

**PARTICIPATORY GUARANTEE SYSTEM (PGS) CERTIFICATION FOR
PRODUCTION OF ORGANIC VEGETABLES: AN ANALYTICAL STUDY**

**AASHIKA SASINDRAN
(2018-11-031)**

**DEPARTMENT OF AGRICULTURAL EXTENSION
COLLEGE OF AGRICULTURE
VELLAYANI, THIRUVANANTHAPURAM - 695 522
KERALA, INDIA**

2020

**PARTICIPATORY GUARANTEE SYSTEM (PGS) CERTIFICATION FOR
PRODUCTION OF ORGANIC VEGETABLES: AN ANALYTICAL STUDY**

by

AASHIKA SASINDRAN

(2018-11-031)

THESIS

**Submitted in partial fulfilment of
the requirements for the degree of**

MASTER OF SCIENCE IN AGRICULTURE

Faculty of Agriculture

Kerala Agricultural University



DEPARTMENT OF AGRICULTURAL EXTENSION

COLLEGE OF AGRICULTURE

VELLAYANI, THIRUVANANTHAPURAM - 695 522

KERALA, INDIA

2020

DECLARATION

I, hereby declare that this thesis entitled “**Participatory Guarantee System (PGS) certification for production of organic vegetables: An analytical study**” is a bonafide record of research work done by me during the course of research and the thesis has not previously formed the basis for the award to me of any degree, diploma, associateship, fellowship or other similar title of any other University or Society.



Vellayani

Date:

Aashika Sasindran

(2018 - 11-031)

CERTIFICATE

Certified that this thesis entitled “**Participatory Guarantee System (PGS) certification for production of organic vegetables: An analytical study**” is a record of research work done independently by Ms.Aashika Sasindran under my guidance and supervision and that it has not previously formed the basis for the award of any degree, diploma, fellowship or associateship to her.



Vellayani

Date: 24/11/2020

Dr. A.K. Sherief

(Major Advisor, Advisory Committee)

Professor

Department of Agricultural Extension

College of Agriculture, Vellayani

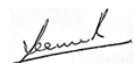
Thiruvananthapuram- 695522

CERTIFICATE

We, the undersigned members of the advisory committee of **Ms. Aashika Sasindran**, a candidate for the degree of **Master of Science in Agriculture** with major in Agricultural Extension, agree that the thesis entitled **“Participatory Guarantee System (PGS) certification for production of organic vegetables: An analytical study”** is submitted by Ms. Aashika Sasindran in partial fulfillment of the requirement for the degree.



Dr. A.K. Sherief
(Chairman, Advisory Committee)
Professor
Department of Agricultural Extension
College of Agriculture, Vellayani



Dr. B. Seema
(Member, Advisory Committee)
Professor and Head
Department of Agricultural Extension
College of Agriculture, Vellayan



Dr. G.S. Sreedaya
(Member, Advisory Committee)
Assistant Professor (Sel.Gr)
Department of Agricultural Extension
College of Agriculture, Vellayani



Dr. Bindu B
Assistant Professor,
Farming System Research center
(FSRC)
Sadanandapuram, Kollam



Dr.P.Sethuraman Sivakumar,
Principal Scientist,
ICAR-Central Tuber Crop Research
Center (CTCRI), Sreekaryam

External Examiner

Acknowledgement

The present thesis is the end result of a challenging journey, during the course of which numerous people have contributed their expertise and valuable time. At the end this journey I formally express my heartfelt thanks and respect to all those who made this journey a fruitful and memorable one.

*It is a genuine pleasure to express deep sense of gratitude and appreciation to **Dr. A. K. Sherief**, Professor, Department of Agricultural Extension, College of Agriculture Vellayani who is my mentor, philosopher and guide. His high sense of enthusiasm, professionalism and dynamism is worth mentioning without which my endeavors would not have turned successful.*

*I am indebted to **Dr. B. Seema** Professor and Head, Department of Agricultural Extension as the member of advisory committee for his scholarly suggestions, valuable advices and criticisms during the course of the study*

*My deep gratitude to **Dr. G.S. Sreedaya** Assistant Professor, Department of Agricultural Extension and **Dr. Bindu B**, Assistant Professor, Farming System Research Center (FSRC) who guided me throughout the thesis*

*I express my sincere gratitude to **Dr.P.Sethuraman Sivakumar**, Principal Scientist, ICAR-Central Tuber Crop Research Center,(CTCRI), who guided me throughout the thesis and shared the excitement of this new and rich experience.*

*I would like to express my sincere gratitude to **Mrs. Beena**, (VFPCK) for the constant guidance and perseverance demonstrated during the conduct of thesis.*

*I express my sincere thanks to the faculty, Department of Agricultural Extension, College of Agriculture, Vellayani, **Dr. Allan Thomas, Dr. Sangeetha KG, Dr. Smitha Vasanth, Dr. Archana R Sathyan, and Dr. Gopika Somanath** for their ceaseless support, empathy and constant encouragement rendered to me during the course of my study and research work*

*My joy knows no bound to express my appreciation to **Dhanushachechi, Arjunettan, Nithishettan, Akshayettan and Nayana** for the early insights, constructive suggestions and good humor helped me proceed with the research work and for showing confidence in my work and patience.*

*I wholeheartedly thank **Devapriya, Reshma R,S, Rin Rose, Amritha, Deena, Aparna, Sarin, Merlin, Arun, Elso, Aswathi, Krishna, Hiba, Shahalaztha, Navithachechi, Greeshmachechi,***

Sreekanthettan, Chippy, Raahalya, Kavya, Veni, Reshma, and Anna for all the help and affection showered on me during crucial points of my life.

My wholehearted thanks to my seniors and juniors, for all their helpful and highly appreciated contributions. I also utilize this opportunity to thank the non-teaching staffs, Dept of Agricultural Extension, College of Agriculture Vellayani for their valuable services.

*I am indebted to and hereby express deep sense of gratitude to **Krishnanunni** for all the support, help and services rendered during the period of COVID Pandemic period which is crucial in final stages of thesis. His kind heart and good deeds are commendable.*

*This work has been all about the **farmers** who have admirably battled all odds to keep alive the sacred vocation of farming. I thank them from the bottom of my heart for actively cooperating in my data collection and other procedures during this pandemic.*

The unwavering enthusiasm, motivation and trust bestowed upon me by my friends, teachers and especially my family during times of stress and difficulties need worth mentioning.

Aashika Sasindran

CONTENTS

Sl. No.	CHAPTER	Page No.
1	INTRODUCTION	
2	REVIEW OF LITERATURE	
3	METHODOLOGY	
4	RESULTS AND DISCUSSION	
5	SUMMARY	
6	REFERENCES	
	ABSTRACT	
	APPENDICES	

LIST OF TABLES

Table No.	Title	Page No.
1	Overview of PGS farmers under VFPCCK in Kerala	
2	Distribution of PGS farmers based on Age	
3	Distribution of PGS farmers based on Education	
4	Distribution of PGS farmers based on Experience in Organic farming	
5	Distribution of PGS farmers based on Area under farming	
6	District wise distribution of PGS farmers based on PGS Certificate status	
7	Distribution of PGS farmers based on Annual Income	
8	Distribution of PGS farmers based on Trainings	
9	Distribution of PGS farmers based on Information Seeking behavior	
10	Distribution of PGS farmers based on Environmental Orientation	
11	Distribution of PGS farmers based on Marketing Orientation	
12	Distribution of PGS farmers based on Sustainability of groups	
13	Distribution of PGS farmers based on Knowledge	
14	Distribution of PGS farmers based on Attitude	
15	.Distribution of PGS farmers based on Individual Role Performance	
16	Distribution of PGS farmers based on Group Role Performance	
17	Factor analysis of the attributes of individual performance of Kottayam	

LIST OF TABLE CONTINUED

Table No.	Title	Page No.
19	Factor analysis of the attributes of group performance of Kottayam	
20	Factor analysis of the attributes of individual Role performance of Kasargod	
21	Factor analysis of the attributes of Group Role performance of Kasargod	
22	Factor analysis of the attributes of individual Role performance of Idukki	
23	Factor analysis of the attributes of group Role performance of Idukki	
24	Factor analysis of the attributes of Individual Role performance of Thrissur	
25	Factor analysis of the attributes of Group Role performance of Thrissur	
26	Distribution of PGS farmers based on Adoption Quotient	
27	District wise and overall extent of adoption of Organic Practices	
28	Correlation between Adoption Behaviour and independent variables	
29	Ranking of Constraints faced by farmers	

LIST OF FIGURES

Fig. No.	Title	Between Pages
1.	The logos of certification by PGS-India	
2.	The Schematic Operational Structure of PGS-India	
3.	The certification process of PGS-India	
4.	Association between role dimensions and behaviours are given below	
5.	Distribution of PGS farmers based on Age	
6.	Distribution of PGS farmers based on Education	
7.	Distribution of PGS farmers based on Experience in Organic farming	
8.	Distribution of PGS farmers based on Area under farming	
9.	District wise distribution of PGS farmers based on PGS Certificate status	
10.	Distribution of PGS farmers based on Annual Income	
11.	Distribution of PGS farmers based on Trainings	
12.	Distribution of PGS farmers based on Information Seeking behaviour	
13.	Distribution of PGS farmers based on Environmental Orientation	

LIST OF FIGURES CONTINUED

Fig. No.	Title	Between pages
14	Distribution of PGS farmers based on Marketing Orientation	
15	Distribution of PGS farmers based on Sustainability of groups	
16	District wise distribution of PGS farmers based on Knowledge	
17	District wise distribution of PGS farmers based on Attitude	
18	District wise distribution of PGS farmers based on Individual Role Performance	
19	District wise distribution of PGS farmers based on group Role Performance	
20	District wise distribution of PGS farmers based on Adoption	

LIST OF PLATES

Plate No.	Title	Between pages
1	Interaction with PGS farmer at Trivandrum district during Pilot survey	

LIST OF APPENDICES

Sl. No.	Title	Appendix No.	Page No.
1	Variables for judges' ratings	I	
2	Interview schedule for the farmer respondents	II	
3	Overview of PGS	III	

LIST OF ABBREVIATIONS AND SYMBOLS USED

PGS	Participatory Guarantee System
VFPCK	Vegetable and Fruit Promotion Council Kerala
Ifoam	International Federation of Organic Agriculture Movements
APEDA	The Agricultural and Processed food Products Export Development Authority
FiBL	Research Institute of Organic Agriculture
ICS	Internal Control System
FAO	Food and Agriculture Organization
PGSOC	Participatory Guarantee System Organic Council
NCOF	National Center for Organic Farming
SHG	Self Help Groups
AQ	Adoption Quotient
<i>et al.,</i>	Co- workers
<i>i.e.</i>	That is
t/ha	Tons/ Hectare
%	Percentage

Introduction

INTRODUCTION

India the country known for its astuteness in indigenous agriculture, which was virtually organic is elevating the modern dogma of standard based agriculture and emerging as a hub for organic food products and raw materials globally. By virtue of its varying agro climatic regions, the country is bestowed with lot of potential to produce all varieties of organic products. In terms of area, production, policy support and government interventions India stand apart and is poised to have a well-organized organic agriculture sector, supported with series of institutions and supportive policies of federal and provincial governments.

As per the statistics given by The Research Institute of Organic Agriculture (FiBL) and International Federation of Organic Agriculture Movements (IFOAM), India's rank in terms of World's Organic Agricultural land was 9th and in terms of total number of producers was 1st as per 2018 data. The total area under organic certification process in the country is 3.56 million Hectares. This will include 1.78 million Hectare cultivable area and another 1.78 million Hectare for wild harvest collection. Among the entire states, Madhya Pradesh has covered largest area under organic certification followed by Rajasthan, Maharashtra and Uttar Pradesh. Sikkim has achieved a momentous distinction of converting its entire cultivable land under organic certification in 2016. India produced around 1.7 million MT of certified organic products which comprises all varieties of food products namely Oil Seeds, Sugar cane, Cereals & Millets, Cotton, Pulses, Medicinal Plants, Tea, Fruits, Spices, Dry Fruits, Vegetables, Coffee etc. The production and certification is not limited to the edible sector alone but also yield organic cotton, functional food products etc (APEDA,2020)

1.1.Organic Certification

The need for certification evolves when there is a separation by distance between producers and consumers and the crucial concern is to formulate a system that builds trust. The idea of certification was initiated by wine producers of France in early 20th century. The small wine producers created a set of criterions to distinguish their produce from ones produced by large scale industries.

The organic farmers around the globe have been instigating methods for guaranteeing the organic status of their products to different stakeholders like

consumers, processors, traders and progressively to governmental agencies in charge of food quality. First certification system for organic agriculture was developed in Europe and USA around 30 years back. Initially the certification system was coordinated by farmers' organization with simple set of standards and members who visited the farms approved each other. The modern certification system encompasses set of procedures which guarantee certain added values characterized through norms or established standards.

1.2. Types of organic certification

1.2.1 Third party certification

Third party certification is a system in which another party other than producer or seller provides an affirmation to which both parties are comfortable. This system provides audit trail through each steps of production. For organic agriculture IFOAM and ISO have formulated norms and codified regulations for unified certification process. INDOCERT, ECOCERT, LACON Quality Certification Pvt Ltd etc. are some of the certifying agencies in India. Third party certification has been an excellent means for the strong expansion of organic products in International market along with domestic market. But the system established for export market entails laborious procedures and cost that are not within the reach of small farmers (Kallander, 2008).

1.2.2. Group certification

In group certification the producers organize themselves into cooperatives or societies led by a group administrator with an internal control system (ICS). It is not formally accepted in most regulations, however through a consultative process by IFOAM, with a set of guidelines for ICS and training manual, it has gained acceptance in many developing countries. In group certification the role of the external certification is principally to authenticate that the internal control of the group is working, rather than overseeing the individual farmers. Through group certification, producers can get access to and assistance in the arduous organic certification at decreased costs. However, there are substantial demands for qualification and resources at the group level, which pose limitations to its applications (Kallander, 2008).

1.2.3. Participatory Guarantee System (PGS)

Participatory Guarantee Systems (PGS) is a low cost alternative method to guarantee organic quality of products. PGS is based on the assumed integrity of the farmer, the peer review, support and liability within an association of farmers and some additional safeguards, and thus imply a shift in responsibility. PGS provide a credible, relevant and cost-effective mechanism through which farmers can provide a trust or guarantee of their products as organic to consumers

1.3.Objective of study

Study the Participatory Guarantee System (PGS) certification for production of organic vegetables and analyze the role of PGS farmers in the certification procedure, production and marketing among the VFPCCK farmers in Kerala. . The constraints faced in the implementation of PGS will be studied and appropriate suggestions will be given.

1.4.Need of Study

Organic certification is an important tool for the growth of the agricultural sector. It facilitates recognition and provides consumers with assurance about the organic quality of the products. With Governments playing a key role in developing national regulations for organic production, certification is also very often a synonym of access to the market. Third-Party Certification systems have become the dominant means of Organic Guarantee for world trade. But obtaining third-party certification is a challenge for many organic producers. This is especially true for small-scale farmers. One of the reasons is that the cost of organic certification is high in relation to the revenue from their overall production. Hence Participatory Guarantee System (PGS) certification comes as an alternative for small scale farming community.

This study therefore aims to evaluate the implementation of Participatory Guarantee Systems (PGS) certification for production of organic vegetables including certification procedure, production and marketing. The study would throw light on the constraints faced by farmers and suggest alternate solutions. The PGS of certifying organic produce is expected to help bring more small-scale farmers and scale up organic farming in the State and eventually provide reliability for produce being sold under the organic tag.

1.5. Scope of Study

The Vegetable and Fruit Promotion Council-Kerala (VFPCCK) in 2016 has launched PGS registration of farmers' local groups across the State. There is now a total of 2798 PGS local groups. Out of these, 303 are under VFPCCK and remaining function under NGOs. The study was conducted on famers of PGS groups under VFPCCK among four districts of the state.

Study on PGS groups in Kerala is least explored area. Results of this study will help to understand the status of PGS groups in the state and its impact on organic farming. This will also help to understand the problems faced by farmers in the establishment of PGS.

1.6. Limitations of the study

The farmers, consumers and extension workers are not familiar with the concept of PGS. So farmers find it difficult in establishment and maintenance of PGS groups and officials are unable to provide required assistance to the farmers. The farmers are unable to find a proper market for organic produce.

Review of Literature

REVIEW OF LITERATURE

The review of literature plays a substantial role in giving an orientation to the study and also provides an opportunity to evaluate our work by comparing it with others. The main objective of this chapter is to augment a theoretical framework on the concept of role performance of Participatory Guarantee System (PGS) farmers in organic vegetable production, certification and marketing. The reviews to be explored and analysed are presented under the following heads:

- 2.1 Concept of organic farming
- 2.2 Concept of PGS
- 2.3. PGS India
- 2.4. Role Performance of Farmers
- 2.5. Adoption of organic standards
- 2.6. Knowledge
- 2.7. Attitude
- 2.8 Profile characteristics of Farmers
- 2.9 Constraints perceived by the respondents

2.1 Organic farming

The greatest challenge our nation would face in the future years will be to provide safe food for the growing population in the country. In this regard, organic farming which is a holistic production management system for fostering and enhancing health of agro-eco system, has gained wide endorsement as a rational and plausible alternative to conventional agricultural practices. (Bhattacharyya and Krishna, 2003).

FAO (2005) defines organic agriculture as a holistic production management system which promotes and supplement agro-eco system, including biodiversity, biological cycles and soil biological activity. This is accomplished by using, wherever possible agronomic, biological and mechanical methods in place of synthetic chemical materials, to fulfil any specific function within the system.

According to Giovannucci (2007) Organic Farming was defined as globally certifiable (with controls and traceability) farm management system, that is in harmony with local environment using land husbandry techniques such as soil-conservation

measures, crop rotation and the application of agronomic, biological and manual methods instead of synthetic inputs

FiBL-IFOAM survey on the distribution of organic agricultural land among the different continents by region in 2013 revealed that Oceania had the majority(40%) of the land area under organic cultivation followed by Europe (27%), Latin America (15%), Asia (8%), North America (7%) and Africa (3%).(FiBL-IFOAM,2014).

Kerala state drafted an organic farming policy in the year 2008. Farmers in Kerala were already engaged in organic production by the time of this announcement; one official estimate claims that close to 9,000 farmers within Kerala were certified in organic agriculture for export purposes (Yadav, 2009).

Objectives of the organic farming policy (GoK, 2008) are, to make farming sustainable, remunerative and respectable, to enhance natural soil fertility and productivity, ensure soil and water conservation, sustain agricultural bio-security and food and nutritional security, and to create and ensure domestic market for organic products controlled by the farmers.

In India, organic farming has grown many fold and number of initiatives at the government and non-Government levels have given it a firm direction. Prime Minister of India, Sri. Narendra Modi put forward the idea of transforming North Eastern states to completely organic by taking Sikkim as a model. In India almost 5.3 lakh hectares of land is under organic cultivation, which is 0.3% of the total agricultural land, which includes 44926 certified farms (APEDA, 2010 - 2011).

The principles of organic farming lie in the maintenance of soil fertility through careful husbandry, the recycling of agricultural wastes, avoidance or reduction of external inputs and the use of natural forms of pest management and weed control (Goldsmith and Hildeyard 1996).

2.2 Concept of PGS

Participatory Guarantee Systems are locally focussed quality assurance systems. They certify producers based on active participation of stakeholders and are built on a foundation of trust, social networks and knowledge exchange. (IFOAM-Organics International, 2008)

Participatory Guarantee System are reflective of the growing “beyond organic” movement, which focuses on reconstructing the local and re-embedding food systems into their socio-ecological contexts. Even though PGS offers a number of benefits to producers and consumers, it faces a number of challenges as well, such as lack of formal recognition, social conflicts and dependence on donated resources. (Nelson *et al.*, 2010)

Participatory Guarantee Systems (PGS) aims to improve market differentiation by working towards an organic guarantee system that is based on social capital and peer-to-peer capacity building and validation mechanisms. PGS brings about a series of positive desired effects namely reinforcement of social cohesion, knowledge exchange and seed conservation networks, new market places, information sharing and improved transparency (Eeckout and Rouan, 2017)

Participatory Guarantee system (PGS) is a low-cost alternative method to guarantee the organic quality of products. PGS is particularly relevant in the context of small-scale farming and local markets and the functions of PGS and its potential go far beyond organic guarantee. PGS is promoted especially as a capacity building and farmer empowerment tool (Kirchner, 2017)

Third party certification can act as a barrier to market entry for smallholder producers because of high costs, paperwork and bureaucracy. Participatory guarantee systems (PGS) can assure consumers of good quality products at better prices while avoiding the entry barriers of third-party certification. (Home *et al*, 2017)

Organic third party certification is well beyond their reach, both in terms of cost and technical ability as a thorough understanding is necessary to meet a strict organic standard from the start. Organic participatory guarantee systems (PGS) help farmers to overcome these problems through peer-review and social control as a substitute for a third party certification (Zanasi and Venturi, 2008).

Guiding principles of PGS

According to PGS India the guiding principles for the participatory guarantee system are noted below (www.pgs.org, 2018).

