

# A Comparative Analysis Between Organic and Inorganic Farming: ‘Study on Some Selected Villages of Ranchi District, Jharkhand’

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**Abstract-** *Livelihood is the most powerful term which's systematic application & strategic planning can solve major problems like poverty, hunger, health issues etc. Considering the perspective of Jharkhand agriculture is the major sources of income. Now-a-days all over the world is rethinking about organic farming & its valuable aspects. The is article helps to meet the readers with a "So called not famous" villages of Jharkhand where people are consistently practicing organic farming. But the question mark always roaming in the wind that 'Is it really helps to meet the economic concerns of the farmers?'. Here in this article the comparative analysis has been made between organic & inorganic framing to understand the question more properly.*

*The research was carried out considering two different villages of Angara Block that is Tirlakocha and Vagnabera. There were lots of weapons to complete the research like open ended semi-structured questionnaire and personal interview, participatory rural appraisal (PRA) and focused group discussions. This project report indicates, majorly the basic perceptions of the farmers for choosing organic farming & inorganic farming and the analysis have been made regarding cost of production of the both organically made produce and inorganically made produces.*

*Currently organic farming is very much popular in the villages but there are also some village that are rigid to adopt organic farming. Major focus of the article has been given to identify the causes of that consequences.*

**Keywords-** Organic farming, Economics, Village study, Jharkhand, B:C ratio.

## I. INTRODUCTION

A village is a geographically distinguishable place which is habitat of some human beings who lives in groups called family are socially, culturally and economically interrelated with each other Tripathy (2020). According to the data of conscious 2011 of India, 68.84 per cent Indians are stayed in village which is around 833.1 million people live in

640,867 different villages. Among them nearly 104 million people which are 8.6 per cent of the total Indian population is belonging from the tribal community. According to FAO agriculture, with its allied sectors, is the largest source of livelihoods in India. 70 percent of its rural households still depend primarily on agriculture for their livelihood, with 82 percent of farmers being small and marginal.

The agricultural sector faces different challenges regarding to fulfil global food demand and mitigating environmental challenges. It is calculable that 842 million folks within the world square measure ill-fed and most of the worlds ill-fed folks plagued by chronic hunger and totally different disabilities that causes unhealthy population of Asian country.

The bad impact of excessive use of chemical fertilizer is very much dangerous to this unhealthy as well as the healthy population of India. The excessive use of fertilizer effects on the health condition of the farmer during its application, the persons who brought this chemically organised food during flooding and the has a major impact on environment.

## II. HISTORY OF ORGANIC FARMING

The idea of organic farming was developed within the early decade by Sir Albert Howard, F.H. King, Rudolf Steiner et al World Health Organization believed that the employment of animal manures (often created into compost), cowl crops, crop rotation, and biologically based mostly tormentor management resulted in an exceedingly higher farming system. Such practices were additional promoted by numerous advocates – like (J.L Rodale and his son Henry Martyn Robert, within the year 1940 and onward, World Health Organization revealed Organic horticulture and Farming magazine and variety of texts on organic farming). The demand of the food that has been created by organically was stirred up within the Sixties by the life scientist, that documented the extend of environmental injury caused by insect powder. In India the concept of farming was started

10000 years ago in the Vedic age. At that time the chemicals were not there but they can protect their plant, they can grow their food and can feed their people. After independence as well as partition the amount of land divided but the populations of India do not decrease at the same ratio of the land. As a result food scarcities arise. After World War-II the countries who stop their business of weapons they started the business of chemical fertilizer, and they choose the north eastern Trans Gangetic plain as their place of extension. The HYVP (High Yielding Variety Programme) so called green revolution started. The high yielding variety needs more fertilizer, more water as a result today north-eastern Trans Gangetic plain become an unfertile land Tripathy and Khan (2020).

Organic food sales inflated steady from the late twentieth century bigger environmental awareness, as well as considerations over the health impacts of chemical residues and consumption of typically changed crops, fostered the expansion of the organic sector.

