



# Are Remittances of Migrants from Rural Households Improving Investment in Agriculture: Empirical Evidences from Tamil Nadu State of India

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## Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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## ABSTRACT

A study was conducted in seven villages of Peddanayakenpalayam block of Salem district in Tamil Nadu to understand the impact of remittances of migrants on the Agricultural Well being of their families. The sample size consisted of 100 migrant farm families and the respondents were selected using proportionate random sampling method. A vast majority (87%) of respondents of this study replied that using the remittances of their migrant family members they could able to purchase cows, goats and chicks. Another conspicuous impact on agriculture due to remittances of migrant family members were purchase of new agriculture field/ land and laying of irrigation channels/pipe lines. Nearly three – fifth (59%) of respondents told that they brought un cultivated land to in cultivation

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using the remittances of their migrated family members. Type of family duration of migration and average pay per month had shown a positive significant contribution for impact of remittances of migrant family members on agricultural well-being at one Percent level of probability. Multiple regression analysis was resorted to find out the contribution of Independent variables on the dependent variable, Impact of Remittances on Agricultural Well-being of Migrant Households. Working Conditions was found to significantly contributing to impact of remittance of migrant family members on agricultural well-being at five Percent level of probability. Number of destination was found to have a negative significant contribution towards the impact of remittance on agricultural well-being at one Percent level of probability

*Keywords: Migrants remittances; impact on agricultural well being.*

## 1. INTRODUCTION

### 1.1 Rationale of the Study

Migration is an important adaptation mechanism in rural households to mitigate the economic crisis. Whenever the resource base is shrinking and there is crop failures due to biotic and abiotic stress to crops, the farmers in rural households tend to migrate to nearer cities or go to abroad in search of employment [1,2]. There is another side of the story which is interesting, that in some Agricultural families, in order to earn more which is not possible when they are residing in villages, the members of the those families resort to either domestic or overseas migration. Though, the income is enough to lead a modest life, the members of the family decide to migrate, the cause for which is social pressure rather than economical. In some villages of Tamil Nadu, one can find every family with a migrant. This has become a value for these villagers to send their family members to abroad to earn more and to them it serves more of prestige' rather than money. Predominantly they used to go to Singapore, Malaysia and middle East Countries in search of employment.

There are some empirical evidences that the remittances sent by the migrants to their families were being spent for various purposes. The evidences of remittances being spent on Agriculture is sporadic. Zhang et al [3] in their study found that land-use changes and rural migration caused by urbanization significantly affected the cultivation structure and its change trends: the proportion of food crops decreased, while the proportion of vegetables and orchards increased. Another study by Wenrong et al [4] emphasized the important role of return migrants in the agriculture modernization process. They can provide both financial and human capital to promote more specialized agricultural production.

This being so, there were several studies which contradicted the utilization of remittances for Agricultural purposes.

Redehegn et al [5] in their study in Ethiopia inferred that a rise in months spent out of agriculture has a significant negative effect on crop income and asset accumulation, but only for permanent migration. By contrast, the influx of remitted income from migrants has led to increased crop income and asset values in the form of land and livestock holdings. The impact of remittance investment can be seen clearly in rural areas, especially in agricultural areas where the remittance becomes capital of investment. The capital flow of remittance can increase investment by giving credits and or reducing credit costs. In areas where the credit markets are minimal, remittance becomes an alternative to substitute the credit role [6]. The results of the study in Gambia confirmed that migration and remittances have significant positive impact on employment in agriculture because new investment in agriculture created new skilled and unskilled employment [7].

Balde(2010) has argued that migration has neither led to agricultural abandonment nor have remittances been dedicated to agricultural improvement in Ecuador. McCarthy et al., [8] found that international migration does not strengthen household agricultural production but instead facilitates the transition away from agriculture. Bhadra [9] found that remittances had impacted social status of the families of migrants by improving the life style, giving the opportunity to send children to standard educational institutions and helping them to explore new income generating activities. Shylaja [10] examined the impact of labour migration on the socio-economic and demographic characteristics of the people in Kerala. The study was based on primary data collected from both rural and urban areas of Thiruvananthapuram, Pathanamthitta

and Malappuram. She found that emigration had a very significant role in the change of large families to small families. Moreover, the study also found that emigrant households had maintained better hygienic and sanitary conditions, higher standard of living, and also acquired more assets on account of the inflow of remittances.