- **Participation:** The stakeholders like producers, consumers, retailers, traders and other agencies such as NGOs, Gram Panchayat, and state and government organizations were actively engaged in the design of operation and decision making of PGS.
- **Shared vision:** It encompasses collective responsibility for implementation and decision making among stakeholders of TVS groups
- **Transparency:** Grass root level transparency was assured through active participation of producers in information sharing at meetings and workshops, participation in peer reviews and involvement in decision making.
- **Trust:** Individual producer's commitment in protecting nature, maintaining biodiversity, maintenance of soil's health and consumer's health through organic production expresses the idea of trust.
- **Horizontality:** Collective responsibility and non-hierarchy at group level reflects the democratic structure and horizontality of PGS groups.
- **National networking:** The entire movement of PGS was given an institutional structure by networking the groups under the common umbrella through various agencies, regional councils and zonal councils

2.3. PGS INDIA

India is among the most advanced countries to create awareness and development PGS. Even though the legal framework for organic farming does not officially recognize PGS, the voluntary legal framework for the domestic market allows for organic claims without certification or with certification of PGS. In fact, there are two alternative guarantee systems running in parallel: one led by the Participatory Guarantee Systems Organic Council (PGSOC), promoted by a coalition of NGOs; and Second a governmental one, referred to as "PGS India". Altogether, over 1.62 lakh

farmers have obtained organic guarantee for their products through PGS in the country. (www.pgs.org, 2018)

PGS-India programme was launched in 2011 by Ministry of Agriculture and Farmers Welfare and National Centre of Organic Farming as its secretariat. The programme with the nationwide network operates through 309 Regional councils located across the country. As on March 2017, 4178 farmer groups comprising 173,887 farmers were associated with the programme. Online traceability in the form of consumer verification, entire data base in public domain and financial backings of government are some distinct features of PGS-India. (Chandra *et al.*, 2017)

Under PGS-India two types of logos are being used for the certification programme. The farmers who had started organic cultivation and practiced up to two years would be considered under conversion and would be certified as on the way to organic and branded with **PGS INDIA GREEN** logo. The farmers who had successfully completed the period of conversion, *i.e.* two years for normal crops and three years for plantation crops they would be certified and branded with **PGS INDIA ORGANIC** logo. These logos could be used on packaging material while marketing organic produce (www.pgs.org, 2019)

Fig 1: The logos of certification by PGS-India



Factors for the success of Indian participatory guarantee system was listed as given below.

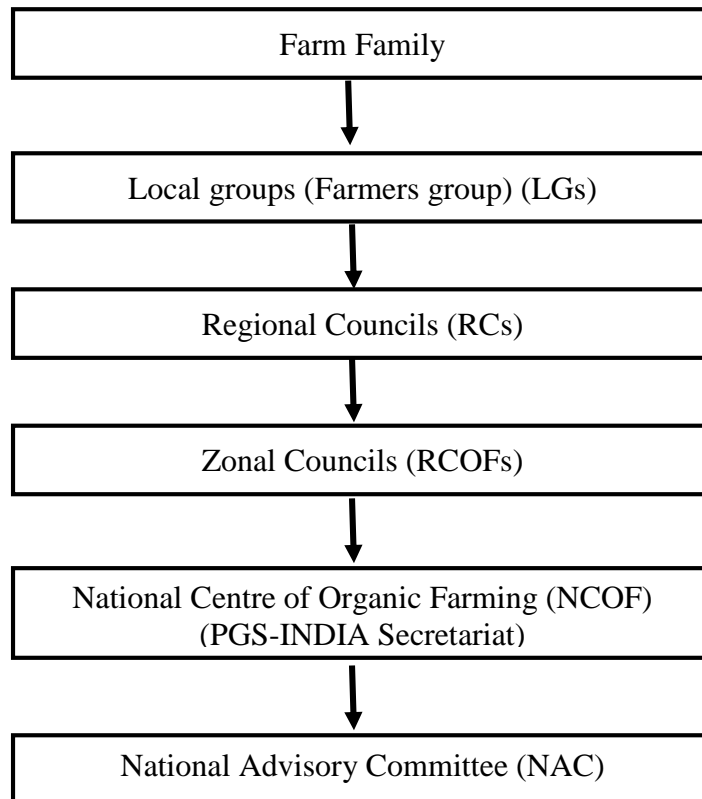
- Low direct cost
- Minimal paperwork
- Regionally appropriate organic standards
- Peer appraisals instead of professional third party inspection
- Horizontal network of farmers regional group and support organisations credible organic guarantee
- Mutual recognition and support between regional pcs groups
- Inbuilt training and support for the farmers
- Empowerment of farmers with increased capacity building
- Empowerment of farmers with increased marketing opportunities
- Inclusion of new and inconversion organic farmers

Organizational setup of PGS India

The schematic operational structure of PGS India is given below (FIG: 2). Roles and responsibilities in PGS are divided among various stakeholders belonging to structural bodies. National Advisory Committee stays as the apex policy-making body for PGS India.

The National Centre of Organic Farming (NCOF) would be the secretariat of the PGS program and implementation body with the director of NCOF as the executive authority. Zonal Council effectively co-ordinates Regional councils which are locally placed small groups. There are six zonal councils around the country. Regional Council (RC) can be floated by State agencies, certification service providers, or any other agencies. Regional councils should provide support for at least 10 local groups. Local groups act as the main functional and decision-making body. It is a group of farmers of a particular area and they function as the decision-making body. The farm family is the basic unit, which understands the organic standards and follows the PGS norms for organic production (www.pgs.org, 2018)

The Schematic Operational Structure of PGS-India (FIG:2)

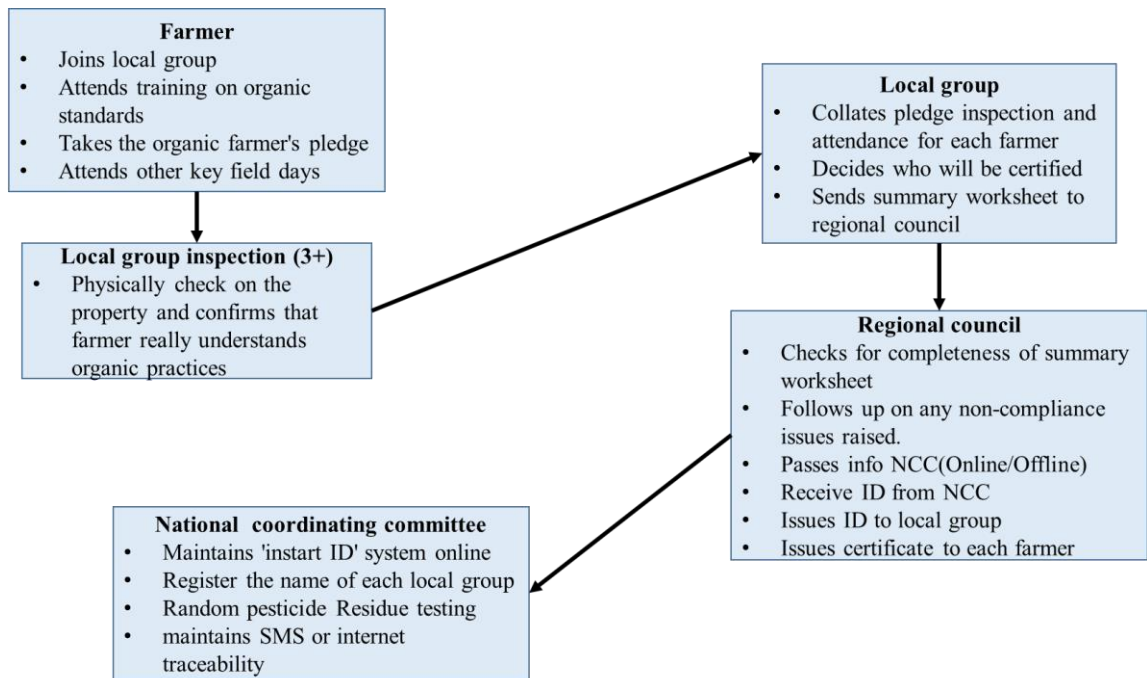


Steps in PGS Certification

PGS is a way to assure the quality of the products that is substantially different from third party certification systems, while equally reliable. PGS is based on the participation of various stakeholders in the certification process. (Castro and Kirchner, 2013)

The certification process of PGS India involves all the stakeholders at various levels of the organization with different roles and responsibilities. The diagrammatic representation of the steps in the certification process is given below (www.pgs.org, 2019)

The certification process of PGS-India (FIG:3)



2.4. Role Performance of Farmers

Neog and Sharma (1993), in her study on role performance of contact farmers stated that the majority (86%) of the respondents had a medium level of performance and negligible (5%) had a low level of role performance.

Individual role behaviour leads to effectiveness of an entire organisation. Uncertainty in a task environment regulates the extent to which various type of role behaviours subsidize to the effectiveness of an organisation. In a stable environment, role proficiency was highly important (Podsakoff *et al.*, 2000).

The studies conducted by the Desai *et.al* (1997) on performing role of information transfer to fellow farmers showed that 33.01 percent of the farmers did not give response to other farmers.

Padmavati *et.al.*, (1998) stated that 65.5 percent of the farmers had medium role performance followed by 17.77 percent respondents with high-level and 16.67 percent with low level of role performance

Sarkar *et.al* (2002) in his study titled on performance of tribal farmers in adoption of technologies observed that 55.8 percent of the respondents had moderate role performance.

Role clarity is a stronger predictor of individual task proficiency. Openness to change is a stronger predictor of adaptivity. Role breadth self-efficacy is a stronger predictor of proactivity than either proficiency or adaptivity at each level than the other sub dimensions of performance (Griffin *et al.*, 2007)

Rajput (2008) stated that 65 percent of the respondents had belonged to medium category of role performance whereas 18.3 percent and 16.67 percent farmers had high and low level of role performance respectively. He also observed that crop productivity showed statistical significance with performance.

Waman and Girace (2002) in their study on role performance of extension officers, observed that 68.3 percent of respondents belonged to the medium category of role performance

According to Eshwarappa *et.al* (1999) in their studies on role perception and role performance of workers in youth training project stated that more than 50 percent (56%) of the respondents belonged to medium category of role performance.

According to Sayuj (2012), arranging loans, ensuring regular field centre meetings, general body meetings and facilitation of development of SHG were recognized as important role items.

According to the studies conducted by Patel *et al.* (1995) role perception was significantly related to cosmopolitanism of the respondents

Deshpande (1986) indicated that respondents with high social participation exhibited a strong relationship with role perception of opinion leader.

More than 50 percent (58%) of the respondents of the technology transfer Club of Krishi Vigyan Kendra (KVK) had medium level of role performance (Sampath, 2009).

2.5. Adoption

Wasanik and Bhaskar (2004) through their study titled ‘Awareness and Adoption of Eco-friendly Cotton Cultivation Practices’ reported that 50.80 per cent of the farmers were ‘fully’ aware about the use of vermicompost for restoring soil fertility, followed by 46.20 per cent about tillage management practices for improving soil productivity and 43.10 per cent about crop rotation for maintaining soil fertility.

Husain (2010) reported that majority (65.36 %) of the farmers were in the medium adoption level category followed by 20.47 per cent of the farmers in the high category. The mean adoption score was found to be 38.97, which meant that the farmers adoption of indigenous horticultural practices was nearly 40 per cent. In banana, amaranth and vegetable cowpea 35.19 per cent, 36.84 per cent, 20 per cent of the indigenous horticultural practices were adopted by more than 50 per cent of the farmers respectively.

Kumar (2012) emphasized that nearly three fourth of the farmers (72.67%) adopted recommended dose of chemical fertilizers, followed by 63.33 per cent of the respondents with adoption of correct concentration of pesticides in cole crop cultivation.

Verma *et al.* (2012) reported that majority (55 %) of the respondents had medium level of overall adoption, followed by low level of overall adoption category which comprised of 37 per cent of the respondents. While only 8 per cent of the respondents were found with high level of overall adoption about organic farming practices in paddy cultivation by the tribal farmers of Chhattisgarh.

Chandrakanth (2014) reported that majority (70.83%) of the cotton growers belonged to moderate adoption category, while 16.25 per cent and 12.95 per cent of

them were in higher and lower adoption category of eco-friendly cotton cultivation categories respectively.

Sivakumar (2001) reported that the recommended dose of pesticides or fertilizers were adopted by none of the farmers. The study shows that the farmers had a tendency towards the adoption of chemical pesticides for the pest management in vegetables in his study on eco-friendly pest management in snakegourd.

Lekshmi (2002) reported that half of the respondents (48 %) belonged to medium level of adoption, 23 per cent and 28 per cent belonged to low and high levels of adoption in the study on adoption of recommended practices for chilli cultivation and problems faced by the growers of selected district of Punjab.

The study conducted by Sasidharan (2015), on the overall adoption of organic farming practices in vegetables stated that organic practices like “selection of resistant variety”, “irrigation at critical stages”, “mulching”, “weeding”, “collection and destruction of pests (egg, larvae, and pupae) and disease affected plants” were adopted and practiced by more than 90 per cent of the farmers.

2.6 Knowledge

Regarding the recommended chilly cultivation practices, twenty nine percent of the respondents had low level of knowledge where as 35 percent and 32 percent of the respondents had medium and high level of knowledge (Lekshmi, 2002).

Fayas (2003) revealed that majority of the vegetable growers (75.60%) had medium level of knowledge in vegetable cultivation.

Jaganathan (2004) opined that majority of the vegetable growers (70%) had medium level of knowledge followed by high (18%) and low (12%) levels of knowledge about organic farming practices in vegetable cultivation.

Oyesola *et al.* (2011) stated that majority (65%) of the respondents were highly knowledgeable about organic farming followed by low level of (35%) knowledge in the study about farmer's perception about organic farming in Nigeria.

Study conducted by Sidram (2008) revealed that majority of the respondents (63 %) had medium level of knowledge about organic pigeon pea farming practices. With regard to individual organic farming practices, majority of the respondents had knowledge about recommended seed rate (81 %), recommended sowing time (98 %), application of FYM (100%), vermicompost (100%) and jeevamruth (98%), summer ploughing (100%), crop rotation (96 %), pheromone traps (98 %), NPV (100%) and NSKE (100%).

2.7 Attitude

Sanderson (2004) showed that attitudes are affected by a set of variables on knowledge and socio-structural factors such as, community pressure, family concern, ethical principles and values.

Patel *et al.* (2006) reported that nearly three fifth (57 %) of the respondents had neutral attitude towards integrated pest management technology in pigeon pea, followed by favorable and unfavorable attitude with 25 per cent and 17 per cent of the pigeon pea growers respectively.

Dipeolu *et al.* (2006) stated that in general, farmers had positive attitude about organic vegetable production.

Majority of the vegetable growers (72%) and banana growers (65 %) had favourable attitude towards organic farming practices in Kasargod district. (Sasidharan, 2015)

Majority (60%) of the respondents had a favourable attitude towards organic farming in the study about farmer's perception about organic farming, while only (39%) of the respondents had an unfavourable attitude (Oyesola *et al.*, 2011).

Mondal *et al.* (2014) reported that majority of the respondents (60%) had a positive attitude towards organic farming and they opined that organic farming will decrease production costs by reducing input purchases.

2.8 Profile Characteristics of farmers

2.8.1. Age

According to Sayooj (2013) 64.8% of SHG farmers belonged to middle age group.

Studies of Reddy (1989) showed that age had a negatively significant relationship with role performance of contact farmers

The studies conducted by Ajith (2018) revealed that about half of representatives of Farmers Producers Organisation in Idukki district of Kerala belonged to the age group of more than 55 years old.

Padmavati *et.al* (1998) observed that age showed a positive and significant relation with role perception of Mitra Kisan.

Fayas (2003) revealed that majority of the vegetable growers belonged to the age group of 35 to 50 years.

Fifty per cent of organic farmers of Kannur district belonged to old aged category and 42 per cent belong to middle aged category (Anupama 2014)

2.8.2. Education

Studies of Sayooj (2013) showed that no illiterate was found among VFPCCK farmers and majority of them had high school or higher secondary level of education.

Studies conducted by Jaganathan (2004) established that education status is positively correlated with knowledge and adoption of organic farming practices.

The studies conducted by Muller (1997) on effective groups established that there was a positive correlation between educational statuses of the respondents with group co-operation

Kamalakannan (2003) reported that medium level of education was shown among majority (70 %) of the vegetable growers

Sutham, 2003 in his studies established that 42.67 % of the vegetable farmers were literate.

In the study conducted by Oyesola *et al* (2011) on farmers perception about organic farming, majority (80.6 %) of the farmers had formal education and 20 % of the respondents had non-formal education.

The studies conducted by Anupama (2014) on Organic vegetable cultivation revealed that 100 percent of the organic farmers were literate, 49 percentage of the respondents have attended High School and 25 percent of them had completed college education.

2.8.3. Experience in Organic Farming

According to Jaganathan (2004), 47 per cent of the respondents were having medium level of experience in vegetable cultivation.

Jayawardhana (2007) proposed that 38 per cent of the respondents were having more than 25 years of experience in coconut cultivation.

Studies conducted by Fayas (2003) revealed that 75 per cent of the farmers had more than twenty years of farming experience among the respondents

Majority of the farmers (54%) had more than 25 years of experience in farming, while 39 per cent of the farmers had experience between 11-25 years, 5 per cent had experience between 6-10 years and only 2 per cent had farming experience of less than 5 years (Anupama, 2014).

The studies conducted by Sasidharan (2015) on adoption of organic technologies proposed that, farmers with experience of three or more years in organic farming should be categorised as purely organic farmers. Farmers who were having an experience of

less than three years were under conversion and they could be categorised as mixed farmers who practices both conventional and organic farming practices together.

2.8.4. Area under Organic Cultivation

According to Balachandran (2004), majority of the farmers, *i.e.*, about 53 per cent belonged to the category of small and marginal farmers with land holding up to 2 acres.

Study conducted by Sreedaya (2000), in vegetable farmers indicated that majority (70%) of the vegetable growing farmers had medium level of area under vegetable cultivation.

According to Fayas (2003), 84.4 per cent of the respondents had medium level of area under vegetable cultivation.

Sasidharan (2015) reported that more than half (52 %) of the vegetable farmers had up to 0.1 ha of area under Organic vegetable cultivation.

2.8.5. Certificate Status

Study conducted by Barret *et al.*, (2002) on organic certification from developing countries proposed that once the production units have an organic certificate they must be inspected and reviewed annually in order to keep the certificate.

Oelofse *et al.*, (2010) on their studies on certified organic agriculture in China and Brazil, emphasized that conversion of small scale farmers to certify organic farmers require substantial external support for production, certification and marketing aspects.

Tovar *et.al.*, (2005) indicated that certification agencies, vary for large and small farms. Huge farmers depend on worldwide trade links and certifiers, whereas small farmers depend on national certifiers and territorial farmer organizations.

2.8.6. Annual Income

Financial positions of majority of VFPCCK farmers were good as compared to general section of farmers, argued Sayooj (2013). He also observed that majority (67.74%) of his respondents belonged to medium level of income group, where the annual income ranged from Rs.1, 00,000 to Rs.3, 00,000.

According to Sreedaya (2000), group Cohesion is significantly and negatively correlated with the annual income of SHG members involved in vegetable cultivation.

According to Vasantha (2014) respondents of SHG groups who have undergone training to enhance their income generation activities helped to increase the income of the SHG members.

Esakkimuthu (2012), revealed that 76.6 percent of his respondents had annual income in the range of Rs.50,001-1,00,000 and over 21 per cent of the farmers had it up to Rs.50,000 and only one belonged to high category, with income above Rs.1,00,000.

2.8.7. Trainings Attended

According to Vasantha (2014) training had helped to enhance the income generation activities of SHG members

Sidram (2008) stated that majority of respondents participated in training (70 %) and extension group meeting (67 %) in the study analysis of organic farming practices in pigeon pea.

According to Shaju (1998) the majority of the respondents (70%) belonged to the category of low level of participation in trainings

Priya (2003) concluded that nearly 95 % of the farmers under Self Help Groups (SHG) belonged to high category of training attended.

Study conducted by Sasidharan (2015) revealed that three-fourth (76%) of the vegetable farmers had regularly attended trainings on organic vegetable production.

2.8.8. Information seeking behaviour

Beena (2002) revealed that information seeking behaviour was observed to be medium for the huge majority (88.33 %) of the farmers. Only 11.67 per cent of the farmers belonged to low group.

Twenty four per cent of the farmers felt that success stories through media like books, magazines, radio and T. V programmes on organic farming, played an appreciable role in motivating their farming activities (Loganandhan, 2002).

Jayawardhana (2007) stated that more than fifty per cent of the respondents had medium level of information seeking behaviour.

Sidram (2008) found that 45 per cent of the farmers had medium level of information seeking behaviour in organic pigeon pea cultivation.

Kumar (2012) revealed that majority (59%) of the sampled farmers had medium level of information seeking behaviour followed by 22 per cent and 19 per cent in low and high categories respectively .