### History of inorganic farming:

The cultivation of inorganic farming has long history in India. There was a time when the Agriculture and farming system of India was unable to supply the excessive food demand of the increasing population due to largely excessive growth of the population in India. For this it was needed to supply more and more food to the constantly increasing population. Then comes inorganic farming. Inorganic farming introduced in India through “Green Revolution” in 60s century. With the introduction of inorganic farming the use of fertilizer and pesticide comes into existence. At the very first time the farmers were very much happy to see the production of the field, as inorganic farming gives higher amount of production to the farmer.

But with the increasement of the disease to human being humans are became aware to search about the cause of this event, then truth reveals. Day by day the fertility of the soils decreases and the productivity of crop also comes to end.

### Relevance of the project:

Here in this project the main emphasise is given in the topic that is to understand about the farmers perspective to choose organic or inorganic farming. The main moto of the study is to understand that why organic farmer is choosing organic farming and why the inorganic farmer are choosing the inorganic farming without harming their view point of their income. In the different villages of the study area, it has been noticed that people have different concepts about

farming. In the pure organic village like **Tirlakocho** it was found that the farmers of that villages are very much concern of their health and soil of the field. They choose to do organic farming not for any reason of forces but for their own shake of good health.

On the other hand, the inorganic village like **Vagnabera** people use chemical pesticides for the purpose of getting higher production and ultimately the higher income. To understand the perspectives of the inorganic farmers is quite different from others. For them income is the necessary object of doing farming.

In the study on organic and inorganic farming related concept, in the whole project was to find out the reason of doing organic or the inorganic farming. Any suggestion hasn't given to the respondent on their farming. To identifying their problems, sources of incomes and farming related activities was my only concern.

### Uniqueness:

There are many projects regarding the different studies on organic and the inorganic farming but the speciality of this project is this is concern with the reason that **why the farmers are doing that farming.**

Here we can see that the production cost in organic farming is low. But in the inorganic farming there are investment risk is high and different types of risk involved in that farming that is –

- Environmental risk
- Pest and disease attack
- Climate risk.

In this concern we see that there is difference between two types of farming but the project view point is to understand the attitude and practice of the farmer that why they are doing that particular farming.

### III. OBJECTIVES

- To study the attitudes of farmers towards practices of organic and inorganic farming.
- To make a comparative analysis (cost of cultivation) in between organic and inorganic farming.
- To study the different challenges faced by the organic cultivators in promoting the organic farming.
- To suggest different suitable measures regarding the challenges.

**Study area:**

In the district of Ranchi, my study area was divided of organic and for inorganic also. For organic study I choose the village Tirlakocha and for inorganic the village was Vognabera. The both of village was comes under Angara Block of Ranchi district. The state, district and block was randomly selected but the villages were selected purposively for getting and actual and sound response from the community.

**Table 1 Block profile of Angara**

Areas in ha: 40600	Population (number): 1,12,759
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**Table 2 Village Profile**

Parameters	Name of Villages	
	Tirlakocha	Vagnabera
No. of household	19	26
Total Population	136	152
Male	68 (50%)	70 (46.05%)
Female	45 (33%)	82 (53.95%)
Children	23 (17%)	0 (0%)
Sex ratio	66	117

**Table 3 Cropping pattern**

Kharif	Rabi	Zaid
Rice, maize, bajra, urad, Marwan.	Wheat, potato, tomato, French beans, brinjal, okra, cowpea, cucumber	Pumpkin, okra, brinjal, tomato, and all types of gourd.

**IV. METHODOLOGY AND DATA SOURCE**

The study was conducted in the two village of Jharkhand. Stratified random sampling method: the study method that have been followed. Stratified sampling may be a technique of sampling that involves the division of a population into smaller teams called strata. In stratified sampling technique or stratification, the strata are fashioned supported members shared attributes or characteristic.

According Tripathy and Khan (2020) PRA (participatory Rural Appraisal Techniques) is a very good tool to understand any village at a holistic manner. So at the first stages of my data collection follow the method of PRA and focused group discussion method. Then my study was divided into two main strata that is one for organic farmer and one is for inorganic farmers in the two different villages.