Gagan et al [11] revealed that majority of respondents 28.6 percent spent remittance for consumption. Another large part was used for marriages, especially towards the payment of dowry. Repayment of old debts accounted for 16.8 percent of the remittance and construction of homes and repairs (16.6%) only 10.3 percent of the remittance had been invested in productive purpose including purchase of land, in business, education, and savings, acquiring assets other than land and in farm activities. Verma et al. [12] revealed that 94.56 percent respondent migrants families spend money for daily consumption needs, 38.10 percent respondent used remittance for repayment of loans taken from landlords and or money-lenders, followed by 30.95% respondent purchase of domestic articles and 19.05 percent were used for house repair/construction while only 4.08 % incurred expenditure out of remittance for the marriage of their children.

Chandan [13] studied Remittance and sustainable livelihoods in Semi- Arid areas and found that around 45 percent of households used the remittance to clear the debts followed by 42 percent of the migrants spent their earnings on health both at the destination and at the origin and 39 percent of household spend money to household consumption and 37 percent of households invested in agricultural maintenance and only 12 % of migrants their invested in house construction. Gunjan and Reddy (2015) reported that none of the migrant households made any attempt to create productive assets on the farm through remittances, though they spent some amount for hiring labour and for purchasing material inputs and cattle feed. In migrant member households a larger percentage of land was kept fallow and the number of livestock was also lower. The magnitude of workload of farm women was more in the case of migrant member households than in non-migrant households due to additional burden of non-households and non-farm works in the absence of male members.

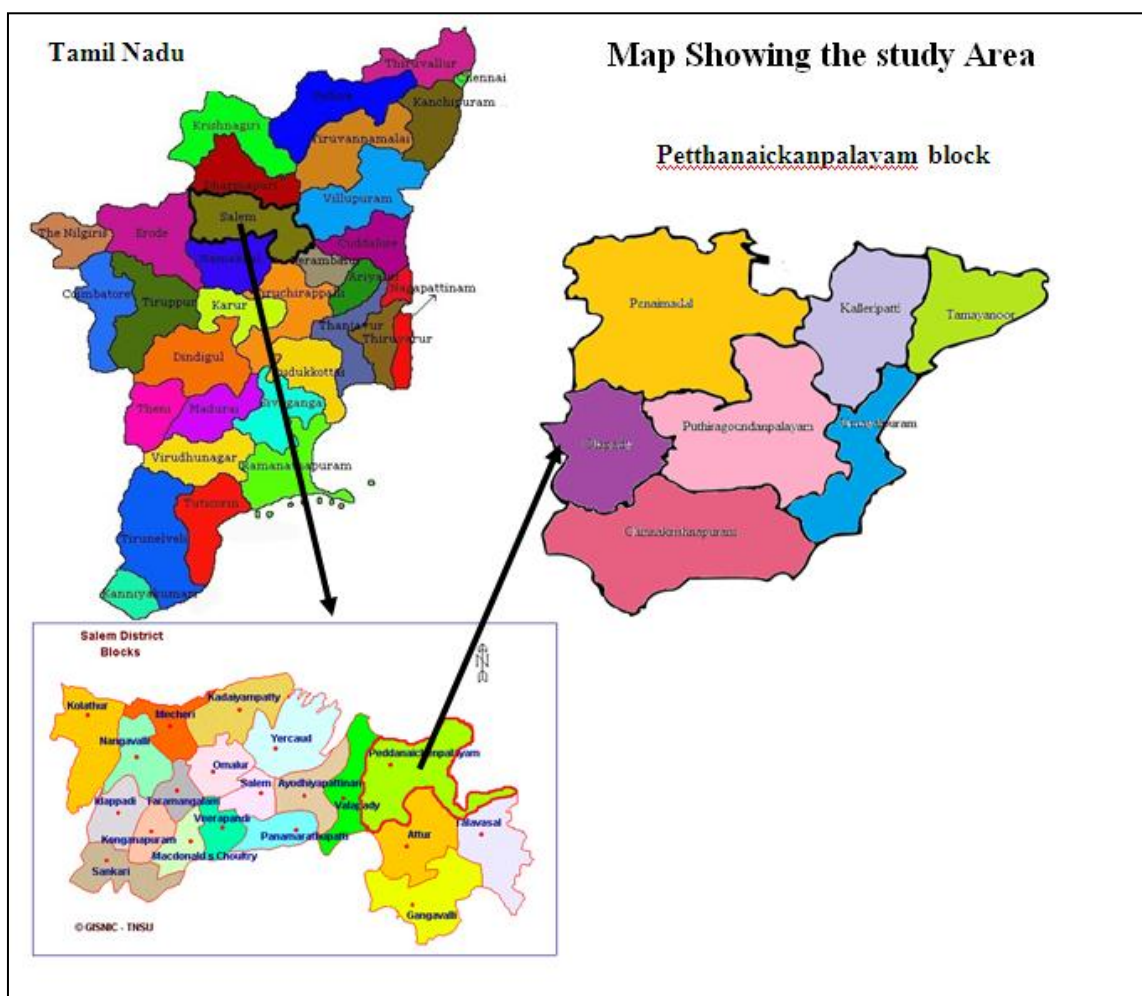
Notwithstanding the fact that sporadic studies have been attempted to study the impact of remittances on the livelihood of migrant households, very few studies with major emphasis on impact of remittances on Agricultural activities of Migrant households could be traced. Hence this study has been contemplated with the twin objective of studying the impact of remittances of migrant members on the Agricultural Well-being of farm families and the influence of characteristics of migrants on the Impact of remittances