On a study on organic cultivation majority (72%) of the farmers belonged to medium category followed by high (17%) and low (11%) category with respect to information seeking behaviour. (Anupama, 2014)

Majority (68%) of the vegetable farmers had medium level of information seeking behaviour in organic vegetable cultivation followed by low 19 per cent. (Sasidharan, 2015)

2.8.9. Environmental Orientation

Loganandhan (2002) revealed that 54 per cent of the respondents converted to organic farming primarily due to care or consideration about environmental safety and bad effects of hazardous practices in modern farming.

Mondal *et al.* (2014) stated that 47 per cent of the respondents accepted that chemical pesticides were be used at a critical stage for organic vegetable cultivation. Another 37 percent of farmers were unaware that use of chemical pesticide was prohibited in organic vegetable cultivation.

According to studies conducted by Jagannathan (2004) more than half the respondents (60%) had high environmental orientation

Sreevalsan (1995) observed that among the respondents nearly two-third of the respondents were less environmentally oriented.

2.8.10. Market Orientation

As reported by Thomas (2000) market orientation had significant relationship with knowledge and adoption of medicinal plants.

High level of market orientation was observed by Fayas (2003) in maximum number of vegetable growers (89%).

According to Reddy (2005), 23.9 per cent farmers were found in low, 60.0 per cent in medium and 6.1 per cent in high categories of market orientation.

2.8.11. Sustainability

According to Sujata and Somu (2013) sustainability is the capacity of the farmer groups to continue to grow and function without financial, managerial and other organizational support.

According to Vasanta (2014) sustainability of SHG depends on the growth of income generation activity and entrepreneurship behaviour among women self-help group representatives.

Reddy (2005) observed that financial management, governance and human resource were the major area of lacunae that undermine the sustainability of farmer groups

Studies conducted by Sasidharan (2015) showed that ninety two per cent of the organic vegetable farmers perceived high sustainability of cluster based approach of organic farming. Whereas only 8 per cent of the respondents had shown low level of sustainability of the organic vegetable clusters

2.9 Constraints

Sriram (1997) emphasized that a vast majority of the respondents (92.50 %) ranked labour scarcity as the primary and foremost constraint while following

ecofriendly agricultural practices, followed by lack of assured irrigation (87.50%) and the lack of technical guidance on the use of bio-control agents (56.56%).

Sasidharan (2015) reported that lack of premium price for organic products was the primary constraint faced by the vegetable and banana growers of Kasargod district.

Bairathi *et al.* (2002) indicated that the most widely perceived constraint by the trainees in the adoption of organic farming methods was ‘ short life of bio cultures’ which was ranked by 95 per cent of the respondents followed by non availability of culture in time and non availability of seed/ variety resistant to diseases/ insect nematodes (90 % each).75 per cent of the trainees perceived socio- economic problems of adopting organic farming

Methodology

METHODOLOGY

Research methodology is a cumulative term for the structured approach of conducting research. It include different steps and procedures that are usually adopted by a researcher in analysing the research problem along with the logic and reasons behind them.

In line with the objectives of this study, the research methodology adopted is displayed under the following heads.

- 3.1. Research design
- 3.2. Locale of the study
- 3.3. Selection of respondents
- 3.4. Operationalisation and measurement of independent variables
- 3.5. Operationalisation and measurement of dependent variables
- 3.6. Constraints faced by PGS farmers
- 3.7. Suggestions for improvement of growth
- 3.8. Methods used for data collection.
- 3.9. Statistical tools used for analysis

3.1 Research design

A research design is the proposal to conduct a research. According to Creswell (2009) a framework for selecting an appropriate research design is based on philosophical paradigms, along with strategies of inquiry and research methods.

The Participatory Guarantee System (PGS) groups functioning under Vegetable and Fruits Promotion Council (VFPC) was selected for the present study. The present study about PGS was undertaken by using ex- post facto research design. The investigator had drawn inference with reference to the relationship between variables on the base of independent variables whose manifestation has already occurred.

3.2 Locale of the study

The study was conducted in four districts of Kerala viz., Kasargod, Thrissur, Kottayam and Idukki. These four districts were purposively selected based on number of active PGS groups under VFPCCK.

3.3 Selection of respondents

The study was undertaken among 80 PGS farmers of four districts, i.e. Kasargod, Thrissur, Kottayam and Idukki in Kerala. Five PGS groups were randomly selected from each district. From these selected PGS groups four farmers were randomly selected for the study. Thus from each district 20 farmers were surveyed thus making a total of 80 respondents.

3.4 Operationalisation and measurement of independent variables

In line with objectives of study, review of literature, discussion with experts and observation, a list of independent variables along with their operational definition were sent to judges to bring forth their relevancy in the study on a five point continuum ranging from most relevant to least relevant.

The scoring pattern of judges rating is given below.

Response	Score
Most Relevant	5
More Relevant	4
Relevant	3
Less relevant	2
Least relevant	1

After rating the total value obtained for each variable was calculated. From these results, the variables which got a score value of 75% and more were selected for study. The independent variables thus selected are given below.

Sl. No	Independent Variable	Measurement
1.	Age	Age in Years
2.	Educational Status	Anupama (2014)
3.	Experience in Organic Farming	Experience in years.
4.	Area Under Organic Cultivation	Area in acres
5.	Certificate Status	Certificate holding status
6.	Annual Income	Total annual income in rupees
7.	Trainings Attended	Number of trainings attended
8.	Information Seeking behaviour	Anupama (2014)
9.	Environmental Orientation	Sreevalsan (1995)
10.	Market orientation	Samantha (1977)
11.	Sustainability	Sundaran(2016)
12.	Attitude	Jaganathan (2004)
13.	Knowledge Level	Teacher made test

3.4.1 Socio-Psychological characters

3.4.1.1 Age:

The operational definition of age is the number of actual calendar years completed by the farmer during the time of the interview. The actual chronological age of PGS farmers were enquired during the survey and based on this value, the farmers were categorised into three groups namely young, middle and old based on the mean and standard deviation. The frequency and percentage of farmers belonging to each of these categories were calculated.

3.4.1.2 Educational status

The operational definition of education is the degree of formal education secured by a farmer. Based on the educational status of the farmers, they were classified into four categories. The respondents who had education up to 10th standard were given as score value corresponding to their class, *i.e.* a farmer who had education up to 6 standard was given a score of 6. A unit value for each year was given for each of the additional degrees a farmer had attained. The score is corresponding to the number of years the farmer had taken to complete the degree. A farmer who had achieved pre degree was given a score of 12 as he had taken two more years along with 10th standard to achieve this degree. The farmers who were graduated were given a score value of 15 or 16 based on the degree. Diploma or other higher education were awarded scores that are corresponding to the number of years, the farmer had taken to complete the course. The frequency and percentage of farmers belonging to each of these categories were calculated.

Category	Score
Upto 10 th	Class value
Upto 12 th	12
Graduation	15/16
Higher education	13

3.4.1.3. Experience in Organic Farming

Experience in organic farming refers to the total number of years the farmer had implemented organic farming in the field. It was calculated by assessing the actual number of years the farmer has started organic farming. The respondents were categorized into three groups, namely low, medium and high based on the mean and standard deviation of the result. The frequency and percentage of farmers belonging to each of these categories were calculated.

3.4.1.4 Area under Organic Cultivation

It was measured as the extent of area in acre under cultivation which rely on the principles of organic farming mentioned by PGS India. The area under organic farming

was calculated by measuring the actual area in acres owned by the farmer. Based on these data the farmers were categorized into three groups, namely low medium and high by assessing mean and standard deviation. The frequency and percentage of farmers belonging to each of these categories were calculated.

3.4.1.5 Certificate Status

PGS India green and PGS India organic certificates are awarded to the farmers by PGS India under the Department of Agriculture and Cooperation, Ministry of Agriculture and Farmers' Welfare, Government of India. The respondents were categorised into two groups, i.e. farmers with PGS certificate and without PGS Certificate. Farmers with PGS certificate were awarded the score value of two and farmers without PGS certificate was awarded with Score value of one. The frequency and percentage of farmers with and without certificate were calculated.

Category	Score
Without certificate	1
With certificate	2

3.4.1.6. Annual Income

Annual income refers to the earning of the respondent from salary, wages, profit, turnover, yield, or other means for a period of one year. It was calculated by measuring actual annual income of the respondent. The farmers were categorised into three orders viz, low, medium and high based on the mean and standard deviation of the data. The frequency and percentage of farmers belonging to each of these categories were calculated.

3.4.1.7. Trainings Attended

Trainings attended was defined as the number of training related to organic farming and PGS undergone by the respondents for the past two years. This was measured by calculating the actual number of trainings attended by the farmers. The farmers were categorised into three groups, i.e. Low, Medium and High based on the mean and standard deviation. The frequency and percentage of farmers belonging to each of these categories were calculated.

3.4.1.8. Information seeking behaviour

Information seeking behaviour was operationalized as the degree to which farmers utilize different means of mass media to attain appropriate technological information and updates regarding organic farming and PGS.

The scoring procedure followed by Anupama (2014) was adopted with slight modification. The frequency of information-seeking behaviour was measured as shown below.

Sl. No.	Source	Frequently (3)	Occasionally (2)	Rarely (1)
1.	Radio			
2.	Television			
3.	Newspaper			
4.	Magazines			
5.	Agri. Literatures			
6.	KIOSKs			
7.	Mobile Phone			
8.	E - extension			
9.	Krishibhavan			
10.	Fellow growers			
11.	Any other			

3.4.1.9. Environmental Orientation

This was operationalized as the degree to which a farmer had concern about his environment and use of chemicals in agriculture.

The scale developed by Sreevalsan (1995) was used for the study with slight modification. The scale consisted of eight statements and the respondents were asked to state their agreement or disagreement to each of the statement and scores of two and one were assigned for agree and disagree respectively. The responses were summed up to obtain the environmental orientation score. The score range was between sixteen and zero.

Si. No	Statement	Agree	Disagree
1	Indiscriminate use of pesticides causes environmental hazards		
2	Man is exploiting earth too much		
3	Man has to be greatly concerned about environmental issues like soil pollution, air pollution, water pollution etc.		
4	There is truth in what environmental activist claim and we should lend our support to them		
5	The present trend is to reduce the use of chemicals. Do you agree that the older method of farming were safer than the present ones?		
6	Agricultural process free of chemicals are more tastier and healthier		
7	Agro chemicals can be used during emergency situations.		
8	Recommended dose of agrochemicals in correct quantity shall be used		

3.4.1.10. Market Orientation

Market orientation was referred as the means or opportunity to get the inputs for organic production as well as to sell the outputs. The scale developed by Samantha (1977) was used to measure market orientation with slight modification.

The method consisted of scoring the responses obtained to the statements presented to the farmers to express their perception about market for the produce. The statements and scoring procedure adopted are given below.

Si No	Statements	Always (5)	Frequently (4)	Sometimes (3)	Rarely (2)	Never (1)
1	One should grow varieties with high market demand					
2	One should sell his produce to the nearest market irrespective of price					
3	PGS farmer should get higher price to his organic products.					
4	VFPCK ensures a reliable market for PGS farmers					

3.4.1.11. Sustainability

Sustainability was operationalized as the extent to which the PGS group is viable after the withdrawal of the PGS promoters. The measurement procedure was adopted from Sundaran (2016). The schedule consisted of 9 statements which were measured on a five-point continuum ranging from always, frequently, sometimes, rarely and never with scores 5 4 3 2 and 1 respectively. Based on the scores the farmers were classified into three categories by using the mean and standard deviation of the data.

Sl No	Statements	Always (5)	Frequently (4)	Sometimes (3)	Rarely (2)	Never (1)
1	The members are able to articulate the vision and goal of PGS formation					
2	Members regularly attend group meeting					
3	Weekly group meetings are conducted					
4	All the decisions and discussions are noted in minute book					
5	New marketing strategies are evolved by PGS members					
6	Members in group reduce every year					
7	PGS members attend skill development programmes					
8	The organic produce gets higher price in the market					
9	Being the member of the PGS is a liability					

3.4.2. Attitude

Attitude was referred to the degree of positive and negative approach of the farmer towards the PGS certification and organic farming. The scale devised by Jaganathan (2004) to measure attitude of farmers was used for study with slight modifications. The response to each statement was measured on a three point continuum as agree,

undecided and disagree with scores of 3, 2 and 1 respectively for positive statements. The score was reversed for negative statements. The scores gained for each item were summed up to get the attitude score of a farmer. The maximum score was 33 and the minimum score was 11. Based on the mean and standard deviation of the data, the farmers were classified into low medium and high level of attitude towards PGS and organic farming

Si No	Statements	A	UD	DA
1	It is worthful to adopt organic farming even by suffering initial losses			
2	PGS certification encourages organic farming.			
3	Traditional farming approach are more economic than the organic farming approach			
4	Third party organic certification is a tedious process			
5	It is possible to get good yield by adopting organic practices			
6	Organic farming should be practiced by all farmers			
7	PGS empowers farmer through increased marketing opportunities			
8	It is possible to solve our environmental problems by organic farming			
9	Group appraisal for certification ensures credibility of farmers			
10	Peer appraisal instead of third party certification promote capacity building and mutual support			
11	Government gives support and recognition for PGS programmes			

3.4.3. Knowledge

In the current study knowledge was referred to the extent of information owned by the respondent about PGS National Standards for Organic Production Of Vegetables

Knowledge of the respondent about PGS National standard on organic farming was evaluated using teacher made test developed for the purpose. Researcher had collected various organic farming and certification procedures from the operational manual recommended by PGS India under NPOP. Based on the discussion with experts 11 questions were identified to conduct the study. The test were administered to the respondent farmers and a score of two was assigned to correct answers and one to wrong answers. The total scores obtained for the all items indicate the knowledge level of the respondents. The maximum possible score was 22 and minimum was 11

3.5 Operationalisation and measurement of dependent variables

Keeping the objectives in view, four dependent variables were selected for the study, after thorough review of literature and consultation with experts. The variables selected and the measuring techniques used are listed below.

- The adoption behaviour of farmers towards PGS certification.
- The role performance of farmers individually and as a group in PGS certification procedure.

3.5.2 The role performance of farmers

Role performance was evaluated in terms of the proficiency with which an individual carried out the core tasks in the certification procedure. It was measured by using the model developed by Griffin (2007) for measuring work role performance with slight modifications. This model of role performance cross classified role performance at two levels that is individual and team and into three different sub dimensions of role behaviour namely proficiency, adaptivity and proactivity.

3.5.2.1 Individual Role Performance.

The three individual role dimensions measured in this model are given below.

- **Individual task proficiency:** This behaviour describes the ability of the respondent to complete the core tasks properly
- **Individual task adaptivity:** This behaviour describes how a respondent adjust to a new equipment process or procedure in the core task
- **Individual task proficiency:** This behaviour measures how a respondent initiates better ways of doing tasks.

Each of these individual role behaviour are measured using three statements which are scored at a five point continuum scale, Very high(5), High(4), Neutral(3), Less(2) and very less(1). The total score for individual performance of the respondents was obtained by summing up the score of 9 statements. The farmers were classified into three categories namely, low, medium and high level of individual role performance based on mean and standard deviation of the data.

Statements for measuring individual performance are given below.

Statements	Very High	High	Neutral	Less	Very Less
Individual task proficiency					
a).Carried out the core parts of your job well					
b).Completed your core tasks well using the standard procedures					
c).Ensured your tasks were completed properly					
Individual task adaptivity					
a).Adapted well to changes in core tasks.					
b).Coped with changes to the way you have to do your core tasks.					
c).Learned new skills to help you adapt to changes in your core tasks					

Individual task proactivity					
a).Initiated better ways of doing your core tasks					
b).Come up with ideas to improve the way in which your core tasks are done					
c).Made changes to the way your core tasks are done					

3.5.2.2 Group Role Performance.

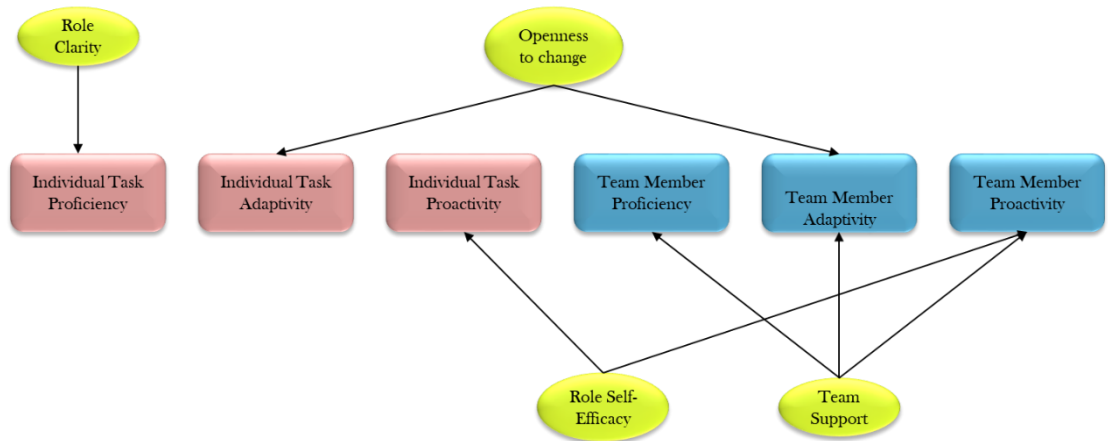
The three group role dimensions measured in this model are given below

- **Group member proficiency.** Team member proficiency describes behaviours that can be formalized and are embedded in a team or group context
- **Group member adaptivity.** Team member adaptivity reflects the degree to which individuals cope with, respond to, and/or support changes that affect their roles as members of a team
- **Group member proactivity.** Team member proactivity reflects the extent to which an individual engages in self-starting, future-directed behavior to change a team's situation or the way the team work

Each of these group role behaviour were measured using three statements which were scored at a five point continuum scale, Very high(5), High(4), Neutral(3), Less(2) and very less(1). The total score for individual performance after respondent was obtained by summing up the score of 9 statements. The farmers were classified into three categories namely, low, medium and high level of group role performance based on mean and standard deviation of the data.

Factor analysis was done for both individual and group behaviours to identify the most prominent role dimension among the respondents. According to the role, performance model used, each of the role dimensions was associated with role behaviours like role clarity, openness to change, role self-efficacy and team support.

Respondents showing these role behaviours as were identified based on the result of the factor analysis.



Association between role dimensions and behaviours are given above (Fig: 4)

3.5.2 The adoption behaviour of farmers towards PGS certification

In the current study adoption was referred after degree to which a farmer had actually the adopted PGS certification practices.

Extent of adoption of PGS certification practices by VFPCCK farmers was measured by calculating adoption quotient used by Singh and Singh (1967). The equation of adoption quotient is given below.

$$\sum_{i=1}^n \frac{e_i}{p_i} \times 100$$

Adoption Quotient (AQ) = _____
N

- AQ = Adoption quotient
- e_i = Extent of adoption of each practice
- p_i = Potentiality of adoption of each practice
- N = Total number of practices selected.

In order to measure the level of adoption 24 PGS certification and organic practices were presented to the respondents based on Roger's five point cumulative scale of Aware(A)=1, Interest(I)=3, Evaluation(E)= 6, Trial(T)= 10 and Adoption(A)= 15.

Category	Cumulative Score
Aware	1
Interest	3
Evaluation	6
Trial	10
Adoption	15

Based on the adoption quotient of the farmers were categorised into three groups namely low medium and high levels of adoption behaviour by employing mean and standard deviation. The district-wise overall extent of adoption of 24 organic practices was also measured.

$$\text{Extent of Adoption} = \frac{\text{Total score obtained for an organic practice}}{\text{Maximum score an organic practice can attain}} \times 100$$

Correlation analysis of independent variables with the extent of adoption of organic practices was conducted.

3.6 Constraints faced by PS farmers

Constraints was operationalised as difficulties faced by farmers in the process of production, certification and marketing of PGS products. A total of eight constraints were identified based on the review of literature, pilot survey and consultation with experts. The response of each constraint was obtained on a five-point continuum scale namely, most important (5), important (4), quite important (3), less important (2) and not important (1).

Scoring pattern of constraints is given below.

Category	Score
Most Important(MI)	5
Important(I)	4
Quite Important(QI)	3
Less Important(LI)	2
Not Important(NI)	1

Weighted average was calculated for each of the constraint and based on the results all the constraints were ranked from 1 to 8. The constraints used in the study are listed in Appendix.

3.7.Suggestions for improvement of growth

Open-ended questions included in the questionnaire for the farmers to indicate the suggestions for improving the performance and effectiveness of PGS groups.

3.8.Methods used for data collection.

In view of the scope and objectives of the study, a questionnaire was prepared after referring available literature and consultation with experts. Based on the suggestions a well-structured questionnaire was finalized in English. Pre-testing of this questionnaire was done in Thiruvananthapuram district. Based on the results of the pilot survey suitable modifications were made and the final questionnaire was prepared. The respondents were personally contacted for collection of data through the phone. Based on the collected data, statistical analysis and interpretation were carried out to draw out meaningful conclusions.

