program implemented to help migrant workers.

### **GOVERNMENT MEASURES**

By the central and state governments implemented various measures to help them and later arranged transport for them. Many migrant also died due to the lockdown, with reasons ranging from starvation, suicides, exhaustion, road and rail accidents, police brutality and denial of timely medical care.

### **DIRECTIVES**

- On 27 March the Home Minister ordered to ensure that migrant would not move the lockdown period.
- On 28 March National Disaster Fund (NDRF) for providing food and shelter to the migrant.
- On 29 March government orders landlord should not demand rent and employer should pay wages without deduction.
- The order regarding payment of wages was withdrawn in the guidelines for the lockdown extension issued on 17 May.
- On 16 May the government announced the National Migrant Information System (NMIS), an online database created by the National Disaster Management Authority (NDMA). The government planned to keep the workers updated by feeding their phone numbers in the system.

#### **Relief camps**

- Delhi government provided free food to 4 lakh people every day as of late march and 500 hunger relief centres. Provided food across the country in food camps run by the government and NGO's on april 5.

- On 12 April 37978 relief camps and 26225 food camps.
- The government of Kerala changed food and provided north Indian dishes, providing carom boards and recharge facilities for phones, as well as provide medical essential such as masks, sanitizers, and medicines.

### **TRANSPORT ARRANGEMENTS**

#### **Buses**

✓ On 28 May 91 lakh migrants had travelled back home in government arranged transport facilities.

✓ On 23 May 40 lakh migrants had travelled to their homes by buses.

#### **Shramik Special Trains**

✓ On 1 May the central government permitted the Indian Railways to launch "Shramik Special" trains for the migrant workers.

✓ On 3 May the Ministry of Home Affairs mildly reprimanded the state governments for hurriedly requesting for trains to transport migrants, stating that the trains were primarily mainly meant for those who were stranded due to the sudden lockdown and not the migrants.

✓ The central government then faced criticism from the opposition, with the Indian National Congress promising to sponsor the tickets of the migrants on 4 May.

✓ The government then announced that the railways would offer an 85% subsidy on the train fares, with the state governments funding the remaining 15%.

✓ 4277 Shramik Special trains had transported about 60 lakh people, as of 12 June.

### **RELIEF MEASURE**

✓ Most important measure On 13th Jun priministernarantramodilanchrs1000 crore employment scheme to provide income support to migrant workers who returned to their home states during the covid-19 lockdown.

✓ 3 April the central government had released 11092 crore to states and

UT s under the NDRF, to fund food and shelter arrangements for migrants.

√ To help provide jobs and wages to workers, the average daily wages under the MGNREGA were increased as of 1 April.

√ On 14 May Finance Minister Sitharaman Further announced free food grains for the migrant workers.

### **LABOUR LAWS**

√ The government of Uttar Pradesh, Madhya Pradesh and Gujarat sought to temporarily revise their labour laws in early May with the purpose attracting industries and investments.

√ Labour unions criticized this as being harmful to the migrant workers while giving more authority to the employers,

√ Ten of them then wrote to the ILO on 14 May regarding the same, to which the ILO responded by reassuring them that it had contacted Prime Minister Narendra Modi.

### **QUARANTINE MEASURES**

√ State government opened thousands of quarantine centers to houses them, with some states imposing mandatory institutional quarantine. States also imposed strict measures for migrants to follow, either while leaving or after entering states borders.

### **SUPREME COURT HEARING**

√ On 30 March the Supreme Court of India agreed to hear a petition on behalf of the migrant workers.

√ On 16 May the Supreme Court rejected a PIL to direct the District magistrates to identify and provide free relief and transport to the Migrant workers.

√ On 26 May the Supreme Court ordered the centre and states to provide free food, shelter and transport to stranded migrant workers.

### **STATE GOVERNMENT MEASURES**

√ The state government was among the first to launch measures against Covid-19. The state government had announced a 3,280 crore relief package on 24 March. It included financial support of 1000Rs to all ration card holders, free rice and other essential commodities in the wake of lockdown. It also provided registered street vendors, auto rickshaw drivers, Migrant labourers and construction workers in the state with similar provisions. It had also announced extension periods of three months to make loan and tax payments for all citizens, and one month to pay house rent for workers including migrants across the state. Currently, the government operates 311 relief camps and shelters for migrant workers.

√ Earlier it had allocated sum of 60crore from disaster relief fund to deal with the crisis. It had also taken steps to provide medicines for the two months to patients with hypertension, diabetes mellitus, HIV and TB while also monitoring pregnant women who are due within that time. The government had started screening passengers arriving at the airports in January. It had screened 2,10,538 passengers as of 1 April. As of 16, more than lakh passengers have been placed under quarantine.

√ The government has established helpline for public. It also released an app for officials to monitor people under home quarantine. The government has announced a compensation of 50 lakh to the families of those who die during Covid-19 duty.

√ On 31 March in the wake of ht nationwide lockdown, the government announced a one month rent freeze for student and workers, including migrant labourers. It also extended the time to make payments including loans and taxes by three months.

√ On 2 April, the government announced care package of 1000 and

monthly allowed ration of food supply for each household.

✓ On 13 April, the Coimbatore district administration made usage of face masks compulsory for all.

✓ On 26 April the state government enacted a new ordinance to punish who try to block burial of cremation under Tamil Nadu Public Health Act, 1939.

✓ The government agreed to allow flight operations from 25 May 2020. It limited incoming flights to Chennai International Airport to 25. Passengers showing symptoms will be subjected to tests to hospitals if found positive, while ones without symptoms or with symptoms shall undergo 14 day home quarantine. All passengers are stamped with quarantine seals.

## CONCLUSION

The covid-19 is spreading around the world and affecting people worldwide. Migrant workers should not be seen as a problem today. The study revealed that the government took more action for migrant people. The research has concluded those who are familiar with government programs on migration are graduated. These are the beneficiaries. According to research, uneducated people are unaware of government programs. So we need to find a solution to this. In particular, migration of human capital should be tailored to economic growth and poverty alleviation to support economic growth. The government should therefore make systematic plans to improve the living standards of migrant workers and increase economic growth.

## REFERENCES

1. Centre for Monitoring Indian Economy Report unemployment monthly rate (2020)
2. Fornaro, L and M Wolf (2020), "Covid-19 Coronavirus and Macroeconomic Policy: Some Analytical Notes", manuscript
3. Gali, J (2009), *Monetary Policy, Inflation, and the Business Cycle: An Introduction to the New Keynesian Framework*, Princeton University Press.

4. IIPS, "The COVID-19, Migration and Livelihood in India: Challenges and Strategies".

5. Jamwal, A., Bhatnagar, S., & Sharma, P. (2020). *Coronavirus Disease 2019 (COVID-19): Current*

6. *Journal of Vocational Behaviour* (2020), "Unemployment in the time of COVID-19 A research Agenda".

7. *Literature and Status in India*.

8. Lorenzoni, G (2009), "A theory of demand shocks," *American Economic Review* 99(5): 2050-84.

9. OECD (2020), "Flattening the Unemployment curve? Policies to Support Workers income and promote a speedy labour market recovery".

10. Shruti Agrawal, Anbesh Jamwal, Sumit Gupta (2020), "Effect of COVID-19 on the Indian Economy and Supply Chain", ResearchGate.

11. World Bank Group Flagship Report (2020), "Global Economic Prospects".

12. Wren-Lewis, S (2020) "The economic effects of a pandemic".