## 2. RESEARCH METHODOLOGY

Salem district in Tamil Nadu is a potential district for agricultural operations and it is known for hard working farmers who are very much attached with farming despite facing lot of hardship in agriculture. Pethanayakanpalayam block in Salem District is an agriculturally rich block and in recent past, the farming families witnessed migration of one or two members to abroad or domestic migration. Hence, this study has been taken up in this block of the district.

Ex post-facto research designs was used in this study. Goode and Hatt (1965) explained that ex post-facto research proceeds from the past to the present rather than being oriented towards the future, and the researcher can control the crucial variables only by selecting one, which has already been recorded. Since the present investigation was on impact of remittances of migrants of farm families which has already occur and the researcher had no control over the variables, tried to find out the impact in farm families and its relationship with relevant personal, socio economic, psychological and other variables, the selection of ex post-facto research design is justified.

Multi stage sampling was followed to select district, Block and villages. Among twenty blocks in Salem District, Pethanaikanpalayam block was selected due to highest number of Migrant households in the block. Among the 36 revenue villages in Peddanaickenpalayam block 7 villages namely Puthiragoun danpalayam, Olapady, Chinnakrishna puram, Tamayanoor, Umayalpuram, Kalleripatti and Panaimadal were selected based on the total number of migrants from farm families were found to be on the higher side in these 7 villages than other villages.



**Fig. 1. Map Showing the study Area**

Out - Migrants from the agricultural families were the respondents for the study. A complete list of out – migrants of farm families was prepared for all the selected 7 villages with the help of data collected from VAO office of respective villages. A total number of 100 respondents were selected for this study for meaningful analysis and interpretation of the results. The number of respondents from each of the selected villages was fixed based on the proportionate random sampling method by using the following formulae.

$$n_i = N_i \times n/N$$

Where,  $n_i$  = Number of migrants from farm families to be selected from the  $i^{th}$  village

$N_i$  = Number of migrants in the  $i^{th}$  village

$N$  = Total number of migrants in all the 7 villages

$n$  = Total number of migrants to be selected from the 7 villages

Having selected 100 farm families as detailed above, next important task is to identify respondents in selected farm families. The first option was to interview the Migrant in farm families if they were available at the time of data collection. If they were not available next option was to collect data from the head of the family. In the case of absence of head of the family during the interview the final option was to collect data from other family members. The respondents in the farm families were selected in the order of migrant family members or head of the family or other family members. Accordingly the researcher interviewed 90 head of the family, 8 migrant family members and 2 other family members for this study.