3.9 Statistical tools used for analysis

The data collected from the respondents were scored, tabulated and analyzed using suitable statistical methods

3.9.1 Mean and standard deviation.

Respondents were categorized into low, medium and high groups for the variables based on mean and Standard Deviation (SD) of the scores. Categorization was done into low medium and higher categories using Mean - SD, mean and Mean + SD

3.9.2 Frequency

Frequency was used to measure the number of respondents belonging in each category of different variables.

3.9.3. Percentage analysis

Percentage analysis was used to make comparisons among respondents of different districts and among different variables.

3.9.4. Correlation Analysis

Karl Pearson Correlation analysis was used to find the relationship of adoption behaviour of PGS farmers with the independent variable measured.

3.9.5. Factor Analysis

Factor analysis was carried out among the role performance to determine most important role behaviour of PGS farmers.

Results & Discussions

RESULT AND DISCUSSION

The salient findings of the study undertaken are presented and discussed under the following subheads:

- 4.1. Overview of PGS farmers under VFPCCK in Kerala
- 4.2. Socio psychological Characters
- 4.3. Knowledge of farmers on PGS and organic farming
- 4.4. Attitude of farmers towards PGS certification
- 4.5. Role performance of farmers in PGS certification
- 4.6. Adoption behaviour of farmers towards PGS certification
- 4.7. Constraints encountered by the farmers
- 4.8. Suggestions for improvement

4.1. Overview of PGS farmers under VFPCCK in Kerala

PGS groups in Kerala are grouped under the three categories of regional councils namely, Principal Agriculture Officer of each district, Vegetable and Fruit Promotion Council of Kerala (VFPCCK) and different NGOs. All the PGS groups in Kerala are under the Zonal council located at Bengaluru. The current study was conducted among PGS groups under VFPCCK. There are totally 252 local groups under VFPCCK in 2020 and out of 1850 farmers who had registered under PGS, 208 farmers were issued with PGS GREEN certificates. The district wise data of PGS local groups, farmers and area are given below.

Table1.Overview of PGS farmers under VFPCCK in Kerala

District	No of local groups	No of farmers	Area (ha)	PGS Green certificates generated
Kottayam	12	78	39.25	17
Kasargod	66	573	301.14	157
Idukki	11	76	36.00	7
Thrissur	14	94	65.25	19
Total	103	821	438.64	200

From table 1 it is evident that Kasargod district had maximum number of local groups, farmers, area and certified farmers under PGS. Idukki district had least certified farmers among the four districts. The maximum area under PGS certification was covered in Kasargod district.

4.2. Socio psychological Characters

Comprehensive familiarization of socio-economic and psychological variables of farmers would enable the researcher to interpret the data and study their behaviour occurring in a particular social context. The results of socio-psychological and economic variables selected based on the judges rating are given below.

4.2.1. Age

The operational definition of age is the number of actual calendar years completed by the farmer during the time of the interview. Distribution of PGS farmers based on their age and the results are given below.

Table 2. Distribution of PGS farmers based on Age

Category (years)	Kasargod (n=20)		Thrissur (n=20)		Idukki (n=20)		Kottayam (n=20)		Total (N=80)	
	F	%	F	%	F	%	F	%	F	%
< 47 (Low)	2	10	4	20	3	15	2	10	11	13.75
47-60 (Medium)	14	70	15	75	16	80	9	45	54	67.5
>60 (High)	4	20	1	5	1	5	9	45	15	18.75
Total	20	100	20	100	20	100	20	100	80	100

Upto 10 th	12	60	12	60	13	65	11	55	48	60
Upto 12 th	6	30	6	30	3	15	6	30	21	26.25
Graduation	1	5	2	10	4	20	1	5	8	10
Higher education	1	5	0	0	0	0	2	10	3	3.75
Total	20	100	20	100	20		20	100	80	100
Mean- 10.275	S.D.-2.89			Max-16			Min- 4			

From the table (3), it is visible that all the PGS farmers were literate. The range of educational qualification is from high school to graduation. About 60 percent of the farmers had completed high school and 26.25 percent of respondents had completed pre-degree. Moreover, 10 percent of the respondents were graduated. A small percent (3.75) of respondents also appeared for higher education.

District wise comparison indicates that more than 50 percent of farmers from all the four districts were literate. Organic farming involves traditional methods and indigenous knowledge. Readiness to adopt new technologies and strategies to market their products is very essential to be successful in organic farming. Even though the role of education in the production of organic vegetables is negligible, in the certification and marketing process education plays a vital role.

According to the 2011 Census report literacy rate of Kerala is 93.9 (GoI, 2011). Therefore the results are almost in agreement with the existing literacy rate in Kerala.

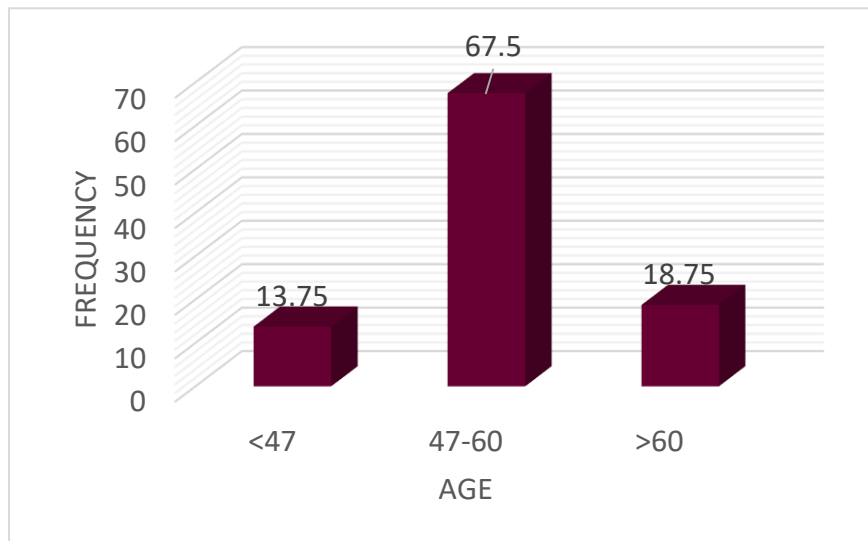


Fig 5. Distribution of PGS farmers based on Age

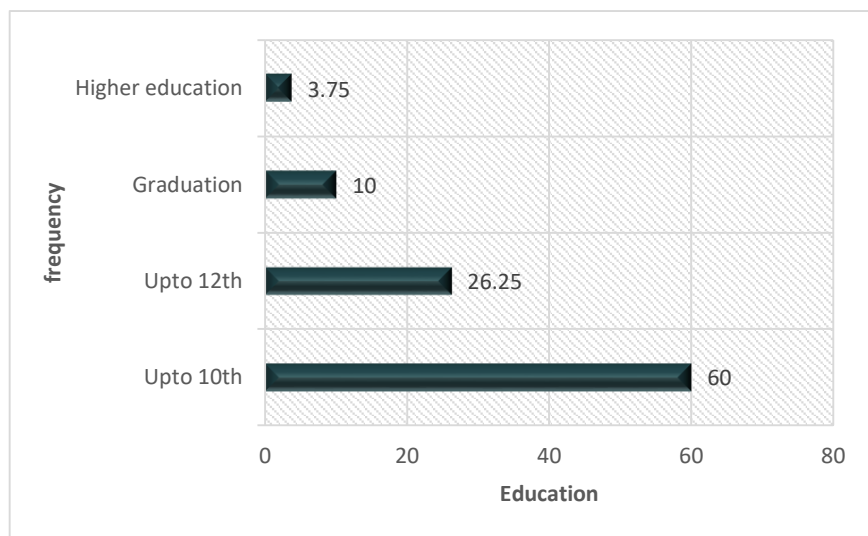


Fig 6. Distribution of PGS farmers based on Education

4.2.3 Experience in Organic Farming

Experience in organic farming refers to the total number of years the farmer had implemented organic farming in the field.

Table 4. Distribution of PGS farmers based on Experience in Organic farming

Category (years)	Kasargod (n=20)		Thrissur (n=20)		Idukki (n=20)		Kottayam (n=20)		Total (N=80)	
	F	%	F	%	F	%	F	%	F	%
< 3 (Low)	2	10	3	15	3	15	1	5	9	11.25
3-14 (Medium)	11	55	15	75	12	60	17	85	55	68.75
>14 (High)	7	35	2	10	5	25	2	10	16	20
Total	20	100	20	100	20	100	20	100	80	100
Mean= 8.81		SD=5.71			Max- 20			Min- 1		

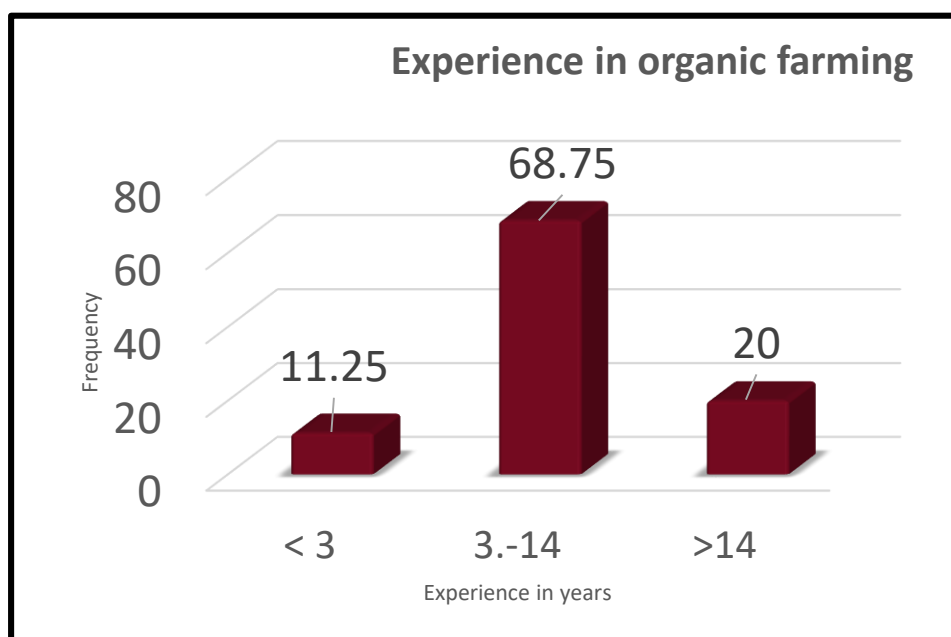
The distribution of farmers based on experience in organic farming is given in the table. On evaluating the table 4 on the distribution of PGS farmers based on experience in organic farming, it is clear that 68.75 percent of farmers belonged to the medium (3-14 years) category of experience in organic farming and 20 percent of the respondents had experience of more than 14 years.

District wise comparison indicates that more than 50 percent of respondents of all the four districts were have farming experience, between 3 years and 14 years. The number of respondents with more than 14 years of experience was more (35%) in the Kasaragod district.

The awareness about the harmful effects of conventional agriculture practices and globally increasing demand for organic products had brought interest among farmers into organic farming. In Kerala VFPCCK promoted organic farming among the farmers, through the State Organic Farming policy initiated in 2008 by Govt. of Kerala.

This scheme was implemented in all districts of Kerala. The team support was given to farmers in 2016 and this was first initiated in Kasargod district. In 2015 Kasargod district was declared as completely organic. This promoted many research organisations and NGOs to conduct projects and researches in this area related to organic farming. This accounts for higher number of respondents in high category of experience, from Kasargod district. These farmers are willing to take the economic risk foregoing a part of their income. The results are almost in agreement with the results of Jaganathan (2004) where majority of the farmers belonged to medium level of experience in organic farming. The results of Anupama (2014) and Fayas (2003), emphasized that majority of the farmers had more than 10 years of experience.

Fig 7. Distribution of PGS farmers based on Experience in Organic farming



4.2.4. Area under Organic Cultivation

It was measured as the extent of area in acre under cultivation which rely on the principles of organic farming mentioned by PGS India. The results based on distribution of PGS farmers based on area are given below.

Table 5. Distribution of PGS farmers based on Area under farming

Category (Area in acre)	Kasargod (n=20)		Thrissur (n=20)		Idukki (n=20)		Kottayam (n=20)		Total (N=80)	
	F	%	F	%	F	%	F	%	F	%
<0.8 (Low)	8	40	5	25	3	15	2	10	18	22.5
0.8-5 (Medium)	11	55	13	65	9	45	11	55	44	55
>5 (High)	1	5	2	10	8	40	7	35	18	22.5
Total	20	100	20	100	20	100	20	100	80	100
Mean= 2.99		SD=2.13		Max- 7		Min- 5				

From the table 5 of the area under organic farming, it is clear that more than 50 percent (55%) farmers belonged to the medium (0.8-5 acres) category of area. The mean value of the area is 2.99 acres.

On interpreting the district-wise distribution of data, it is visible that more respondents with an area greater than 5 acres were seen in the districts of Kottayam and Idukki. Respondents of Kasargod district had 40 percent of farmers with an area less than 0.8 acre.

The more number of respondents belonging to the higher category of area, in Kottayam and Idukki districts may be justified by the type of crops they grow. Plantation crops and spices, cultivated in larger areas are the major crops grown by the farmers in these districts. The result obtained on distribution of farmers based on area under farming are in agreement with studies conducted by Fayas (2003) and Sreedaya (2000).

4.2.5. Certificate Status

The certificate status of PGS farmers under VFPCCK from the four districts are given below.

Table 6 .District wise distribution of PGS farmers based on PGS Certificate status

Category (years)	Kasargod (n=20)		Thrissur (n=20)		Idukki (n=20)		Kottayam (n=20)		Total (N=80)	
	F	%	F	%	F	%	F	%	F	%
With certificate	13	65	8	40	7	35	9	45	37	46.25
without certificate	7	35	12	60	13	65	11	55	43	53.75
Total	20	100	20	100	20	100	20	100	80	100

Table(6) showing the certificate status of PGS farmers indicated that, more than 50 percent (53.75%) of the farmers do not have PGS-GREEN certificate.

District wise comparison shows that farmers of Kasaragod District are having the maximum number of respondents with PGS certificate, followed by Kottayam, Thrissur and Idukki.

The implementation effect of State organic policy and team support given in 2016 in Kasargod district explains the maximum number of certificate holding farmers. The PKVY scheme was initially implemented in in all 14 districts. But in second phase of PKVY only the northern districts were included. So under this scheme fund was not allotted to farmers of Kottayam and Idukki district. In Thrissur, a major group of respondents were cultivating in rented land, and according to policies of PKVY rented land were not aided with fund support. The result on the certificate holding status of farmers from all four districts are in concordance with the data of VFPCCK.

According to the norms of PGS, after three years of conversion period PGS-ORGANIC certificate can be awarded. However, the farmers have to renew the certificate every year to keep the status as PGS farmers. This often doesn't occur due to delay in the peer group appraisal and regular meetings of the committee members. To change the status from PGS- GREEN to PGS-ORGANIC farmers have to file a compliance and follow certain procedures involving Pesticide Residue analysis. The high cost of pesticide Residue analysis and unreachability act as a hindrance to this process.

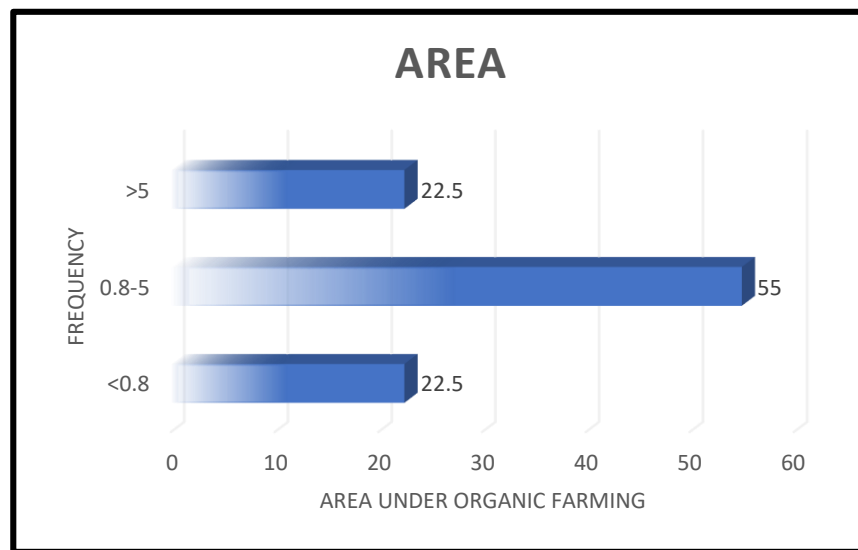


Fig 8. Distribution of PGS farmers based on Area under farming

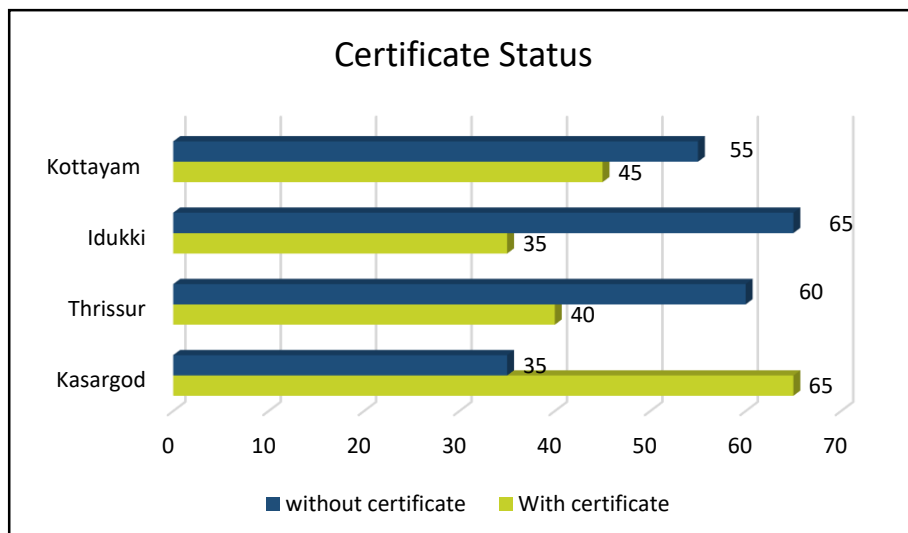


Fig 9. District wise distribution of PGS farmers based on PGS Certificate

4.2.6. Annual Income

Annual income refers to the earning of the respondent from salary, wages, profit, turnover, yield, or other means for a period of one year

Table 7. Distribution of PGS farmers based on Annual Income

Category (lakhs)	Kasargod (n=20)		Thrissur (n=20)		Idukki (n=20)		Kottayam (n=20)		Total (N=80)	
	F	%	F	%	F	%	F	%	F	%
<0.9 (Low)	12	60	5	25	6	30	3	15	26	32.5
0.9-3.2 (Medium)	6	30	11	55	8	40	13	65	38	47.5
>3.2 (High)	2	10	4	20	6	30	4	20	16	20
Total	20	100	20	100	20	100	20	100	80	100
Mean= 2.13	SD=1.18		Max-4		Min- .4					

From table (7) we can observe that majority (47.5%) of the PGS farmers belonged to the medium (0.9-3.2 lakhs/annum) category of annual income and 32.5 percent of the respondents had an income of less than Rs.90,000 per annum. Only 20 percent of the farmers had income greater than 3.2 lakhs per annum.

District wise interpretation reveals that farmers belonging to Idukki and Kottayam district were having more annual income. This may be because of the higher area under cultivation, good management practices and better market. Apart from vegetables and fruits, farmers cultivate spices & plantation crops, in these areas which fetch better price & income. The results are in agreement with study conducted by Sayooj (2013) on VFPCCK farmers.

4.2.7. Trainings Attended

Trainings attended was defined as the number of training related to organic farming and PGS undergone by the respondents for the past two years. The distribution of farmers based on trainings attended is given below.

Table 8. Distribution of PGS farmers based on Trainings

Category (Number)	Kasargod (n=20)		Thrissur (n=20)		Idukki (n=20)		Kottayam (n=20)		Total (N=80)	
	F	%	F	%	F	%	F	%	F	%
<5 (Low)	3	15	4	20	3	15	2	10	12	15
5-13 (Medium)	10	50	15	75	14	70	16	80	55	68.75
>13 (High)	7	35	1	5	3	15	2	10	13	16.25
Total	20	100	20	100	20	100	20	100	80	100
Mean= 8.61		SD=4.07		Max-18		Min- 3				

Table 8 shows that majority (68.75%) of the farmers belonged to the category of medium level (5-13) of the training category. 16.25 percent of farmers belonged to higher category of training and 15 percent of farmers belonged to lower category. The mean value of training attended is 8.6

The district-wise distribution reveals that more than 50 per cent of respondent from all four districts belonged to the medium category of training.

VFPC and Department of Agriculture and Farmers' welfare conducts different training programme to promote organic farming under different schemes and policies. Majority of the respondents were having frequent contact with extension

officials. These may be the reasons for the higher participation of farmers in different training programmes. The results are in agreement with conclusions given by Sasidharan (2015) and Sidram (2008).