**Methods applying for data collection and data analysis:**

Data were collected mainly via semi- structure questioner. Additional quantitative data were collected through PRA tools including focused group discussions, key informant interview, personal information etc.

**Selection of study area:**

The study has been carried out in the framework of villagers Tirlakocha and Vognabera. The preliminary information about the blocks has been gathered from Divyayan Krishi Vigyan Kendra. Based on the information about the two villages, a randomise survey has been conducted out of which the final study area was selected in that villager. Actually, the villagers were very much small in size that I able to cover the whole of the villagers. The villagers have been selected following the predominance of organic and inorganic farming households in the village and the participation of the household members in the farming activities.

**Table 4 Sampling details**

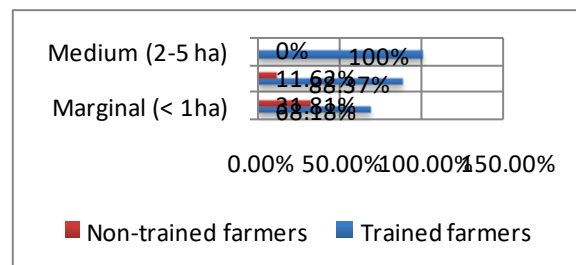
Name of the village	No of respondents
Tirlakocha	30
Vagnabera	30

**Sources of data:**

For the study, both primary and secondary sources were used. During April 2019 to June 2019, the related primary data relating to the present study were collected from the chosen respondent using specially built pre-tested schedules. The established method of social science, such as observation, isolation and associational interviews, has collected data.

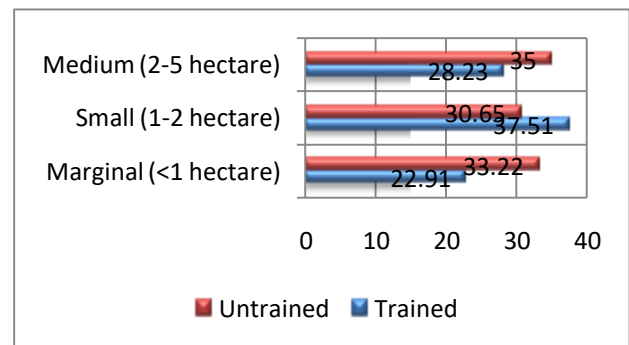
**V. RESULT AND DISCUSSIONS**

**Socio-economic profile of the farmers:** The objective was to furnished with the information of family background, resource endowment, and education level of the farmers of the village.



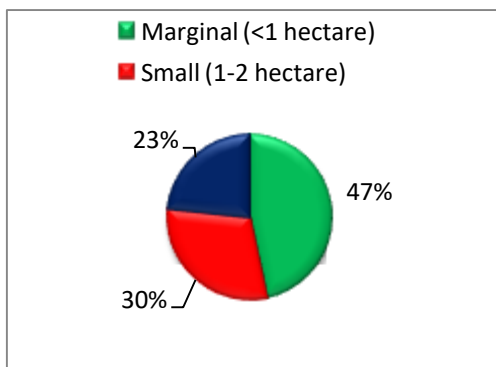
**Figure 1 Trained & non-trained farmers according to their land-holdings**

In the above figure No 1 it depicts the number of selected farmers (trained and untrained). The farmers of the both two villages are divided into mainly three different categories based upon land holdings. Therefore, the category is marginal, small and medium. In the both two villages we could not find any large farmer. Highest farmer belongs to small and marginal categories. For the organic village we are able to observe 88.37% of small farmers who got training on organic farming & 11.62% of non-trained organic farmers. It consists the high amount of awareness regarding training & people are aware about the importance of it. In the context of marginal farmer & medium farmers the intensity to get training on various perspective of organic farming & gaining knowledge on the various techniques of it are very high. Farmers are aware about the importance of training & gradually the number is increasing day by day. The farmers are trained from Divyayan Krishi Vigyan Kendra that is associated & influenced by Ramakrishna Mission Vivekananda Educational and Research Institute., Ranchi.