Thirteen indicators or items were identified to study the impact of agriculture well-being. These indicators were measured in dichotomous manner wherein a score of 2 and 1 were given

on Yes & No responses. Percentage was calculated cumulating 'Yes' responses for the selected variable. Qualitative data for each of the impact indicators was also collected and interpreted in findings & discussion section. Percentage was worked out for each of the impact indicator related to agriculture well-being. Data was collected using a well structured pre tested interview schedule.

In order to find out the contribution of the selected characteristics of migrants and their family towards the Impact of remittances on the Agricultural well –being of the families Multiple Regression analysis was carried out. Sixteen Independent variables or predictor variables have been selected and the Impact of Remittances on the Agricultural Well-being was taken as dependent variable. The selected independent variables were hypothesized to predict the Impact of remittances on Agricultural well being. The following is the general form of prediction equation.

$$Y = a + b_1x_1 + b_2x_2 + b_3 x_3 + \dots + b_nx_n$$

Where,

Y = Expected value of dependant variable

a = Intercept

x<sub>1</sub> to x<sub>n</sub> are independent variables

b<sub>1</sub> to b<sub>n</sub> are the partial regression correlation coefficients

The prediction equation was fit and discussed in the subsequent section

### 3. RESULTS AND DISCUSSION

The data collected through the interview schedule was scored, analysed, tabulated and interpreted. There are two sections which are to be discussed. One is the indicators which are used for interpreting the impact of remittances of migrant members on the agricultural well being of farm families and another one is the contribution of selected independent variables towards the impact of migrant family members on the Agricultural well – being of farm families

#### 3.1 Impact of Remittances of Migrant Members on the Agriculture Well-being of farm Families

The important dimension of this present investigation was to analyze the impact of remittances of migrant family members on the agriculture well – being of the farm families. This

was studied in various dimension namely purchase of new agriculture land, improvement of agriculture land, improvement of irrigation structure , purchase of agriculture machineries, change in cropping pattern, agro input usage and agriculture operations etc. The data was collected and presented in Table 1.

The Table 1 clearly indicated that the predominant impact in agricultural and allied activities was increase in income from livestock. A vast majority (87%) of respondents of this study replied that using the remittances of their migrant family members they could able to purchase cows, goats and chicks. The higher mean value of 1.87 and significant Mc Nemer value of 86.01 indicated that a significant change had happened in the income from livestock due to the remittances of migrant family members. The researcher came to know that four farm families in P.G.Palayam village, three farm families in Thamayanur village, four farm families in Panaimadal village, and two farm families in Kalleripatti village were successfully operating poultry units which were started with the seed money received from the remittances of their migrant family members.

In almost all the farm families the researcher was able to see cattle. The farm families used to rear breeds like Jersey, Sindhi and they could able to earn impressively from cattle. Apart from selling milk they could use cow dung as manure. The respondents told that they could earn consistent income from livestock rather than agriculture. Goat was found to be another important livestock component from which the farm families could earn appreciably Jamunaparry breed was found to be grown by 40 Percent of the respondents Mr.Jayakumar, whom the researcher met at P.G.Palayam village, was able to grow several breeds of goat and used to take them for exhibition. He maintained integrated farming also in was field.

A striking finding from table 1, was that two – third (77%) of respondents of this study told that the contact with agriculture department /agricultural research station /kvk got increased after intensifying the agriculture activities through the remittances amount received from their migrant family members. Many respondents told the researcher that the Tapioca & Castor research station of Tamil Nadu Agriculture University (TNAU) situated in Yethapur which is adjacent to the study area was very much helpful for them to get the seeds, agro inputs like

coconut tonic, castor oil etc. The higher mean value of 1.77 with significant Mc Nemer chi square value of 76.13 revealed that the remittance of migrants of farm families did have an impeccable impact towards contact with agriculture department/KVK.