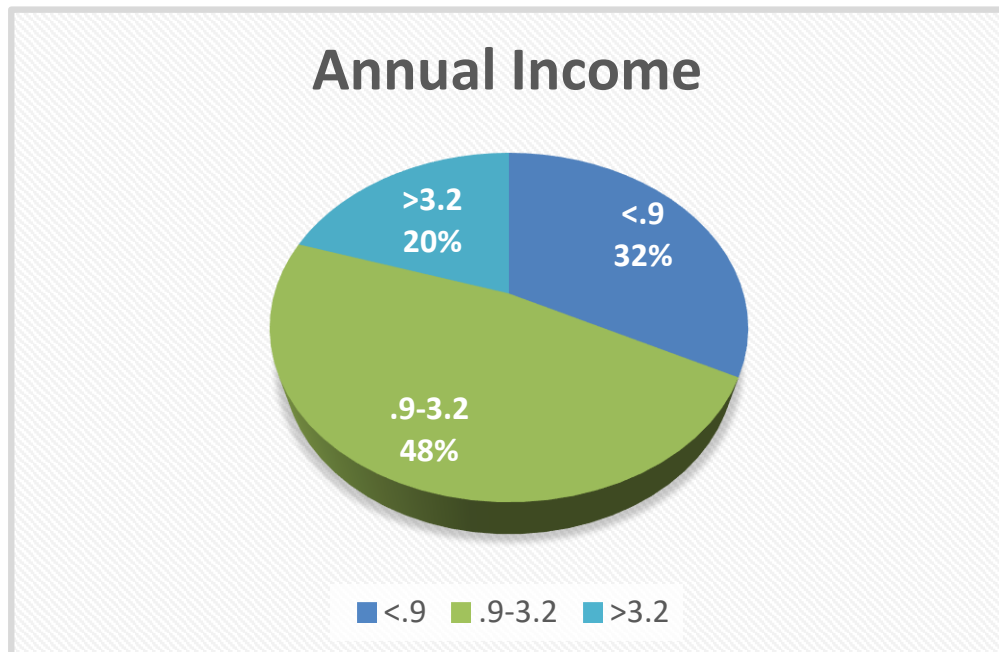


Fig 10. Distribution of PGS farmers based on Annual Income

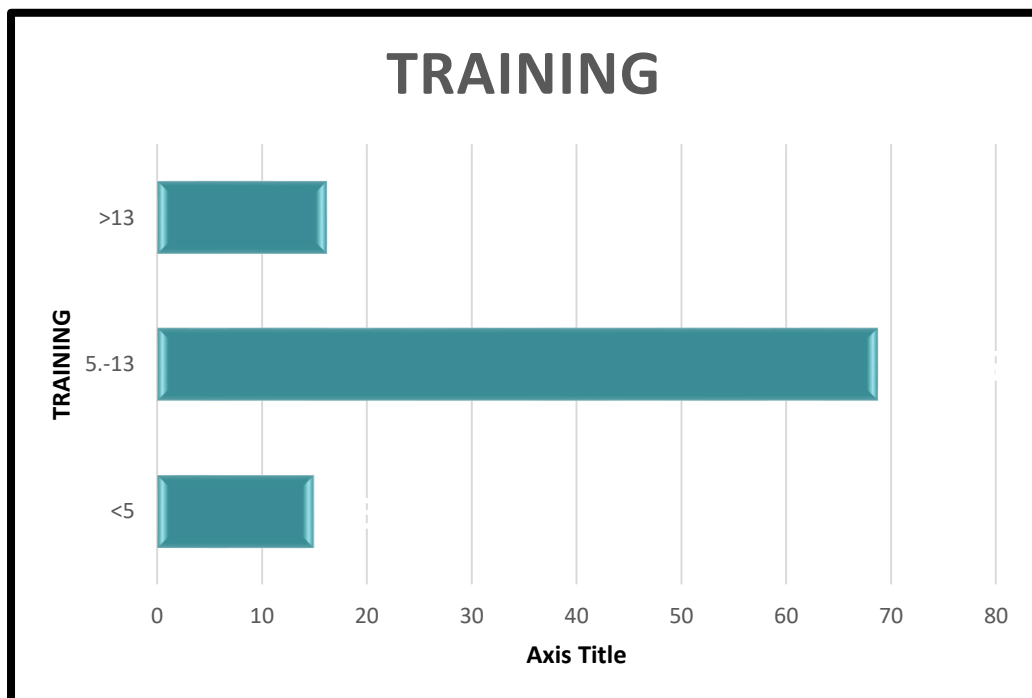


Fig 11. Distribution of PGS farmers based on Trainings

4.2.8. Information seeking behaviour

Information seeking behaviour was operationalized as the degree to which farmers utilize different means of mass media to attain appropriate technological information and updates regarding organic farming and PGS.

Table 9. Distribution of PGS farmers based on Information Seeking behavior

Category (Number)	Kasargod (n=20)		Thrissur (n=20)		Idukki (n=20)		Kottayam (n=20)		Total (N=80)	
	F	%	F	%	F	%	F	%	F	%
	<20 (Low)	2	10	4	20	1	5	3	15	10
20-24 (Medium)	13	65	13	65	14	70	13	65	53	66.25
>24 (High)	5	25	3	15	5	25	4	20	17	21.25
Total	20	100	20	100	20	100	20	100	80	100
Mean= 22.1	SD=2.29		Max=26		Min= 18					

From the Table 9, on the information-seeking behaviour of farmers, it is distinct that, the majority (66.25%) of the farmers fall into the medium (20-24) category of information-seeking behaviour, 21.25 per cent of the farmers belong to the higher category, i.e. more than 24, followed by 12.5 per cent of farmers belonging to the lower category, i.e. less than 20.

The district-wise distribution reveals that more than 50 per cent of respondents from all four districts belonged to the medium category of information seeking behaviour.

This may be because, the farmers were having regular contact with extension professionals from department and VFPCCK, NGOs, VFPCCK group members and had regular access to other agricultural magazines and television programmes. All the farmers were literate. Moreover, most of the farmers were actively participating in training programmes. This might be the reason that majority of the farmers had medium level of information seeking behaviour. Similar results have been obtained by Jayawardhana (2007) and Sasidharan (2015)

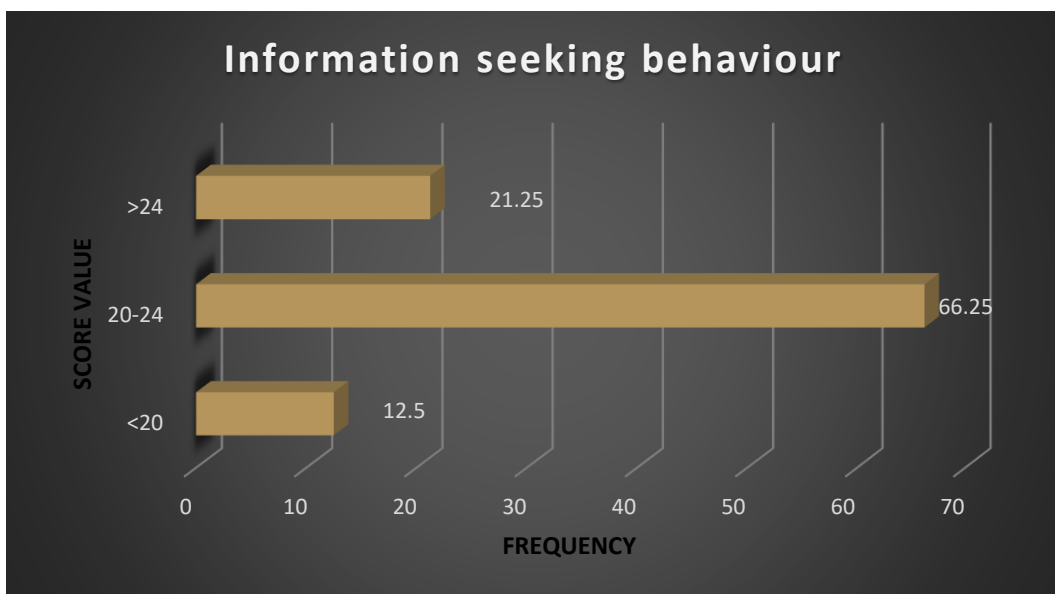


Fig 12. Distribution of PGS farmers based on Information seeking behaviour

4.2.9. Environmental Orientation

This was operationalized as the degree to which a farmer had concern about his environment and use of chemicals in agriculture.

Table 10. Distribution of PGS farmers based on Environmental Orientation

Category	Kasargod (n=20)		Thrissur (n=20)		Idukki (n=20)		Kottayam (n=20)		Total (N=80)		
	F	%	F	%	F	%	F	%	F	%	
<12 (Low)	1	5	1	5	3	15	2	10	7	8.75	
12-15 (Medium)	14	70	17	85	17	85	16	80	64	80	
>15 (High)	5	25	2	10	0	0	2	10	9	11.25	
Total	20	100	20	100	20	100	20	100	80	100	
Mean=13.58		SD=1.47		Max-16		Min- 11					

Evaluating the table 10 on environmental orientation it is apparent that 80% of the farmers had a medium level of environmental orientation followed by 11.25 per cent of respondents falling into high level and 8.75 per cent of farmers with low-level of environmental orientation.

District wise comparison shows that more number of respondents belonging to the higher category of environmental orientation is in Kasargod district.

The different schemes and initiatives to promote organic farming was first implemented in Kasargod district. Also, the health hazards reported to be caused by Endosulphan might have created fear among the farmers and made them more environment oriented. A very less number of farmers opined that use of chemicals inputs were unavoidable. These results were in line with studies conducted by Loganandhan (2002) and Jaganathan (2004).

4.2.10. Market Orientation

Market orientation was referred as the means or opportunity to get the inputs for organic production as well as to sell the outputs

Table 11. Distribution of PGS farmers based on Marketing Orientation

Category (Number)	Kasargod (n=20)		Thrissur (n=20)		Idukki (n=20)		Kottayam (n=20)		Total (N=80)	
	F	%	F	%	F	%	F	%	F	%
<10 (Low)	5	25	4	20	7	35	2	10	18	22.5
10-14 (Medium)	8	40	10	50	10	50	15	75	43	53.75
>14 (High)	7	35	6	30	3	15	3	15	19	23.75
Total	20	100	20	100	20	100	20	100	80	100
Mean=12.4		SD=2.37		Max-17		Min-8				

Evaluating the table 11 on market orientation, it is observed that more than 50 per cent (53.75%) of the respondents belonged to the medium category of environmental orientation, followed by 23.75 per cent respondents in the higher category and 22.5 per cent of respondents in the lower category.

District wise comparison shows that respondents belonging to Kottayam, Thrissur and Idukki had more than 50 per cent of farmers belonging to medium category of marketing orientation. The farmers of Kottayam and Idukki were highly educated

and along with vegetables they also cultivated plantation crops. Market was the primary concern to the majority the farmers from all the district. Majority of farmers marketed their products in VFPCCK, but they are concerned about the fact that, they don't have a proper market for organic produces. Farmers with high market orientation devised their own strategies to market their products. The high environmental orientation and experience in organic farming of farmers of Kasargod district may be the reason for less market orientation compared to other districts. The results were in agreement with the studies conducted by Fayas (2003)

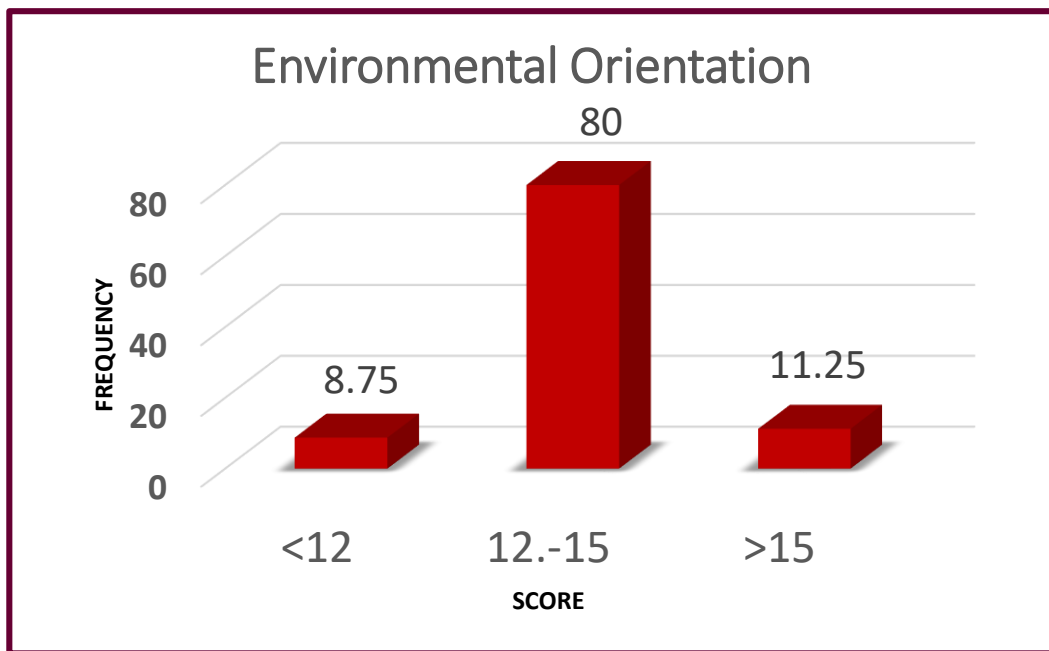


Fig 13. Distribution of PGS farmers based on Environmental Orientation

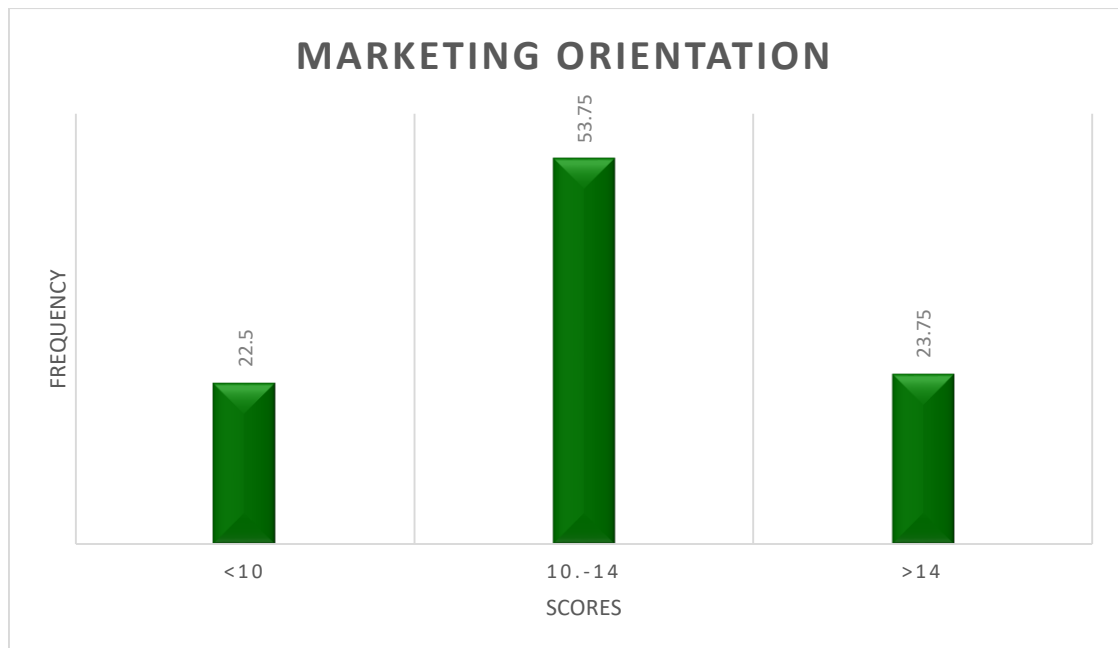


Fig 14. Distribution of PGS farmers based on Marketing Orientation

4.2.11 Sustainability

Sustainability was operationalized as the extent to which the PGS group is viable after the withdrawal of the PGS promoters.

Table 12. Distribution of PGS farmers based on Sustainability of groups

Category	Kasargod (n=20)		Thrissur (n=20)		Idukki (n=20)		Kottayam (n=20)		Total (N=80)	
	F	%	F	%	F	%	F	%	F	%
<20 (Low)	4	20	5	25	6	30	7	35	22	27.5
20-24 (Medium)	10	50	11	55	12	60	11	55	44	55
>24 (High)	6	30	4	20	2	10	2	10	14	17.5
Total	20	100	20	100	20	100	20	100	80	100
Mean=22.02	SD=2.18				Max=27				Min=19	

From the results of table 12 it is evident that more than 50 percent (55) percent of total respondents belonged to the medium category of sustainability, followed by low (27.5%) and high (17.5%). District wise distribution shows that majority of farmers of all the four districts fall under the category of medium level of sustainability.

Sustainability of groups is greatly dependent on the financial support given by the government to the farmers. When the financial support was stopped the farmers tend to withdraw from the group activities. The extension agents who support and maintain the procedures play a vital role in maintaining the sustainability of these groups. More respondents under high category of sustainability are seen in Kasargod and Thrissur district. This may be because, in second phase, PKVY was implemented only in the northern districts of Kerala and farmers of these two districts were aided with funds. On the other hand farmers of Idukki and Kottayam was not supported by this scheme and they show less respondents in higher category.

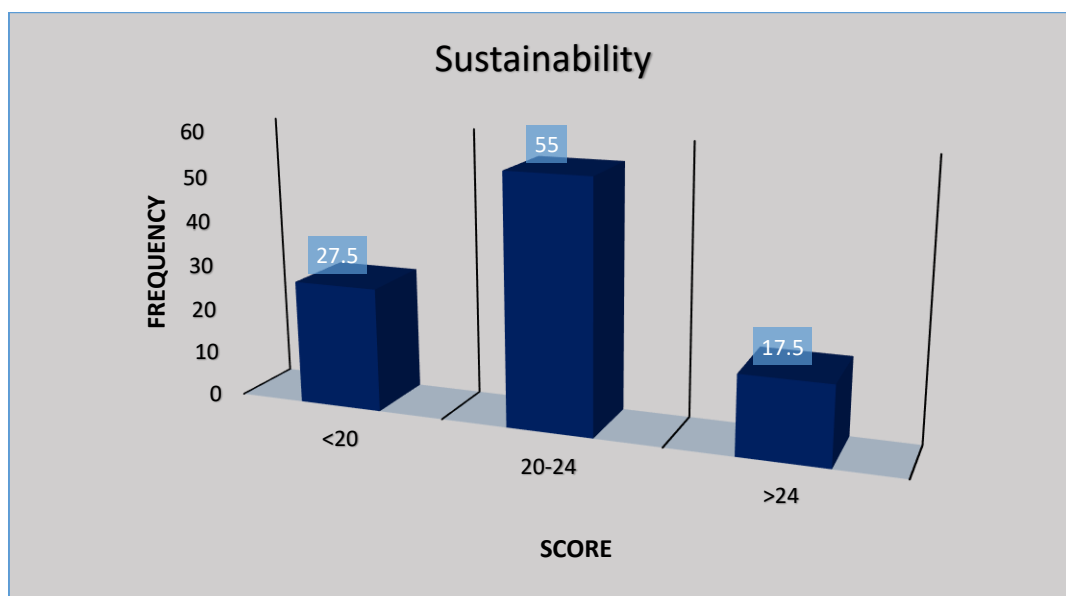


Fig 15. Distribution of PGS farmers based on Sustainability of groups

4.3. Knowledge of farmers on PGS and organic farming

In the current study, knowledge was referred to as the extent of information owned by the respondent about PGS national standards for Organic production of vegetables.

Table 13. Distribution of PGS farmers based on Knowledge

Category	Kasargod		Thrissur		Idukki		Kottayam		Total	
	(n=20)		(n=20)		(n=20)		(n=20)		(N=80)	
	F	%	F	%	F	%	F	%	F	%
<16 (Low)	5	25	4	20	3	15	7	35	19	23.75
16-20 (Medium)	8	40	12	60	13	65	11	55	44	55
>20 (High)	7	35	4	20	4	20	2	10	17	21.25
Total	20	100	20	100	20	100	20	100	80	100
Mean=18.3		SD=3.07		Max=22		Min=13				

The table 13 of knowledge of PGS farmers indicate that more than 50 percent (55%) of farmers belonged to medium category of knowledge. The mean value of knowledge is 18.3. District wise comparison shows that majority of farmers of all districts fall under the medium category. In Kasargod district, farmers under medium and high category is almost same.

Literacy rate of farmers, better information seeking behaviour and trainings may be the contributing factors of knowledge about organic farming and PGS certification to the farmers. Among the groups the farmers share information about innovations a new technologies, which also helps to gain knowledge. The results of Knowledge is in line with the conclusions given by Fayas (2003), Jaganathan (2004) and Sidram (2008) in their studies.