**Figure 3 Age distribution of trained & non-trained organic farmers**

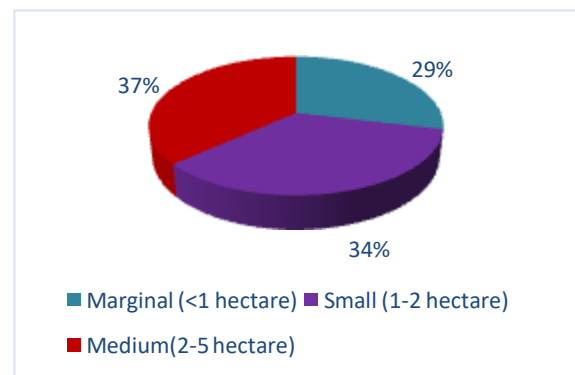
For the perfect analysis of the overall socio-economic condition consideration of the overall components are equally important. Data have been taken on age distribution considering trained & non-trained farmers. Farmers have been divided as the medium, small & marginal farmers. Average age for the marginal trained farmers has been noticed as 28 & non-trained farmers is 35. Here the average age of the trained marginal organic farmer (22.91) comprises the lower unit of the age distribution. It signifies that the young farmers are taking interest in organic farming. They are more interested to take training also. It is consistently moving motivational force for the farmer who are thinking to switch on organic farming.



**Figure 2 Number of Inorganic Farmer**

In the cases of inorganic village vognabera farmers can't be divided into trained or non-trained categories, because the conventional methods of farming have been practiced by the farmer by not taking any training from any organization. High percentage of farmers have been found in the marginal category, whereas small & medium farmers are comparatively less.

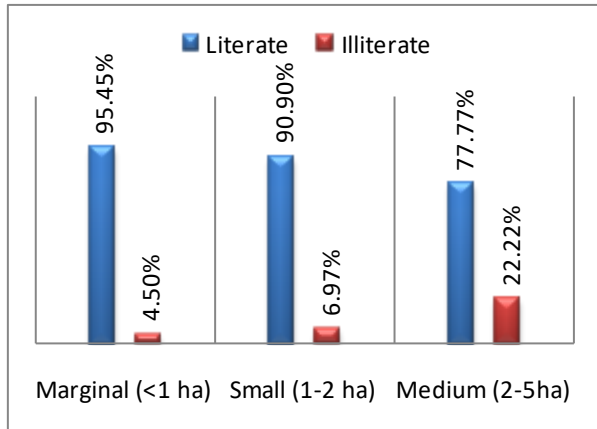
**Average age distribution of organic & inorganic farmers according to their land holdings:**



**Figure 4 Average age distribution of inorganic farmers**

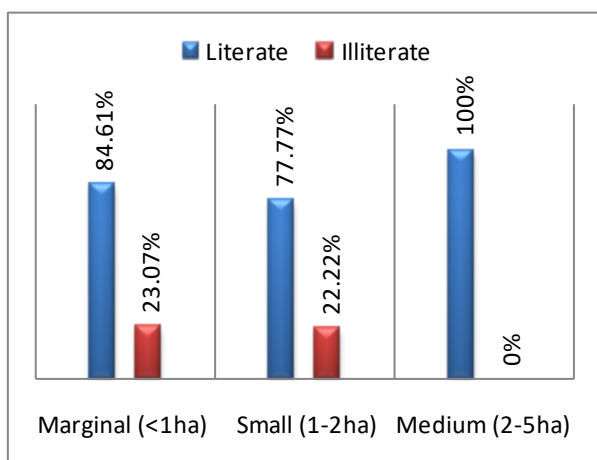
In the Figure no. 4 organic farmers' proportion (trained and non-trained farmer) according to their land holding is depicted the characterise of average age distribution of the farmers. Here small farmers consist (Average age 31.60) consist the higher portion of age distribution followed by medium (29.77) & small farmers (24.75).