Another conspicuous impact on agriculture due to remittances of migrant family members were purchase of new agriculture field/ land and laying of irrigation channels/pipe lines. These two indicators were endorsed by nearly three – fourth (73%) of respondents each respectively. The researcher was told by majority of respondents in farm families that they used to try purchasing

adjacent agriculture field and lands elsewhere in this district from the money received from their family members who migrated. One relevant observation of the researcher was that the social prestige attached with the purchase of new agriculture field/land. The farmers in this study area were respected by their peer group/relatives/villagers based on the number of acres of land possessed by him. Further using the records of land the respondents used to get agricultural lands also. Some respondents told that they would look after the agricultural activities in new land purchase and some other told they would give the land for less for 1 or 2 years.

**Table 1. Impact of remittances of migrant members on the agriculture well-being of farm families n = 100**

S.No	Particulars	Frequency	Percent	Mean	Std. Deviation	McNemar Test value
1	Purchase of new agriculture field / Land	73	73.0	1.7374	.44230	72.014**
2	Bring Un cultivated land into cultivation	59	59.0	1.5960	.49320	57.017**
3	Application of FYM / Organic inputs to the land	60	60.0	1.6061	.49111	58.017**
4	Digging wells / Bore wells	45	45.0	1.4545	.50046	43.022**
5	Micro irrigation – Drip / Sprinkler / Raingun	48	48.0	1.4848	.50231	46.021**
6	Irrigation channels / Pipelines	73	73.0	1.7374	.44230	71.014**
7	Cropping Pattern	4	4.0	1.0404	.19791	-
8	Adopt new technologies / Varieties	10	10.0	1.1010	.30288	-
9	Weeding	4	4.0	1.0404	.19791	-
10	Use of Chemicals	29	29.0	1.2929	.45742	27.034**
11	Improved crop protection practices	4	4.0	1.0404	.19791	-
12	Employ more number of labours	35	35.0	1.3535	.48050	33.029**
13	Purchase of Tractor	12	12.0	1.1212	.32803	-
14	Purchase of intercultural implements	12	12.0	1.1212	.32803	-
15	Income from livestock	87	87.0	1.8788	.32803	86.011**
16	Training in Agricultural related Programs	37	37.0	1.3737	.48626	36.026**
17	Contact with Agricultural department / KVK	77	77.0	1.7778	.41786	76.013**
18	Crop Insurance	38	38.0	1.3838	.48879	36.026**
19	Others (Fencing/laying approach roads to field)	29	29.0	1.2929	.45742	27.034**

Yet another agricultural impact was the laying down of irrigation channels/pipe lines. Previously the respondents used to irrigate their land through earthen channels wherein they experienced considerable loss of water. The frequent failure of season and climate change phenomena has necessitated the respondents to save the water. Hence using the money sent by their migrant family members, they went for laying down pipe lines throughout the field with high quality thick PVC pipes. The researcher could observe such pipes in many of the respondent's field. The high mean value of 1.73 for both of these agricultural indicators namely purchase of new agriculture field and laying down irrigation pipe line with highly significant Mc Nemer chi square value indicated that the remittances of migrant family members did have an indelible impact on these two indicator.

Nearly three – fifth (59%) of respondents told that they brought un cultivated land to in cultivation using the remittances of their migrated family members. The researcher was told that the respondents of this study used to bring the uncultivable lands near to the field to cultivation. They used to get those uncultivated land for

lease and in course of time, owned the lands. This was the case with many respondents. Previously they did not find credit to cultivate entire land owned by them. After the remittances received from their migrant family members they could able to cultivate the entire piece of land owned by them. The McNemar chi square value of 57.01 showed that a considerable change was effected in bringing uncultivated land to in cultivation using the amount received from migrant family members.

Exactly three – fifth (60%) of respondents told that they could able to apply FYM/organic inputs to the land as a result of purchasing more number of cattle, goats, which increase the availability of FYM/organic inputs. It was reported earlier that more number of livestock were purchased by the respondents using the remittances of migrant family members. This finding in a healthy trend since application of FYM/organic inputs improves soil fertility, immensely, which according to several studies were found to be low among the farmers. The respondents of this study contrary to the findings of many studies found to apply FYM in their lands.