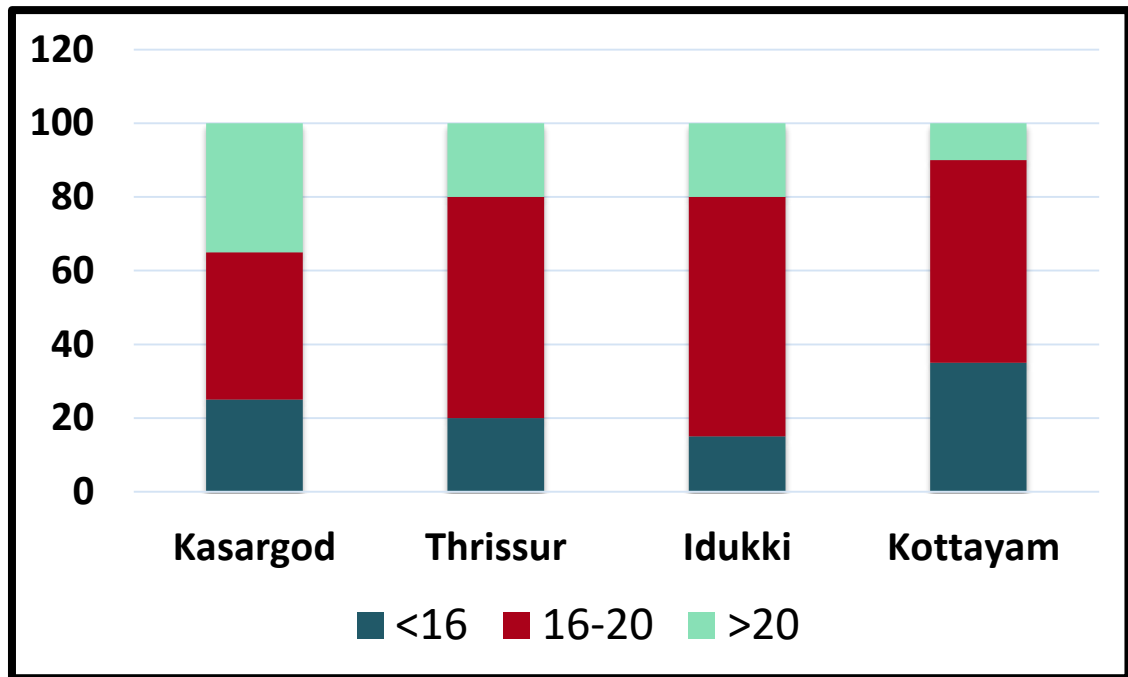


Fig 16. District wise distribution of PGS farmers based on Knowledge

4.4. Attitude

Attitude was referred to as the degree of positive and negative approach of the farmer towards the PGS certification and organic farming. The distribution of farmers based on attitude is given below.

Table 14. Distribution of PGS farmers based on Attitude

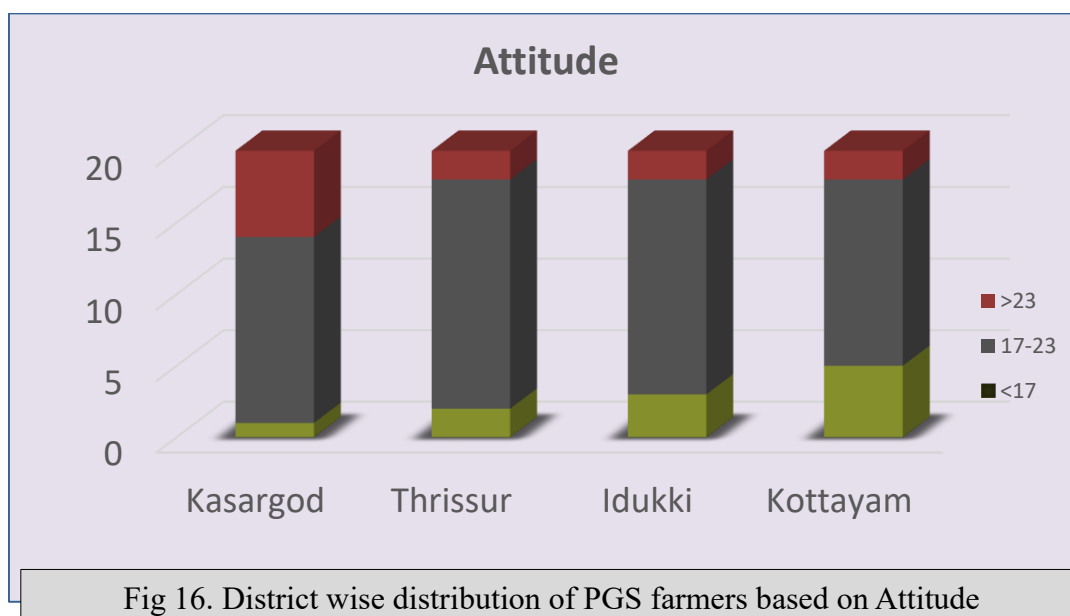
Category (Number)	Kasargod (n=20)		Thrissur (n=20)		Idukki (n=20)		Kottayam (n=20)		Total (N=80)	
	F	%	F	%	F	%	F	%	F	%
<17 (Low)	1	5	2	10	3	15	5	25	11	13.75
17-23 (Medium)	13	65	16	80	15	75	13	65	57	71.25
>23 (High)	6	30	2	10	2	10	2	10	12	15
Total	20	100	20	100	20	100	20	100	80	100

Mean=19.78	SD=3.07	Max=27	Min=15
------------	---------	--------	--------

From the table 14 it is clear that about three-fourth (71.25%) of farmers fall under the category of medium level of attitude. About 15 percent of the respondents show high level of attitude and 13.75 percent of farmers show low level of attitude towards PGS certification. Mean value of attitude is 19.78.

District wise comparison shows that, more than 60 percent of respondents of all the four districts are grouped under medium level of attitude. Maximum number of respondents showing high level of attitude was in Kasargod district. The farmers of Idukki and Kottayam had maximum number of respondents in low category of attitude.

The environmental orientation of farmers along with good adoption practices may be the reason for the majority of farmers to fall under medium category. An increased number of respondents was visible in Kasargod district. The PKVY scheme was initially implemented in in all 14 districts. But in second phase of PKVY only the northern districts were included. So under this scheme fund was not allotted to farmers of Kottayam and Idukki district. Market for organic products is another factor which determine the attitude of farmers. The PGS farmers who were able to chalk out their own strategies for marketing, and received remunerative prices were having high attitude for organic farming. The results of this study is in line with conclusions put forward by, Patel *et al.* (2006) and Sasidharan (2015) in their studies.



4.5. Role performance of farmers in PGS certification

Role performance was evaluated in terms of the proficiency with which an individual carried out the core tasks in the certification procedure. The role performance was measured individually and as a group. The results of role performance is given below.

Table 15. Distribution of PGS farmers based on Individual Role Performance

Category (Number)	Kasargod (n=20)		Thrissur (n=20)		Idukki (n=20)		Kottayam (n=20)		Total (N=80)		
	F	%	F	%	F	%	F	%	F	%	
<32 (Low)	4	20	2	10	1	5	1	5	8	10	
30-45 (Medium)	15	75	16	80	16	80	13	65	60	75	
>45 (High)	1	5	2	10	3	15	6	30	12	15	
Total	20	100	20	100	20	100	20	100	80	100	
Mean= 38.86		SD=6.32				Max-49		Min- 30			

From the Table 15 it is clear that three-fourth of the farmers are with medium level of individual role performance, followed by 15 percent of high role performance and 10 percent of low role performance.

Table 16. Distribution of PGS farmers based on Group Role Performance

Category (Number)	Kasargod (n=20)		Thrissur (n=20)		Idukki (n=20)		Kottayam (n=20)		Total (N=80)	
	F	%	F	%	F	%	F	%	F	%

<18 (Low)	1	5	4	20	2	10	4	20	11	13.75
18-27 (Medium)	14	70	13	65	16	80	15	75	58	72.5
>27 (High)	5	25	3	15	2	10	1	5	11	13.75
Total	20	100	20	100	20	100	20	100	80	100
Mean=22.9	SD=4.46			Max=35			Min= 17			

Table 16 on group role performance shows that 72.5 percent of farmers showed medium level of group role performance followed by 13.75 percent of respondents in both high and low category of group role performance.

From the both tables it is observed that mean value of individual role performance (38.86) is higher than mean value of group role performance (22.9). From this it is very clear that role performance of farmers as an individual is greater than group role performance. The farmers with experience in organic farming, the skills and knowledge acquired through training and media resulted in good individual role performance. The reluctance in attending group meetings and peer appraisal due to convenient time constraints is one reason for less group role performance. It may be also due to the reason that farmers haven't fully understood the PGS concept. The changing extension officers under VFPCCK and their support and overview is also a factor. The results observed are in line with the conclusions given by Neog and Sharma (1993) and Padmavati *et.al.*,(1998), where majority of the farmers had medium level of role performance.

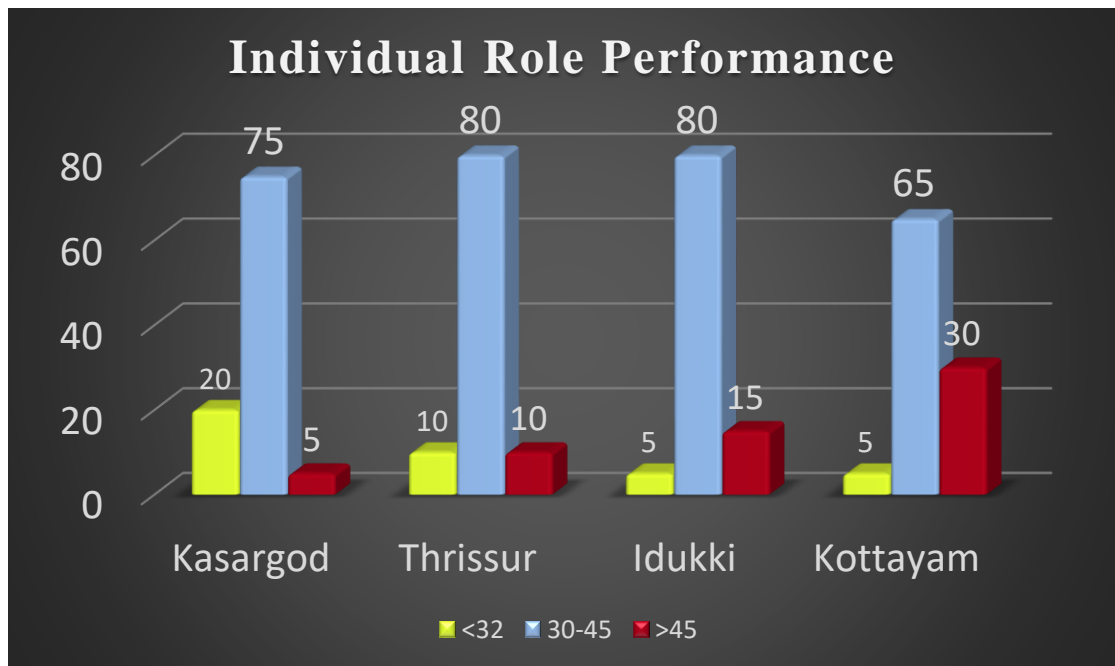


Fig 17. District wise distribution of PGS farmers based on Individual Role Performance

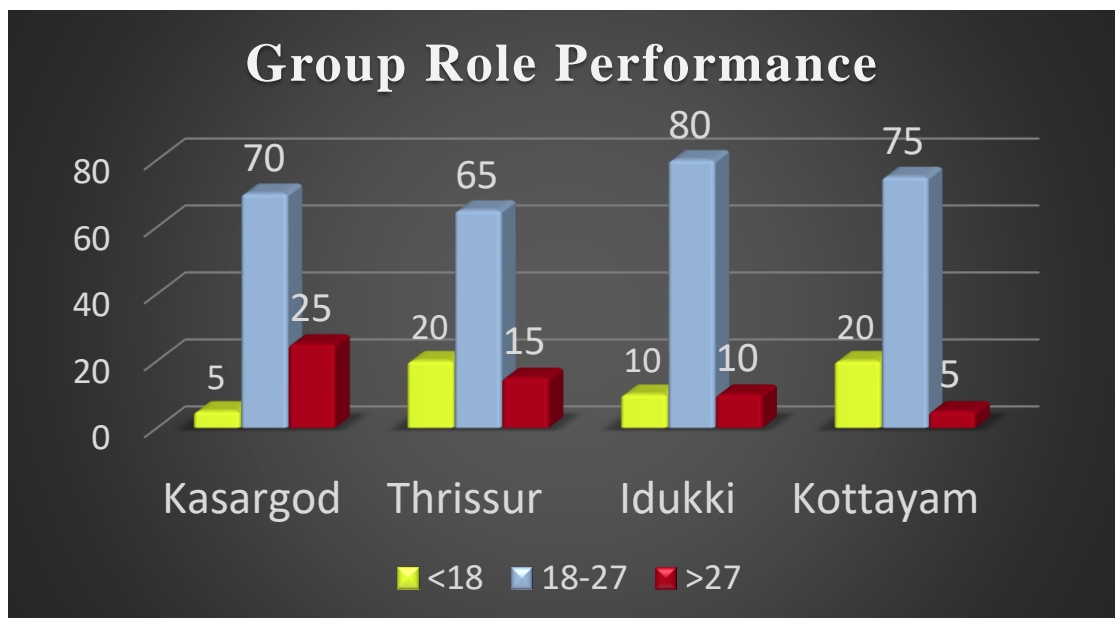


Fig 18. District wise distribution of PGS farmers based on group Role Performance

4.5.1. District wise factor analysis of Role performance

Factor analysis of individual and group role performance was conducted separately for all the four districts. The results of factor analysis is given below. Each of these role dimensions were measured using three statements which were scored at a five point continuum scale, Very high(5), High(4), Neutral(3), Less(2) and very less(1). The statements S1, S2 and S3 measures role proficiency, S4, S5 and S6 measures adaptivity and S7,S8 and S9 measures role proactivity. Factor analysis was done for both individual and group behaviours to identify the most prominent role dimension among the respondents. According to the role performance model used, each of the role dimensions was associated with role behaviours like role clarity, openness to change, role self-efficacy and team support.

4.5.1.1. Kottayam

Factor analysis of the attributes of Role performance of Kottayam is given below.

Table 18. Factor analysis of the attributed of Individual Role performance of Kottayam

Component	Factor			
	1	2	3	4
S1	-.021	.845	.152	-.100
S2	.294	.387	.683	-.339
S3	.597	.375	-.486	-.063
S4	.778	.412	-.300	.063
S5	.833	-.055	.182	-.411
S6	.606	-.439	.303	.347
S7	.781	-.101	.019	.512
S8	-.269	.580	-.367	.286
S9	-.206	.454	.595	.505

Table 19. Factor analysis of the attributes of Group Role performance of Kottayam

Component	Factor			
	1	2	3	4
S1	.530	-.349	.475	.051
S2	-.342	-.448	-.082	.571
S3	.025	.828	.161	.301
S4	.426	.281	.409	.573
S5	-.386	.430	.437	-.338
S6	.237	-.155	.515	-.407
S7	.957	-.034	-.077	-.028
S8	.957	-.034	-.077	-.028
S9	.423	.374	-.622	-.149

From both tables 17 &18 we can observe that, by factor analysis four factors were extracted for both individual and group role performance. For individual role performance, all three dimensions, i.e individual task proficiency, adaptivity and proactivity are effective. But in the case of group role performance, role proficiency and proactivity is the most important role behavior. This indicates high role clarity, openness to change and role self-efficacy in individual characters. But in the case of group role performance of openness change is not an important dimension compared to other two dimensions. The education status, information seeking behavior and good market orientation of farmers of this district substantiate high individual role performance.

4.5.1.2..Kasargod

Factor analysis of the attributes of Role performance of Kasargod is given below

Table 19. Factor analysis of the attributes of individual Role performance of Kasargod

Component	Factor			
	1	2	3	4

S1	.165	.847	.250	-.339
S2	.573	.533	-.344	.384
S3	.750	.150	.486	-.273
S4	.933	.072	.257	.054
S5	.923	-.064	-.124	-.223
S6	.811	-.199	-.244	.364
S7	.853	-.306	-.059	.083
S8	-.220	.153	.676	.678
S9	-.152	.718	-.415	.138

Table 20. Factor analysis of the attributes of Group Role performance of Kasargod

Component	1	2	3
S1	.013	.937	.174
S2	.235	-.087	.942
S3	.734	-.262	.337
S4	.909	.081	-.144
S5	.815	.182	-.039
S6	.897	-.012	-.069
S7	.707	-.351	-.108
S8	.806	-.067	-.158
S9	.744	.392	-.058

From the tables 19 and 20 it was clear that four factors were extracted for individual role performance and three factors were extracted for group role performance. In the case of Kasargod district's individual role performance, it is observed that all three

dimensions, i.e individual task proficiency, adaptivity and proactivity are effective. But in the case of group role performance, role proficiency and openness to change are the most important role behaviors. This indicates high role clarity, openness to change and role self-efficacy in individual characters. The high attitude of farmers towards organic farming justify the individual role performance behaviours of farmers. More team support was seen among the farmers of this district. This was because of the effort of extension officials to popularize PGS along with other schemes implemented for organic farming.

4.5.1.Idukki

Factor analysis of the attributes of Role performance of Idukki. Among the four districts Idukki district had least number of PGS certified farmers.

Table 21.Factor analysis of the attributes of individual Role performance of Idukki

Component	Factor			
	1	2	3	4
S1	-.386	.808	.011	-.108
S2	.046	.700	-.609	.030
S3	.474	.346	.691	-.033
S4	.756	.440	.354	-.047
S5	.783	.388	-.335	-.228
S6	.698	-.321	-.292	.368
S7	.816	-.051	.063	.509
S8	-.448	.248	.548	.395
S9	-.437	.329	-.224	.707

Component	Factor		
	1	2	3
S1	.183	.695	-.321
S2	-.484	-.128	.704

S3	-.306	.216	.777
S4	.107	.829	.116
S5	-.077	.561	.188
S6	.661	-.161	-.077
S7	.894	.179	.213
S8	.825	.085	.362
S9	.653	-.447	.307

Table 22. Factor analysis of the attributes of group Role performance of Idukki

From tables 21 and 22 it was clear that four factors were extracted for individual role performance and three factors were extracted for group role performance. In the Idukki district's individual role performance, it is observed that all three dimensions, i.e. individual task proficiency, adaptivity and proactivity are effective. But in the case of group role performance, role proficiency is the most important role behaviors. This indicates high role clarity, openness to change and role self-efficacy in individual characters.

4.5.1. Thrissur

Factor analysis of the attributes Role performance of Thrissur

Component	Factor			
	1	2	3	4
S1	.426	.418	-.412	-.219
S2	.626	.221	.448	-.485
S3	.751	-.227	-.476	.119
S4	.897	.207	-.245	.124
S5	.842	-.187	.038	-.216
S6	.520	-.160	.706	.157
S7	.410	-.005	.122	.776

S8	.130	.836	.168	.106
S9	-.265	.744	-.005	.134

Table 23. Factor analysis of the attributes of Individual Role performance of Thrissur

Component	Factor			
	1	2	3	4
S1	.273	.288	.651	.449
S2	.395	-.505	-.362	.585
S3	.593	-.656	.131	.091
S4	.877	-.058	.369	-.066
S5	.862	-.017	-.069	-.053
S6	.672	.086	.052	-.659
S7	-.110	.474	.517	.162
S8	.684	.533	-.350	.175
S9	.268	.767	-.427	.141

Table 24. Factor analysis of the attributes of Group Role performance of Thrissur

In the individual role performance of sample respondents of Thrissur, it is observed that, individual task proficiency and adaptivity are effective. But in the case of group role performance, role proficiency is the most important role behaviors. This indicates high role clarity, openness to change and role self-efficacy in individual characters

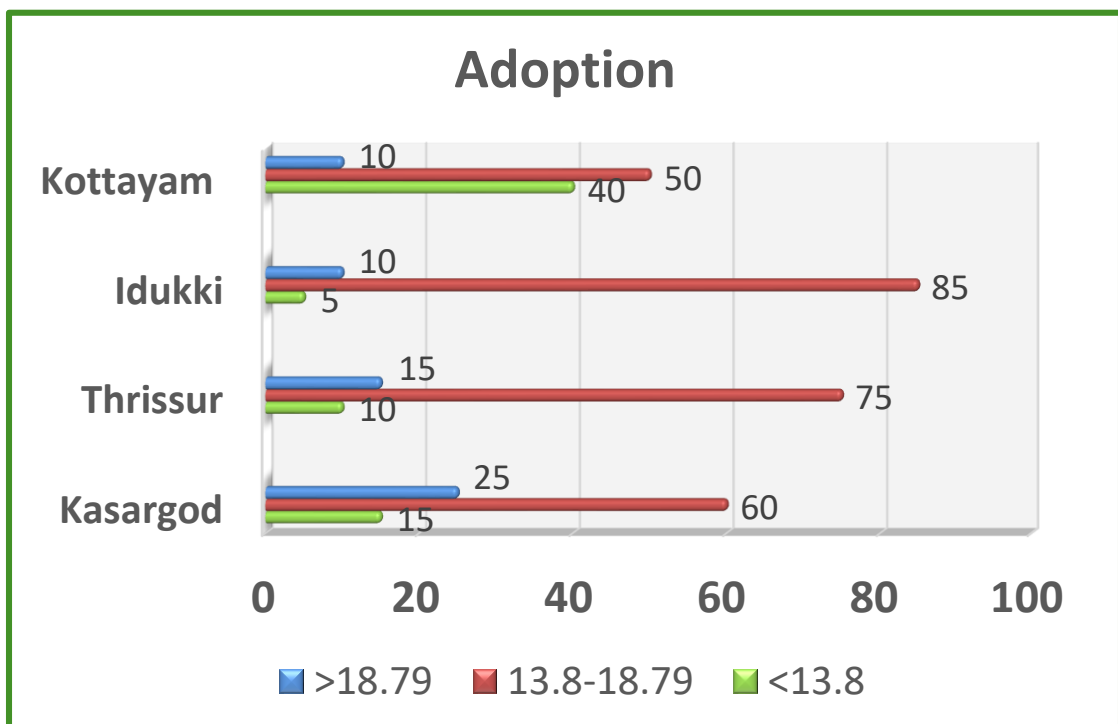
4.6. Adoption behaviour of farmers towards PGS certification

In the current study adoption was referred after degree to which a farmer had actually the adopted PGS certification practices

4.6.1. Distribution of PGS farmers based on Adoption Quotient

Table 25. Distribution of PGS farmers based on Adoption Quotient

Category (Adoption quotient)	Kasargod (n=20)		Thrissur (n=20)		Idukki (n=20)		Kottayam (n=20)		Total (N=80)	
	F	%	F	%	F	%	F	%	F	%
<58.05 (Low)	3	15	2	10	1	5	8	40	14	17.5
55.05- 77.02 (Medium)	12	60	15	75	17	85	10	50	54	67.5
>77.02 (High)	5	25	3	15	2	10	2	10	12	15
Total	20	100	20	100	20	100	20	100	80	100
Mean=67.54		SD=9.48		Max=81.66		Min=51.94				



The results of the adoption quotient revealed, that majority of PGS farmers *i.e.* 67.54 per cent belonged to medium category of adoption, followed by 17.5 and 15 per cent in low and high category of adoption. The mean adoption quotient (AQ) was 67.54 per cent with a maximum and minimum AQ of 81.66 and 51.94 per cent respectively.