**Literacy status of the identified households:**



**Figure 5 Literacy status of the organic farmers based on land-holdings**

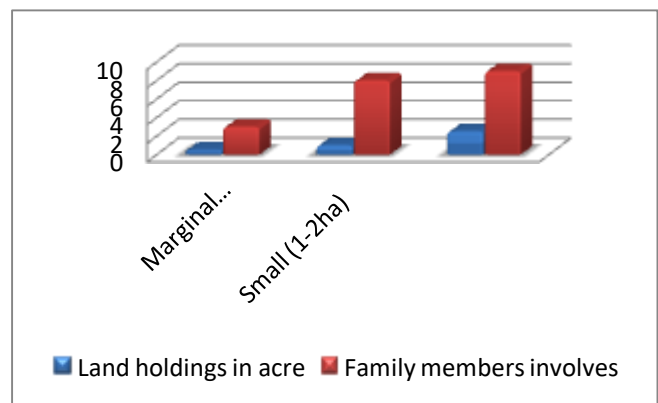
Informative knowledge on status of literacy is the majorly important factor to understand the influence of education on building perception of the farmers. Literacy can be identified as the major motivational sources to understand the positive & good things to pursue organic farming. In most of the cases farmers due to not have proper educational knowledge, becomes blind follower of the traditional or conventional practices. Education is the important factor to make farmer rightly mobilise for the good for them (Economically) & for society also. Here in the figure number 1.5 from the literacy status of the organic farmers it can be shown that in every land holding marginal farmers possess high literacy (Marginal: 95.45%, small: 90.90%, medium: 77.77%). It clearly signifies that education act as the important factor to motivate people towards organic farming & its good perspectives.



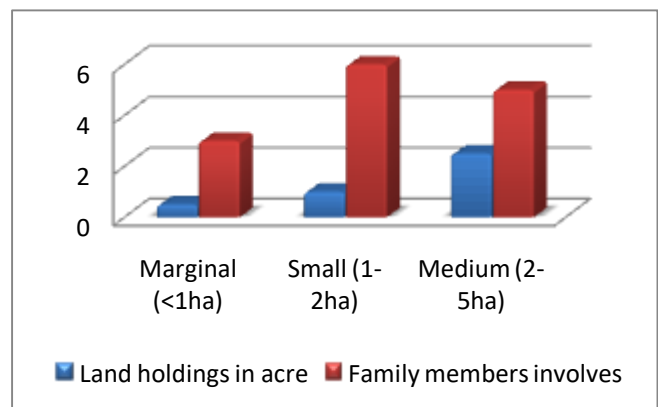
**Figure 6 literacy status of the inorganic farmers based on land-holdings**

For the inorganic village also the overall literacy of the inorganic farmers (marginal, small & medium) is high. It signifies the farmers are aware about the pros & cons of the organic farming but there have some more prominent factors that creates some hinders to adopt organic farming that can be economic factor, less interested to adopt new techniques, over dependency on conventional methods of farming, fear of adaptation. By this data is can clearly state that literacy & awareness is not the only factor that can promote organic farming, there are also some major factors that is actually important for farmers.

**Average number of family members required for conducting organic & inorganic farming:**



**Figure 7 organic farming: Family members involvement based on land size**



**Figure 8 Inorganic farming: Family members involvement based on land size**

Here in the above two figures working force for conducting overall farming practice have been shown that have signifies the time & working force difference between organic & inorganic farming. Data have been considered on the same size of the land holdings that is 0.5 acre, 1 acre & 2.5 acre. But the family members engaged in the operation is different for both of the farming techniques. Here it clerly

shows high amount of members have been required in organic farming for the same piece of land than inorganic farming. One more notable point is depending upon the category of the farmers number of labour forces changes. In the case of marginal farmers the same amount of labours have been required but with the higher size of the lands required members number for conducting whole package of practice is high in organic farming rather than inorganic one.