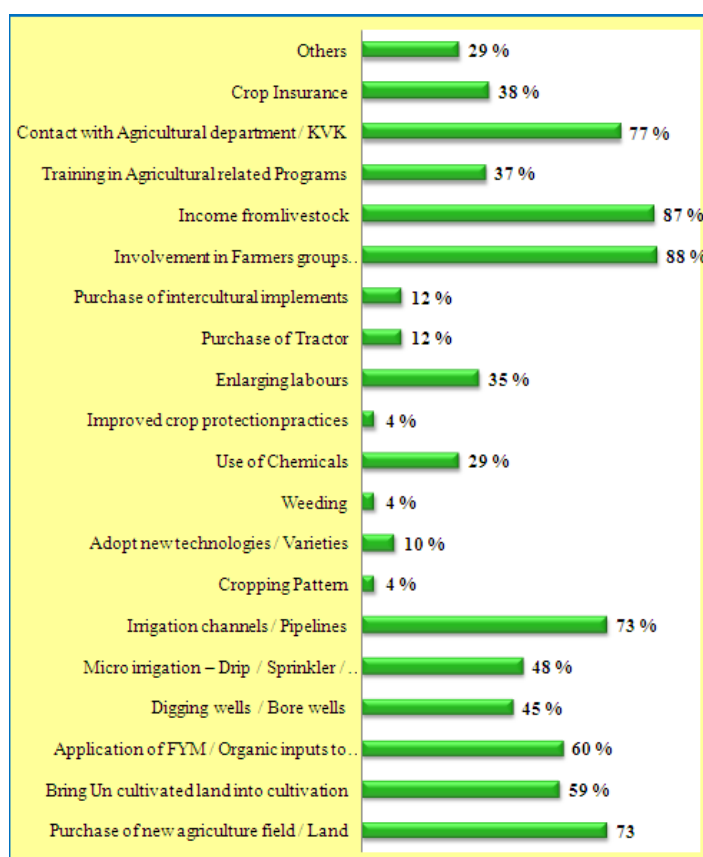


Fig. 2. Impact of Remittances on Agricultural well being of Migrant Households

The higher significant mean value of 1.60 and significant McNemar chi square value of 58.01 indicated the existence of significant change in the use of FYM/organic component using the remittances of migrant family members.

Another important observation from table 1 was the improvement of irrigation infrastructure using the remittances of migrant family members. Nearly 50 Percent of respondents told that they spend for digging bore wells (45%). Deepening of open wells and bore wells was common in this study area. Previously the respondents used to get irrigation water from neighboring farmers. After sending family members out for earning, they could able to deepen their own well/bore wells.

Out of hundred respondents forty eight were found to adopt drip either in coconut/banana /vegetables (brinjal fields). In one of the field, the researcher has seen rain gun used for younger coconut gardens of 1 to 2 yrs. This was a perceptible change observed in study area which was possible through the amount sent by the migrant family members from their destination. The highly significant McNemar value of 43.02 and 46.02 for these two indicators related to irrigation infrastructure substantiated the significant change created through remittance of migrant family members.

It is observed from table 1 that nearly two – fifth (38%) of respondents were found to remit for crop insurance. Previously they neither knew about crop insurance nor possessed money to remit the premium for crop insurance. After getting settled financially through remittance of their migrant family members the respondents could able to remit for crop insurance or willing to pay for crop insurance. Though a considerable number of respondents of the study area did have awareness about crop insurance, a major population of farmers in this study area were not aware of this. Hence intensive awareness program about crop insurance are to be organized by the agricultural department.