It is observed that more than 60 percent of farmers belonged to medium adoption category. The literacy level, high information seeking behaviour and attitude resulted in the adoption of practices. These results are in line with the observation given by Verma *et al.* (2012) and Chandrakanth (2014), in their studies about adoption.

4.6.2. District wise and overall extent of adoption of Organic Practices

Table 26. District wise and overall extent of adoption of Organic Practices

Fig 19. District wise distribution of PGS farmers based on Adoption

Table .District wise and overall extent of adoption of Organic Practices						
Sl. No	Adoption practices	Kasargod (n=20)	Thrissur (n=20)	Idukki (n=20)	Kottayam (n=20)	Overall
1	Organic pledge	71.66	78	67	57.66	68.58
2	Peer appraisal	65.66	73.33	62.33	56	64.33
3	Attending Training	94	100	100	100	98.5
4	Group meeting	31.33	30.33	36	31.33	32.25
5	Maintenance of farm diary and records	17	15.33	15.33	9.33	14.25
6	Exposure visits	32.66	22	19.66	13.66	22

7	Maintenance of Buffer Zone	18.33	11.33	11.33	6.66	11.91
8	Integrated farming system	98.33	98.33	96.66	96.66	97.5
9	Intercropping	98.33	98.33	94.33	94.33	96.33
10	Crop rotation	100	100	100	100	100
11	Seasonal planting	100	100	100	100	100
12	Selection of good seeds	74.33	80	77	69.66	75.25
13	Green manuring	63	67	61.33	52	60.83
14	Biofertilisers	71	82	68	74.33	73.83
15	Mineral fertilisers in natural powdered form	36.33	26.33	24	22.33	28
16	Traditional organic inputs Panchagavya, jeevamrith	85	98.33	96.66	92.66	93.766
17	Composting	85	86	90	81.66	85.66
18	Mulching	83.66	98.33	100	88.66	92.66
19	Biocontrol agents	84.66	98.33	90.33	100	93.33
20	Botanical extracts	76.66	89.33	93.33	69	82.08
21	Bio-pesticides	59.33	61	60	47.66	57
22	Traps(Pheremone, light)	90.33	100	93.33	92.66	94.08

23	Sanitation of farm equipment	49.33	41	58	30	44.58
24	Special storage structures for organic products	57	50.33	42.33	37	46.66

In case of the recommended practices, nine out of twenty four practices had an overall adoption percentage greater than 90.

Seasonal planting and crop rotation was adopted by all the farmers. Common organic practices like mulching, use of bio control agents, intercropping, integrated farming, traditional organic inputs, attending training and traps were followed by more than 90 percent of the farmers. Maintenance of farm records and use of mineral fertilizers in powdered form were the least adopted practices.

The respondents were VFPCCK farmers and they had knowledge about common cultivation practices like seasonal planting and crop rotation. The products like bio control agents and bio-pesticides were easily available to farmers of Thrissur. The PGS recommended practices like record keeping, maintenance of buffer zone and storage techniques was least adopted. This might be because, farmers had not conceptualized the principles of PGS in the way it should be . In the case of these PGS certification practices, majority of the respondents were in evaluation or trial stage of adoption.

4.6.3. Correlation between Adoption Behaviour and independent variables

Table 27. Correlation between Adoption Behaviour and independent variables

Independent variables	Correlation Coefficient
Age	-.283*
Education	.012
Certificate status	.292**

Area under Farming	-.072
Farming experience	.423**
Annual income	.060
Training	.471**
Information Seeking Behaviour	.419**
Market Orientation	.352**
Environmental Orientation	.307**
Attitude	.666**
Knowledge	.544**
Sustainability	.229*

*-Significant at 1 per cent level;

** - Significant at 5 per cent level

The results of the correlation revealed that out of 13 independent variables selected for the study, 10 variables were significantly related to the dependent variable adoption behaviour of PGS farmers. The independent variables, *viz.*, age and sustainability were significant at 1% level of significance followed by certificate status, experience in organic farming, training, information seeking behaviour, market orientation, environmental orientation, attitude and knowledge at 5% level of significance.

Attitude and Knowledge of farmers displayed positive and significant relationship with adoption behaviour. So it can be concluded that farmers with good knowledge about organic practices and positive attitude tend to adopt the recommended organic practices with the expectation of high yield and returns.

Training and information seeking behaviour showed positive and significant relationship with adoption behaviour of farmers. So it was clear that farmers who had attended more training and used media for getting information tend to adopt more organic practices. Through information seeking behaviour farmers could get more information and examples, which aided them with more confidence in adopting many adoption practices.

Environmental orientation and Market orientation was also positively and significantly correlated to adoption behaviour of farmers. This showed that farmers were trying to adopt practices which were environment friendly. This also indicated that farmers were trying to chalk out, market strategies for organic products.

4.7 Constraints encountered by the farmers with suggestions for improvement.

Constraints was operationalized as difficulties faced by farmers in the process of production, certification and marketing of PGS products.

Table 28.Ranking of Constraints faced by farmers.

CONSTRAINTS	SCORE	RANK
1.Lack of market for organic products	4.98	1
2.Unawareness of consumers about PGS	4.8	2
3.Lack of Market Linkage	4.7	3
4. Pest and Wild Animal attack	3.86	4
5. Lack of Government support	3.81	5
6. Reduced Yield	3.2	6
7. Lack of Support for livestock under the scheme	3.13	7
8. Involvement of local politics	2.16	8

The major constraints faced by the PGS farmers were lack of market linkage and satisfactory price for organic products. There is no separate market for organic products. Even though the products are organic, majority of the farmers sell their produces along with other commercial farmers through VFPC outlet at same price. The vegetables and fruits are more perishable compared to other crops like spices and plantation crops. Therefore farmers cannot bargain over the price. Farmers from Kottayam and Idukki district cultivated spices and plantation crops. They stock their products till a favourable price arises in the market. This is not possible in the case of vegetables and fruits due to their perishable nature.

Unawareness of consumers about PGS certification remains as a barrier to farmers for proper marketing. Therefore measures should be taken to give publicity for PGS products

The consumers of the organic products are inhabitants of urban areas. On the contrary, organic production is mainly concentrated in rural areas. Thus lack of proper transportation facilities for the conveyance of fresh organic products to urban areas hinders the marketing of the produce. The absence of market linkage is thus an important constraint for farmers.

The next major constraint faced by farmers was pest and wild animal attack. Many farmers found it difficult to control pest and disease attack by organic measures. Along with that farmers of Kottayam, Idukki and parts of Thrissur were also facing wild animal attack issues.

To meet high cost and bulkiness of the organic inputs, conduct extension activities such as trainings, exposure visits, and demonstration plots a strong financial back up is required. Therefore farmers require proper and timely Government support. The PKVY scheme gives team support to PGS farmers. But in the second phase of PKVY during 2017-18, only the respondents of Kasargod and Thrissur district availed the team support. Thus farmers of Kottayam and Idukki faced lack of Government support.

Yield reduction in the initial years is ranked as the next constraint. Sudden transformation from conventional farming to organic farming results in drastic yield reduction in the initial tenure resulting in the low income from the farmers.

The lack of enough technical staff for field work is another major constraint in implementing this scheme.

4.8. Suggestions for improvement

The suggestions for improvement of the PGS certification process for production, certification and marketing, based on the constraints and suggestions given by farmers and discussion with extension officials is presented below.

Develop proper market linkage by VFPCCK and recognize and brand the products as PGS organic among consumers. Crop insurance and other incentives should be provided to the farmers who have suffered pest and animal attack. Traders and consumers should be made aware to utilize all relevant communication channels to disseminate existent information on PGS is necessary.

The Government should take initiative to start exclusive PGS-INDIA certified marketing and sale centers like departmental stores, supermarkets and outlets in malls.

Encourage PGS –INDIA certified products for export by designing suitable policy and using advanced technologies like block chain technology. Provide more number of training and demonstration on PGS certification to farmers.

Govt. should form a policy to fix a price for organic commodities. At present there is no fixed price for organic products. Fixed price for organic products will give confidence to farmers to pursue organic farming and enrol into PGS certification. This will ensure the sustainability of groups also.

Designating more field officials is necessary, to ensure the proper functioning of group activities and implementing norms of PGS certification.

In current situation of COVID- 19 pandemic, where normal procedures are not possible, e- extension could be utilised efficiently. Training for farmers could be provided using online platforms. Also improved technologies like block chain technology could be employed for marketing of products to ensure traceability and safety of products.

Summary

5. SUMMARY

The growing awareness of the public about sustainability issues, organic certification is a significant tool for the development of the farming sector. It facilitates validation and assures consumers about the quality of products. Third-party certification has become the prevailing method for Organic guarantee among global trade. Obtaining third-party certification is a complicated process for many producers, especially small-scale farmers. Hence Participatory Guarantee System (PGS) acts as a solution to the small scale farmers, by providing quality assurance through a locally relevant, cost-effective, participatory system that operates outside the frame of third-party certification. This study therefore aims to evaluate the performance of Vegetable and Fruit Promotion Council of Kerala (VFPCCK) farmers, in Participatory Guarantee Systems (PGS) certification for production of organic vegetables.

The principal objective of the study was to measure the role performance of PGS farmer individually and in groups for certification, production, and marketing of organic products. The adoption of organic practices recommended by PGS-India was also studied.

The study was conducted in four districts of Kerala viz., Kasargod, Thrissur, Kottayam and Idukki. These four districts were purposively selected based on number of active PGS groups under VFPCCK. 20 farmers were selected from randomly selected five PGS groups of each district, thus making a total of 80 respondents from four districts.

Detailed review of literature, judges rating, and discussion with experts and scientists were used in the selection of variables. The dependent variables selected for the study were role performance and adoption behaviour of PGS farmers. Profile characteristics, knowledge of farmers about organic farming and attitude towards PGS certification were selected as the independent variables. The data was collected using pre-tested and structured interview schedule. The statistical tools used were frequency, simple percentage analysis, correlation analysis and factor analysis.

The salient findings of the study are summarised below:

1. From the secondary data analysis of PGS groups under VFPCCK, it was found that Kasargod district had maximum number (157) of PGS certified farmers under VFPCCK.
2. The minimum number of PGS certified farmers among the four districts were found in Idukki district (7).
3. In the case of Individual role performance, three-fourth of the farmers are with medium level of individual role performance, followed by 15 percent of high role performance and 10 percent of low role performance.
4. The results of group role performance shows that 72.5 percent of farmers show medium level of group role performance followed by 13.75 percent of respondents in both high and low category of group role performance
5. The mean value of individual role performance (38.86) is higher than mean value of group role performance (22.9) and therefore individual role performance is more than group role performance.
6. In Kottayam district role clarity, openness to change and role self-efficacy were crucial individual role characters. But in the case of group role performance of role clarity and role self-efficacy were important factors.
7. In Kasargod district, all three individual role dimensions, i.e individual task proficiency, adaptivity and proactivity are effective. But in the case of group role performance, role proficiency and openness to change are the most important role behaviors.
8. In the case of Idukki district all three individual role dimensions, i.e individual task proficiency, adaptivity and proactivity are effective. But in the case of group role performance, role proficiency is the most important role dimension.
9. In Thrissur district, individual task proficiency and adaptivity are effective dimensions of individual role performance. But in the case of group role performance, role proficiency is the most important role dimension.
10. In the case of adoption behavior of farmers, majority of PGS farmers *i.e.* 67.54 per cent belonged to medium category of adoption, followed by 17.5 percent and 15 per cent in low and high category of adoption respectively.

11. The mean adoption quotient (AQ) was 67.54 per cent with a maximum and minimum AQ of 81.66 and 51.94 per cent respectively
12. In case of the recommended practices, nine out of twenty four practices had an overall adoption percentage greater than 90.
13. Seasonal planting and crop rotation was adopted by all the farmers. Maintenance of farm records and use of mineral fertilizers in powdered form were the least adopted practices.
14. Common organic practices like mulching, use of bio control agents, intercropping, integrated farming, traditional organic inputs, attending training and traps were followed by more than 90 percent of the farmers.
15. In the case of correlation analysis, out of 13 independent variables selected for the study, 10 variables were significantly related to the dependent variable adoption behavior of farmers.
16. The independent variables, *viz.*, age and sustainability were significant at 1% level of significance followed by certificate status, experience in organic farming, training, information seeking behavior, market orientation, environmental orientation, attitude and knowledge at 5% level of significance
17. Regarding the knowledge of PGS farmers, more than 50 percent (55%) of farmers belong to medium category of knowledge on organic practices and PGS certification procedures.
18. In case of Attitude of farmers towards PGS certification, three-fourth (71.25%) of farmers fall under the category of medium level of attitude, 15 percent of the respondents show high level of attitude and 13.75 percent of farmers show low level of attitude.
19. Regarding the age of farmers, the majority (67.5%) of PGS farmers belong to the category of middle (47-60 years) aged group. It was followed by 18.75 percent of respondents belonging to the old age group, *i.e.* greater than 60 and 13.75 percent of respondents belonging to the young age group, *i.e.* less than 47 years
20. Considering the educational status of farmers, 60 percent of the farmers had completed high school, 26.25 percent of respondents had completed pre-

degree, 10 percent of the respondents were graduated and negligible percent (3.75) of respondents appeared for higher education.

21. Regarding the experience in organic farming, 68.75 percent of farmers belong to the medium (3-14 years) category of experience in organic farming and 20 percent of the respondents have experience of more than 14 years.
22. Considering the area under farming, more than 50 percent (55%) farmers belong to the medium (0.8-5 acres) category of area.
23. Regarding the certificate status of farmers, more than 50 percent (53.75%) of farmers did not have PGS green certificate and 46.25 farmers had PGS Green certificate.
24. Looking into the data of annual income, it was found that majority (47.5%) after PGS farmers belong to the medium(90000-3.2 lakhs/annum) category of annual income. 32.5 percent of the respondents have an income of less than 90000 per annum. Only 20 percent of the farmers have income greater than 3.2 lakhs per annum.
25. Regarding the trainings attended by farmers, majority (68.75%) of the farmers belonged to the category of medium level (5-13) of training category.
26. Regarding information seeking behavior, the majority (66.25%) of the farmers fall into the medium (20-24) category, 21.25 per cent of the farmers belong to the higher category, i.e. more than 24, followed by 12.5 per cent of farmers belonging to the lower category, i.e. less than 20.
27. In case of environmental orientation, 80% of the farmers had a medium level of environmental orientation followed by 11.25 per cent of respondents falling into high level and 8.75 per cent of farmers with low-level of environmental orientation.
28. Looking into the data of market orientation, it is observed that more than 50 per cent (53.75%) of the respondents belonged to the medium category, followed by 23.75 per cent, respondents in the higher category and 22.5 per cent of respondents in the lower category.

29. Regarding the sustainability of PGS groups, more than 50 percent (55%) of total respondents belong to the medium category of sustainability, followed by low (27.5%) and high (17.5%).
30. The major constraints faced by the PGS farmers was lack of market linkage and satisfactory price for organic products and unawareness consumers about PGS certification.

Reference

REFERENCE

- Abbot, J.c. 1967. The development of marketing institutions. In: Southworth, H.M. and Johnson, F.B. (eds), *Agricultural development and Economic Growth* (11th Ed). Cornell University Press, Ithaca. Pp. 100-102.
- Ajith, A. 2018. Farmer producer organizaions (fpos) of Idukki district: a multidimensional analysis on role, function and performance (rfp). M.Sc.(Ag) thesis, Kerala Agricultural University, Thrissur, 78p.
- Anupama, S. 2014. Content development for an agricultural expert system on organic vegetable cultivation. M.Sc. (Ag) thesis, Kerala Agricultural University, Thrissur. 134p.
- APEDA [Agricultural and Processed Food Products Export Development Authority].2020. APEDA home page, statistics [on line]. Available: <https://www.apeda.gov.in> [08 May 2020]
- Bairathi, Rajeev, S. L., Intodia., and Dangi. K.L. 2002. National training course on organic farming – an assessment by participants. *Indian J. Trainings and Development*, 32 (3): 79-85.
- Balachandran, V. 2004. Future in the Past: A study on the status of organic farming in Kerala. *Discussion paper no. 82*. Kerala research programme on local level development. Centre for development studies, Thiruvanthapuram, Kerala, 110p.
- Barrett, H.R., Browne, A. W., Harris, P. J.C. and Cadoret, K. 2002. Organic certification and the UK market: organic imports from developing countries. *Food Policy*. 27(2): 301-308.
- Beena, S. 2002. Performance and potential of grama sabhas in crop production in Athiyanoor block of Thiruvananthapuram district. M.Sc. (Ag) thesis, Kerala Agricultural University, Thrissur, 74p
- Bhattacharyya, P. and Krishna, B. 2003. Scope of organic farming in India. *Yojana*, 47(11):27-30.

- Castro, F. and Kirchner, C. 2013. Participatory Guarantee systems- Making organic certification more accessible for small scale farmers. *LEISA India*, 15(2)
- Chandra. K., Srinivasamurthy. R., and Kumar. V.P. 2017. Present status and scenario of Participatory Guarantee System-India [PGS-India] Organic certification system in India. Proceedings of Marketing and quality assurance track Nineteenth Organic World Congress, International expo mart and centre, Greater Noida, UP, India, pp.107-117
- Chandrakanth, W. S. 2014. Resource management of eco-friendly sustainable cotton cultivation by the farmers of Bharuch and Narmada district of south Gujarat. PhD thesis, Navasari Agricultural University, Navasari, 168p.
- Creswell, J. W. 2009. *Research design: Qualitative, quantitative, and mixed methods approaches* (3rd Ed.). Thousand Oaks: Sage Publications, California, 258p.
- Desai, B.R, Girase, K. A. and Patil, B.P. 1997. Constraints faced by contact farmers in Adoption of New technology. *Agricultural Extension Review*: 14-16
- Deshpande, Y. N. 1986. A study of contact farmers under T and V system of extension of Jaina district with reference to the role perception and role performance on opinion leaders. M.Sc. (Agri) Thesis, M.P.K.V., Rahuri.
- Dipeolu, A.O., Bello, K.A., and Akinbode, S.O. 2006. Comparative economic analysis of organic and inorganic vegetable production in Ogun State, Nigeria. In: *Proceedings of the Second National Conference on Organic Agriculture*, 27-29 November 2006, Ibadan. University of Ibadan, Ibadan, Nigeria. pp. 1-24.
- Eeckout, V., H. and Rouan, J. 2017. The road to organic and beyond: Improving transparency in local food networks through PGS mechanisms and web tools. Proceedings of Marketing and quality assurance track Nineteenth Organic World Congress, International expo mart and centre, Greater Noida, UP, India, pp154-159
- Esakkimuthu, M. 2012. Innovations in Technical Backstopping for the Thiruvananthapuram District panchayath – A critical appraisal of the

- SAMAGRA project on Banana cultivation. M.Sc.(Ag.) thesis, Kerala Agricultural University, Thrissur, 133 p.
- Eshwarappa, G. and Gunjal, S.S. 1999. Role perception and role performance of link workers under women youth training extension project. *Mah. J. Extn. Edcn.* 18(3): 23-26
- FAO (2005) The Codex Alimentarius Commission and the FAO WHO food standards programme. Guidelines for the production, Processing, Marketing and Labelling of Organically produced food.
- Fayas, M. 2003. Viability of self-help groups in vegetable and fruit promotion Council Keralam – A multidimensional analysis, M.Sc. (Ag.) thesis, Kerala Agricultural University, Thrissur, 111 p.
- FiBL- IFOAM. [Research Institute of Organic Agriculture - International Federation of Organic Agriculture Movement]. The world of organic statistics and emerging trends 2014.
- Fonseca, M.F., Wilkinson, J., Egelyng, H., and Mascarenhas, G. 2008. The institutionalization of Participatory Guarantee Systems (PGS) in Brazil: Organic and Fair Trade Initiatives. In: Sixteenth IFOAM Organic World Conference; 16-20 June, 2008, Modena, Italy. ISOFAR (International Society of Organic Agriculture Research), Italy [On-line]. Available: Archived at http://orgprints.org/12356/Fonseca_12356_ed.pdf [12April.2010]. Germany.
- Ghosh, P. K., Bandopadhyay, K. K., Misra, A. K. and Rao, A. S. 2004. Balanced fertilization for maintaining soil health and sustainable agriculture. *Fertil. News*, 49(4): 13–35.
- Giovannucci, D. 2007. Evaluation of organic agriculture and poverty reduction in Asia, In: Conference of International Fund for Agriculture Development, 13-16 March 2007, Seoul, 91p.
- GOI [Government of India]. 2011. Census of India, Provisional Population Totals. Office of the Registrar and Census Commissioner, India, pp.144.