#### Cultivation and crop related details:

**Table 5 Major season and crops, Average production of organic farming:**

Major season	Major crop of that particular season	Crop sown area (/ ha)	Production (/ ha)
Kharif	Paddy	1	2.5 ton
Rabi	Tomato	0.048	22 ton
Zaid	Pumpkin	0.044	15 ton

**Table 6 Major season and crop, Average production of inorganic farming:**

Major season	Major crop of that particular season	Area of production (/ha)	Production (/ ha)
Kharif	Paddy	2	3 ton
Rabi	Tomato	1.5	31 ton
Zaid	Pumpkin	0.2	23 ton

In the table 5 and 6 here we can see the major crop sown in the both organic and inorganic village and about the average production and yield of that two types of farmers. It can be seen that the for the inorganic farming the production of paddy, tomato and pumpkin is high where as in the organic farming it is quite less than the inorganic one.

**Table 7 Average number of animals per family:**

Particular	Organic farmer				Inorganic farmers			
	cow	Buffalo	Goat	Poultry	Cow	Buffalo	Goat	Poultry
Marginal (< 1 ha)	2	1	3	4	2	1	2	5
Small (1-2 ha)	3	2	5	4	3	0	4	4
Medium (2-5 ha)	2	0	6	11	1	0	2	3

Alternative sources of livelihood options are equally important to make any livelihood sustain for longer time periods. For the Jharkhand's point of view livestock rearing is one of the best alternative livelihood options which contributes to the sustainable & secure flow of incomes.

Table number 7 shown that the most of the farmers are rearing cow, poultry, goat and buffalos. Poultry rearing is dominant because it has no needs for giving food separately for them as these are left in surrounding of the house premises. Here it can be seen that organic farmers believes in more livestock rearing as it helps them to produce different kinds of manures which ultimately saves the cost of production. For the organic farmers small and medium farmers are rearing animals in a large quantity. In the village Tirlakocha pig was also found but in a small quantity. In the village vagnabera rearing of animals is considered as one of the alternative occupations of the villagers.

#### Production methods related data:

**Table 8 Different types of practices on pest reduction and application of manures and fertilizers for organic and inorganic farming:**

Particulate	Types of manures and fertilizers	Types of pest reduction measures
Organic farming	1. Gober khad 2. Panchya gavvya 3. Vermicompost	1. Neemastra 2. Khaini pani 3. Karanch extraction 4. Sasyagavya
Particulars	Types of manures and fertilizers	Types of pest reduction measure
Inorganic Farming	1. Nitrogen fertilizer 2. Urea 3. DAP	1. Pesticides given by the retailers according to the farmers description of the symptoms

In the table 8 the types of fertilizer and pesticide that are used by the two types of farmers are shown. Generally organic farmers used the pest reduction methods and fertilizers that are related to organic wastage from house and cattle dung etc and each and every thing is close to nature and not harmful for nature. The inorganic farmers are using pesticides and fertilizer that are harmful and is not eco-friendly.

#### Market analysis and profit analysis of the both produce:

**Table 9 Market analysis of the organic produce**

Particular	Crops	Nearby markets	Selling price / kg
Kharif	Paddy	Zonha and Gundhlipokhar	Rs 16 / kg
Rabi	Tomato	Zonha and Gundhlipokhar	Rs 40 / kg
Zaid	Pumpkin	Zonha and Gundhlipokhar	Rs 20 / kg

**Table 10 Market analysis of inorganic produce:**

Particular	Crops	Nearby market	Selling price / kg
Kharif	Paddy	Zonha and Gundhlipokhar	Rs 16 / kg
Rabi	Tomato	Zonha and Gundhlipokhar	Rs 35 / kg
Zaid	Pumpkin	Zonha and Gundhlipokhar	Rs 18 / kg



Here in the above tables (9&10), we can see that the price of produce that are being produce through organic or inorganic methods are quite same. Though the demand of organic product is growing day by day and the price of the produces is also increasing considering overall perspective of India but this village is still having not reach that milestone. But very few wholesalers are there who gave them some more price but there is a big issue of middle man, some middle man are there to whom the farmers are forced sell their produces for minimizing the wastage. This is an important loop holes that is needed to taken care off. These farmers, they don't have any proper cold-storage & warehousing facilities, the middle took the advantages of it & ultimately farmers gets less price of their produces.