Nearly two – fifth (37%) of respondents were also told that they had involved in training agriculture related program after bringing more area under cultivation through remittances of their migrant family members. Many respondents told that they received training of other dimension from Tapioca & Castor research station Yethapur located in the study area. The highly significant McNemar value of 36.02 for crop insurance and training in agriculture related programs showed

significant change in these two aspects after the respondents got to receive remittance from migrant family members of farm families. The usage of quantity of agro chemicals was found to be increased as the result of remittance of migrant members of farm families which was endorsed by twenty nine out of hundred respondents of this study. The McNemar chi square value was significant change in the use of agro chemicals. The respondents could not purchase agrochemicals previously due to escalating prices and after migration of some of their family members they could able to purchase agro chemicals like pesticides, herbicides, weedicides etc. from the amount sent by migrant family members.

Another twenty nine respondents of the study told that they used the remittance of migrant family members for fencing and laying approach road to the fields. They felt proper fencing could save crops for trespassing of human and animals. They also used to spend a portion of remittance for laying approach road to the fields. The McNemar chi square value was significant which indicator a significant change in fencing/laying approach road to the fields through remittances of migrant family members. Twelve each out of hundred respondents replied that they purchase tractor and intercultural implements from the remittances received from migrant family members. Through the number of owners of tractors was small it is appreciable given the sample size i.e. twelve out of hundred. The respondents who owned the tractor told when tractor is free they used to rent it out for other farmers.

Apart from tractors, the respondents purchased rotovator, sprayers, weeders and other intercultural implements. Ten out of hundred respondents told that they went for adoption for new technologies/varieties after having received remittances from migrant family members for purchasing of costly agro inputs. Typically the respondents of the study went for hybrid tomato, brinjal and other vegetables. They went for the varieties suvarna, suguna, co-1 in turmeric. They told the change was attributed to the remittance from migrant family members. A majority of respondents told the non-adoption of technology due to poor performance of technology /variety and they did not want to incur loss by changing their agriculture practice.

A negligible (4%) number of respondents of this study told that the changed the cropping pattern as they knew repeated cultivation of a single crop



will give low yield. Further they told this change was possible due to remittances from migrant family member. This finding reveals that their existed huge scope for improving the adoption of changing crops for cropping pattern. Four each out of hundred respondents told that they went for improved crop protection practices & increasing the number of weeding respectively. These four respondents were found to be big farmers who could afford the increased number of weeding, using labours and frequent spraying of crops to avoid pest damage.

### 3.2 Contribution of Selected Independent Variables towards the Impact of Migrant Family Members on the Agricultural well – being of farm Families

To find out relative contribution of each variable towards the impact of remittances of migrant family member on agricultural well-being of respondents, multiple regression was carried out and the results are presented in Table 2. Only 16 variables were selected based on their relative relevance to impact on agricultural well-being compared to other variables.

Results indicated that the R<sup>2</sup> value was 0.684 which revealed that 68.40 Percent variation in

impact of remittances of migrant family members on agricultural well-being was explained by selected 16 variables. The 'F' value showed that the analysis was significant at one Percent level of probability. Therefore the prediction equation was fitted for impact of remittances of migrant family members on agricultural well-being of farm families was given below.

$$Y_1 = 10.812 + 0.232 X_1 + 2.196^{**} X_2 + 0.033 X_3 + 0.778 X_4 + 0.264 - 0.145 X_5 + 0.026 X_6 + 0.570 X_7 + 1.095 X_8 - 1.355 X_9 - 0.283 X_{10} + 1.137^{**} X_{11} - 0.150 X_{12} + 1.341^{**} X_{13} + 2.333^{**} X_{14} - 0.025 X_{15} + 0.798 X_{16}$$

Among the variables selected, variable namely type family (X<sub>2</sub>), duration of migration (X<sub>11</sub>) and average pay per month (X<sub>13</sub>) had shown a positive significant contribution for impact of remittances of migrant family members on agricultural well-being at one Percent level of probability. Working Conditions (X<sub>14</sub>) was found to significantly contributing to impact of remittance of migrant family members on agricultural well-being at five Percent level of probability. Number of destination (X<sub>9</sub>) was found to have a negative significant contribution towards the impact of remittance on agricultural well-being at one Percent level of probability.