#### Comparative analysis of cost of cultivation (Rs /ha) between a particular produce of both organic and inorganic farming:

**Table 11 Cost of cultivation for paddy (Estimated)**

Items	Cost for organic cultivation	Cost for inorganic cultivation
Seed (47 kg) @ Rs 45 / kg	2095.03	2095.03
Fertilizer (92kg nutrients) @ Rs 30 / kg	Homemade organic manure	2760
Manure	Home made	Home made
Human labour	14500	14000
Animal labour	1500	1500
Insecticide	Home made	500
Irrigation	80 Rs	80 Rs
Total	18,175.03	20,935.03

Here in the table no 11 estimated level of cost of cultivation of paddy is given as an example for the organic and inorganic farming. For the organic farming according to the villagers some portion of seeds are given to the Ramakrishna Mission to the villager farmer for cultivation but most of the time they have to buy it from outside markets.

On the point of view of pesticides for the organic farming no pesticides are needed to apply in the field as the villagers are aware about the harmful effect of pesticides. The manures that are applied in the field are prepared by the farmers themselves, for this the farmers are rearing different types of domestic animal in their house. That will automatically support the farmers to reduce the production cost. In the cases of irrigation in the organic village people irrigate their field through gravity irrigation and no water can be wastage by it. Through the proper channel they irrigate their field. In the cases of use of pesticides in the organic

village the farmers were aware about the preparation of pesticides but they were little bit of ignorant about the application procedure of pesticides. The farmers use the pesticides whenever pest attacks in the field.

**Table 12 Estimated Profit analysis: (Rs / ha)**

Particular	Organic	Inorganic
Cost of cultivation	18,175.03	20,935.03
Yield	2.5 ton	3ton
Market price (Rs / kg)	16	16
Gross Return	40,000	48,000
Net Return	21824.97	27064.97

#### Discussion of profit analysis:

In the cases of profit, we can see that the profit of the inorganic farmer is higher than the profit of organic producer though the organic farmer has to bear less expenditure in terms of pesticides, manures etc. The reason behind that is the organic farmers are unable to get the price of the produce that must be given for organic produce, there is no difference between organic and inorganic produce.

**Table 13 Problem Ranking**

Rank of the problems	Organic farming	Inorganic farming
1 <sup>st</sup>	Low price of produce	Increase of dose and cost regarding fertilizer and pesticide
2 <sup>nd</sup>	Lack of govt support	High price of pesticides
3 <sup>rd</sup>	Interference of middleman	Excessive attack of pest and disease
4 <sup>th</sup>	Lack of knowledge on pesticide application.	Transportation problem
5 <sup>th</sup>	Mode of transportation	

## VI. CONCLUSION

The study reported under the project head “comparative analysis between organic and inorganic farmer-study on some selected village of Ranchi” was carried out at two different villages of Tirlakocha and Vagnabera village one is for organic data and another is for inorganic data. The project was carried out with the help of tables, figures and

charts. The recommendation or the conclusion of the project report titled as above are as follows, which were observed during survey in two villages that is Tirlakocha and Vagnabera village of Ranchi district.

It is observed that in the village of Tirlakocha the rate of livestock rearing is higher than the rate of livestock rearing in the inorganic village of Vagnabera. It is because in the organic farming the preparation of manures and pesticides that are applied in the field are completely depends upon the livestock like cow, buffalo, poultry, pig etc.

In the organic village I found a major problem that is the interference of middleman, that the crops which have been produced by the organic farmer are taken by middleman and they directly deals with the farmers of that village. The middleman gives less money to the produce for this the farmers income get effected.

In the inorganic village I found the issue of that the farmers are not that much of willing to enter in organic as they saw a farmer who is get in loss in doing organic farming. In the organic village it is observed during training that the farmers who have been got training of organic farming and became successful, some of the untrained farmers adopted good practices by observing the trained cultivator. If you consider labour cost that is higher in organic farming than inorganic farming because of regular production and application of different manures and pesticides.

In this study it is found that farmers apply organic pesticides after pest infestation, but in practical for organic farming prevention is only option to make the field free from pest.

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