**Table 2. Contribution of Independent variables towards Impact of remittances on Agricultural Well being**

Variable No	Variables	Partial Regression Coefficient	Standard Error	't' value
X <sub>1</sub>	Number of family members	.232	.594	.391
X <sub>2</sub>	Type of family	2.196	.993	2.211**
X <sub>3</sub>	Educational status	.033	.069	.485
X <sub>4</sub>	Total area	.778	.450	1.731
X <sub>5</sub>	Possession of communication gadgets	-.145	.310	-.467
X <sub>6</sub>	Possession of livestock	.026	.032	.801
X <sub>7</sub>	Possession of agriculture machinery/implements	.570	.445	1.280
X <sub>8</sub>	Social network details	1.095	.661	1.657
X <sub>9</sub>	No of destination	-1.355	.667	-2.030*
X <sub>10</sub>	Nature of migration	-.283	.500	-.567
X <sub>11</sub>	Duration of migration	1.137	.392	2.900**
X <sub>12</sub>	Type of work	-.150	.165	-.913
X <sub>13</sub>	Average pay per month	1.341	.548	2.446**
X <sub>14</sub>	Working condition	2.333	1.074	2.173*
X <sub>15</sub>	Stay arrangements	-.025	1.306	-.019
X <sub>16</sub>	Frequency of remittances	.798	.443	1.803

R<sup>2</sup> = 0.684; F value = 8.925\*\*; \*\*Significant at one percent level of probability; \* Significant at Five percent level of probability

The strength of contribution of these variables could be explained as one unit increase *certeris paribus* in type family, duration of migration, average pay per month and satisfaction towards working condition would bring an increase of 2.196, 1.137, 1.341 and 2.333 units in impact of remittances on agricultural well-being respectively. Similarly one unit increase *certeris paribus* in number of destination would bring a decrease of 1.355 units in impact of remittance of migrant family members on agricultural well-being.

The type of family often influenced the decision making related to migration. Most of the selected farm families were nuclear in nature which aids in concentration of family members to get a job either in abroad or in domestic locations. If the numbers of family members are more it would be tough to concentrate on migration related issues. Thus the contribution of type of family towards on impact of agricultural well-being is justified.

Average pay per month is an important indicator of agricultural well-being. Average pay per month obviously improved the remittances and in turn impact due to remittances on agricultural well-being. More average pay per month facilitate more investment in agriculture thus the positive contribution of average pay per month and impact of remittance on agricultural well-being is justified.

Duration of migration and satisfaction towards working condition did influence the remittance. More the duration of migration and more satisfaction towards working condition automatically improved the amount of remittances and thus the impact of remittances on agricultural well-being. Frequent change of destination resulted in irregular payment of remittances and finally influenced the impact of remittances. More number of destinations lesser will be the impact of remittance on agricultural well-being. Thus the negative and significant contribution of number of destination and agricultural well-being is justified.

#### 4. CONCLUSION AND RECOMMENDATIONS

- Most of the respondents told that they improved the irrigation infrastructure out of remittances. The Department of Horticulture and Agricultural Engineering departments should further capitalize on this positive orientation of farmers towards

irrigation infrastructure. They should widen the scope of Micro irrigation in the study area through National Horticultural Mission (NHM), NADP and other state and centrally sponsored schemes.

- Similarly, the Impact of remittance on crop insurance and training on Agricultural technologies were found to be low among the member of farm families. Hence, the Extension workers should organize more awareness campaigns about crop insurance and more number of trainings are to be organized in the study area
- Though the members of farm families had a positive orientation towards Tapioca and Castor Research Station, Yethapur and KrishiVigyan Kendra, Sandhiyur both located in the study area, there was a gap in adoption of improved cropping pattern and improved crop protection technologies. Hence, the scientists in KVK and Scientists in research stations should concentrate on transfer of such technologies to the farm families in the study area.
- The findings related to impact of remittances of migrant family members on agricultural well-being indicated that there existed perceptible and remarkable change in most of the indicators pertaining to the above domains was observed. Hence, exclusive programmes targeting the "Agricultural Families with Migrants" may be seriously thought of. Such a programme would improve further the agricultural well-being of the farmers which will help improve GDP due to agriculture in the district.

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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