- GOK [Government of Kerala]. 2008. Kerala state organic farming policy, strategy and action plan. [On-line]. Available: http://foodprocessingindia.co.in/state_pdf/Kerala/Kerala-Organic-Farming-Policy_2008.PDF.
- Goldsmith, E. and Hildeyard, E. 1996. (Eds). *The Earth Report 2*. Mitchell Beazley, UK. 176p.
- Griffin, P., Neal, A., and Parker, K, S. 2007. A new model of work role performance: Positive behaviour in an uncertain and independent context. *Acad. of Manag. J*, 50(2): 327-347
- Home. R., Ugas. R., and Arbenz. M. 2017. Participatory Guarantee Systems: Organic certification to empower Farmers and strengthen communities. Proceedings of Marketing and quality assurance track Nineteenth Organic World Congress, International expo mart and centre, Greater Noida, UP, India.pp.160-164
- Husain, S. A. 2010. Knowledge, Adoption and Perceived Effectiveness of Indigenous Horticultural Practices in Kerala. Ph.D.Thesis, GRI (DU), Gandhigram.
- IFOAM [The International Federation of Organic Agriculture Movements]. 2010. Annual Report 2008. The International Federation of Organic Agriculture Movements, Bonn, Germany.
- IFOAM. [International Federation of Organic Agriculture Movement]. 2005.
- Jaganathan, D. 2004. Analysis of organic farming practices in vegetable cultivation in Thruvanathapuram district. M.Sc. (Ag) thesis, Kerala Agricultural University, Thrissur, 115p.
- Jayawardhana, J.K.J.P. 2007. Organic agricultural practices in coconut based homesteads in Thiruvananthapuram district. M.Sc.(Ag.) thesis, Kerala Agricultural University, Thrissur, 99 p.
- Kallander, I. 2008. Participatory Guarantee System- PGS. Swedish Society for Nature Conservation, Stockholm. 25p

- Kamalakkannan, K. 2003. Research and extension gaps in commercial vegetable farming in eastern Palakkad. M.Sc.(Ag.) thesis, Kerala Agricultural University, Thrissur, 115 p.
- Kerlinger, F.N. 2004. Foundations of Behavioural Research. Holt, Renhart and Winston, New York. 2004.
- Khaledi, M., Gray, R., Weseen, S., and Sawyer, E. 2007. Assessing the barriers to conversion to organic farming: an institutional analysis. Submitted to: Advancing Canadian Agriculture and Agri-Food Saskatchewan (ACAAFS).
- Kirchner, C. 2017. Participatory Guarantee Systems [PGS]: engines of social development in organic 3.0. Proceedings of Marketing and quality assurance track Nineteenth Organic World Congress, International expo mart and centre, Greater Noida, UP, India.pp.103-106
- Kumar, V.H.V. 2012. Knowledge and adoption of chemical fertilizers and pesticides by cole crop growers, M.Sc. (Ag.) thesis, University of Agricultural Sciences, Dharwad, 108p.
- Laxmi, N.M. 1997. *Organic farming practices and feasibilities in India- Recommendations by the GOI technical team. Proceedings of Third IFOAM-Asia Scientific Conference on Food Security in Harmony with nature, December 1-4, 1997* (ed. Shivashankar, K.). University of Agricultural Sciences, Bangalore, pp.104-108.
- Lekshmi, K.S. 2002. Adoption in the study adoption of recommended practices for chilli cultivation and problems faced by the growers of selected district of Punjab. Phd thesis, Punjab Agricultural University, 137p.
- Loganandhan. N. 2002. Socio- economic implications of organic farming in Tamil Nadu. Ph.D. thesis, IARI New Delhi. 214p.
- Mondal, S., Haitook, T. and Simaraks, S. 2014. Farmers' Knowledge, Attitude and Practice toward Organic Vegetables Cultivation in Northeast Thailand. *Kasetsart J. Soc. Sci.* 35 : 158 – 166.

- Muller, S. 1997. An analysis of the characteristics of women's groups and their role in Rural development, M.Sc.(Ag.) thesis, Kerala Agricultural University, Thrissur, 110 p.
- Nelson,E., Tovar, G. L., Rindermann, S.R. and Angel,M. 2010. Participatory organic certification in Mexico: an alternative approach to maintaining the integrity of the organic label. *Agriculture and human Values*, **27**(2): 227-237
- Neog P.K and Sharma, R. 1993. Perception of role by contact farmers in Assam. *Agricultural Extension Review*, 5(6):18-19
- Oelfse, M., Jensen, H.H., and Lucimar, S. 2010. Certified organic agriculture in China and Brazil: Market accessibility and outcomes following adoption. *Ecological Economics*. 69 (2): 1785–1793
- of Organic Agriculture Movements, Bonn,
- Oyesola., Olutokunbo, B., Obabire., and Ibikunle, E. 2011. Farmers' perceptions of organic farming in selected local government areas of ekiti state, Nigeria. *J. of Org. Syst.* 6 (1): 83-91.
- Padel, S. 2001. Conversion to organic farming: a typical example of the diffusion of an innovation? *Sociologica Ruralis*. 41(1): 40-61.
- Padmavati, M., Reddy, M,M,K. and Reddy, M.S. 1998. Relationship of selected independent variables with role perception and role performance of Mitra-Kisan in Watershed Development Project, Res. J. ANGRAU.26(1):54-56
- Pandey, J. and Singh, A. 2012. Opportunities and constraints in organic farming: an Indian perspective, *J. Sci. Res.***56**: 65.
- Panse, V.G. and Sukhatme, P.V. 1967. *Statistical methods for agricultural workers*. Indian Council of Agricultural Research, New Delhi, 360p.
- Patel, M. 2008. A study on production and marketing management behavior of organic vegetable growers in Belgaum district. M.Sc. (Ag) thesis, University of Agricultural Sciences, Dharward, 83p.

- Patel, M. C., Chauhan, N.B., and Korat, D.M. 2006. Consequences of farmer's attribute on their attitude towards integrated pest management strategies. *Karnataka J. Agric. Sci.* 20(4): 797-799.
- Paull, J. 2008. The Lost History of Organic Farming in Australia. *J. Org. Syst.* 3(2): 2-17.
- Paull, J. 2011. The uptake of organic agriculture: A decade of worldwide development. *J. Social and Dev. Sci.*, 2(3): 111-120.
- Pawar, A. 2013. Eco-friendly mango production technologies in Konkan region. PhD thesis, Dr. BSKKV, Dapoli, Maharashtra. 175p.
- PGS INDIA [Participatory Guarantee System-India].2018.PGS INDIA home page[online].Available:<https://pgsindia-ncof.gov.in>.[20.jan.2019]
- PGS-India [Participatory Guarantee System for India]. 2015. Operational manual for domestic organic certification. National Centre of organic farming, Ghaziabad,19-21p
- Pimentel, D., Hepperly, P., Hanson, J., Douds, D. and Seidel, R. 2005. Environmental, Energetic, and Economic Comparisons of Organic and Conventional Farming Systems. *Bio-Sci.*,55: 573 – 582.
- Podsakoff, P. M., MacKenzie, S. B., Paine, J. B., and Bachrach, D. G. 2000. Organizational citizenship behaviors: Critical review of the theoretical and empirical literature and suggestions for future research. *Journal of Management*, 26: 513–563.
- Prabakaran, P. 2012. The Report on The Development of Kasaragod District., Kerala. 2012.
- Priya, R.D. 2003. Micro credit and technology utilization in vegetable production by Self Help Groups in Thiruvananthapuram district. M.Sc.(Ag.) thesis, Kerala Agricultural University, Thrissur, 102 p.
- Rajput, U. N. 2008. A study of role perception and role performance of member of farmer scientist forum. M.Sc. (Agri) Thesis, M.P.K.V., Rahuri.

- Reddy, C.S. 2005. SHGs: A keystone of micro finance in India: women empowerment and social security [on line]. Available: [http:// www.self-help approach.com](http://www.self-help-approach.com). [20 June 2020].
- Reddy, M, M. 1989. A study on role perception and role expectation of Contact farmers as perceived by VEOs contact farmers and other farmers. M.Sc.(Ag) thesis, S.V Agricultural College, Tirupati, 60p.
- Rogers, E.M. 2003. Diffusion of Innovations. 5. Auflage, Free Press, New York, London, 251p
- Samantha, P.K. 1977. A study of some agro-economic, socio psychological and communication variables associated with repayment behaviour of agricultural credit users of nationalized bank, Ph.D. Thesis, Bidhan Chandra Krishi Viswa Vidyalaya., West Bengal, 189 p
- Sampath, V. N., 2009. Role perception and role performance of members of technology tranfer club of KVK, Nandurbar. M.Sc. (Agri) Thesis, M.P.K.V., Rahuri.
- Sanderson, K.L. 2004. Extension support for organic farmers in the South: A function of attitude, knowledge, or confidence (Unpublished master's thesis). University of Florida, FL, USA.
- Sarkar, J.D., Shrivastava, K.K and Sangode, P.K. 2002. Role performance of tribal leaders in adoption of agricultural technologies. *Mah. J. Extn. Edn.* 21(1): 63-66
- Sasidharan., A. 2015. Adoption of organic farming technologies in Banana and vegetable crops in Kasargod district. M.Sc. (Ag) thesis, Kerala Agricultural University, Thrissur. 160p.
- Sayooj, V. 2013. Performance analysis of Vegetable and Fruit Promotion Council Kerala (VFPCCK). M.Sc. (Ag) thesis, Kerala Agricultural University, Thrissur, 55p.
- Shaju, T. 1998. Role of farmwomen in planning and management of watershed. M.Sc.(Ag.) thesis, Kerala Agricultural University, Thrissur, 134 p.

- Sherief, A.K. 1998. Sustainable agriculture appropriate to homestead farming in Kerala. Ph.D. thesis, Annamalai University, Annamalai Nagar, 172 p.
- Sidram. 2008. Analysis of organic farming practices in pigeon pea in Gulbarga District of Karnataka state. M.Sc.(Ag) thesis University of Agriculture Sciences, Dharwad, 94p.
- Singh, K.M., Singh, R.K.P. and Kumar, A. 2014. Adoption of Modern Agricultural Technologies: A Micro Analysis at Farm Level in Bihar. *Environment & Ecology.*, 32(4): 1342–1346.
- Sivakumar, T. 2001. Eco-friendly pest management in snakegourd. M.Sc. (Ag) thesis, Kerala Agricultural University, Thrissur, 122p.
- Solomon, O. 2008. Small scale oil palm farmer's perception of organic agriculture in Imo State, Nigeria. *J. Environmental Ext.* 7: 67-71.
- Sreedaya, G.S. 2000. Performance Analysis of the Self help Groups in Vegetable production in Thiruvananthapuram District. M.Sc. (Ag) thesis, Kerala Agricultural University, Thrissur, 150p.
- Sreevalsan, J.M. 1995. Taxonomical analysis of agricultural modernity of farmers. M.Sc. (Ag) Thesis, Kerala Agricultural University, Thrissur, 68p.
- Sriram, N. 1997. Eco-friendly agricultural practices in cotton cultivation – farmer's Awareness, Attitude and adoption. UNpub. M.Sc. (Ag.) Thesis, A.C. & R. I., T.N.A.U., Coimbatore, 85p.
- Suja, V.S and Somu, A. 2013. Outreach and sustainability of SHG- A study on SNDP union's Self Help Groups. *J. manag.* 1(1):6-17
- Sutham, L. 2003. Analysis of Farmers Participation in the Participatory Technology Development (PTD) Process *vis-a-vis* plant protection in vegetables at Kunnathukal Panchayat, M.Sc.(Ag.) thesis, Kerala Agricultural University, Thrissur, 113 p.
- Sundaran, S, R., 2016. Performance analysis of Self Help Groups (SHGs) and Swasraya Karshaka samithis (SKS) on farm entrepreneurship in Thruvananthapuram district. M.Sc. (Ag.) thesis, Kerala Agricultural University, Thrissur, 113 p.

- Thiagarajan, S. and Ramachandran, N. 2001. Adoption of bio-fertilizers in rice cultivation. *Indian J. Ext. Educ.* 37(3,4): 79-182.
- Thomas, A. 2000. Problems and prospects of medicinal plant cultivation in Thiruvananthapuram district. M.Sc. (Ag.) thesis, Kerala Agricultural University, Thrissur, 112 p.
- Tippeswamy, R. 2007. A study on knowledge and adoption of plant protection measures in coconut cultivation by farmers of Chitraduga district. M.Sc. (Ag) thesis, University of Agricultural Sciences, Dharwad, 117p.
- Tovar, G.T., Martin, L., and Mutersbaugh, T. 2005. Certified organic Agriculture in Mexico: market connections and certification practices. *J. of Rural Studies.* 21(4): 461-474.
- Vasantha, S. 2014. Challenges of self-help group members towards income generation activity. *Int. J. Accounting and Financial Manag. Res.* 4(2): 1-8
- Verma, R.S., Sengar, M.K., Chaturvedi and Verma, L.R. 2012. Adoption of organic farming practices in paddy cultivation by the tribal farmers of Chhattisgarh. *Agric. update.* 7(3,4): 436-440.
- VFPCCK [Vegetable and Fruit Promotion Council Keralam]. 2015. VFPCCK home page [on line]. Available: <http://www.vfpck.org> [6 July 2020]
- Waman, G. K. and Girase, K. A. 2002. Role perception and role performance of extension personnel working in Single Window System of Agriculture Development. *Mah. J. Extn. Edn.* 21(1): 107-109
- Wasnik, S.M. and Bhaskar, K.S. 2004. Awareness and adoption of eco- friendly cotton cultivation practices by watershed farmers in Vidarbha region of Maharashtra : A case study. *Asian J. Ext. Educ.* 23 (1): 188-193.
- Yadav, A.K. 2009. Organic Status in India, Regional Centre of Organic Farming (RCOF), India
- Zanasi, C. and Venturi, P. 2008. Impact Of The Adoption Of Participatory Guarantee Systems (PGS) For Organic Certification For Small Farmers In Developing Countries: The Case Of RedeEcovida In Brazil. *Cultivating The Future Based*

On Science: 2nd Conference of ISOFAR (International Society of Organic Agriculture Research), Modena, Italy.

Plate1 & 2: Interaction with PGS farmer at Trivandrum district during Pilot survey



Abstract

**PARTICIPATORY GUARANTEE SYSTEM (PGS) CERTIFICATION FOR
PRODUCTION OF ORGANIC VEGETABLES: AN ANALYTICAL STUDY**

by

AASHIKA SASINDRAN

(2018-11-031)

Abstract of Thesis

**Submitted in partial fulfilment of
the requirements for the degree of**

MASTER OF SCIENCE IN AGRICULTURE

Faculty of Agriculture

Kerala Agricultural University



DEPARTMENT OF AGRICULTURAL EXTENSION

COLLEGE OF AGRICULTURE

VELLAYANI, THIRUVANANTHAPURAM - 695 522

KERALA, INDIA

2020



KERALA AGRICULTURAL UNIVERSITY

COLLEGE OF AGRICULTURE

Department of Agricultural Extension

**Participatory Guarantee System (PGS) certification for
production of organic vegetables: An analytical study**

DEFENSE SEMINAR

Aashika Sasindran

ABSTRACT

Date:22/08/2020

2018-11-031

Time: 11.00-11.30 am

The study entitled 'Participatory Guarantee System (PGS) certification for production of organic vegetables: An analytical study' was undertaken during 2019-2020. The objectives were to study the Participatory Guarantee System (PGS) certification for production of organic vegetables and to analyze the role of PGS farmers in the certification procedure, production and marketing among the VFPCK farmers in Kerala. The constraints faced during the implementation of PGS were also studied and appropriate suggestions are given to overcome the problems. The study was conducted in Kasargod, Idukki, Kottayam and Thrissur districts of Kerala which have maximum active number of PGS local groups under VFPCK. The sample comprised of 80 PGS farmers, out of which 20 respondents were selected from each district. Thirteen independent variables were selected through judge's rating and role performance and adoption behaviour were the dependent variables selected.

On analysis, it was found that 67.5 per cent of PGS farmers belonged to middle age (47-60) category, and 60 per cent of the respondents had education up to high school level. Majority of the respondents (55%) belonged to medium category of land holding with medium farming experience in organic farming (68.75%). About half (47.5%) of the organic farmers had medium level of annual income. More than half (53.75%) of PGS farmers did not possess organic certificate and majority of the PGS farmers belonged to the medium category of Information seeking behavior(66.25), environmental orientation (80%), attitude (77.25%), Knowledge (55%), sustainability (55%), market orientation (53.75%) and trainings acquired (68.75%).

The analysis of PGS farmers based on their individual role performance revealed that 75 per cent of them belonged to medium category followed by 15 per cent in the high category and remaining 10 per cent in the low category. The distribution of farmers based on their role performance in the PGS group revealed that 72.5 per cent of them belonged to medium category and high and low category have equal (13.75%) respondents. The mean value of Individual role performance (38.86) is greater than mean

value of group role performance (22.9), indicating a higher individual role performance among the PGS farmers.

The results of factor analysis revealed that among the individual roles, respondents from all four districts showed characteristics of Individual task proficiency, Individual task adaptivity and individual task proactivity. Among the group roles, group member proactivity was displayed in all four districts, group member proficiency was displayed among the farmers of Kottayam and Kasargod and group member adaptivity was displayed among the farmers of Kasargod and Thrissur.

The results of the adoption quotient revealed, that majority of PGS farmers *i.e.* 67.54 per cent belonged to medium category of adoption, followed by 17.5 and 15 per cent in low and high category of adoption. The mean adoption quotient (AQ) was 67.54 per cent with a maximum and minimum AQ of 81.66 and 51.94 per cent respectively. In case of the recommended practices, nine out of twenty four practices had an overall adoption percentage greater than 90.

The results of the correlation revealed that out of 13 independent variables selected for the study, 10 variables were significantly related to the dependent variable adoption of organic methods recommended by PGS. The independent variables, *viz.*, age and sustainability were significant at 1% level of significance followed by certificate status, experience in organic farming, training, information seeking behavior, market orientation, environmental orientation, attitude and knowledge at 5% level of significance

The major constraints faced by the PGS farmers were lack of market linkage and satisfactory price for organic products. Unawareness of consumers about PGS certification remains as a barrier to farmers for proper marketing. Pest and wild animal attack and lack of government support are another constraints faced by farmers. The strategy to overcome these constraints is to develop proper market linkage by VFPCCK and to recognize and brand the products as PGS organic among consumers. Moreover, Crop insurance and other incentives should be provided to the farmers who have suffered pest and animal attack.

It could be concluded that, PGS was initiated as a credible, relevant and cost-effective mechanism through which farmers can provide a trust or guarantee of their products as organic to consumers. The findings of this study indicate that the individual role performance among registered PGS farmers is greater than group role performance. Also, the intensity of total adoption of organic practices was significantly high (67.5%) among the PGS farmers. For effective functioning, VFPCCK should review their existing PGS in order to build their systems procedures that enable and encourage all their key stakeholders to take part in the design and implementation of their PGS.



**കേരള കാർഷിക സർവകലാശാല
കോളേജ് ഓഫ് അഗ്രികൾച്ചർ, വെള്ളായണി
വിജ്ഞാന വ്യാപന വിഭാഗം**

**ജൈവ പച്ചക്കറികൾ ഉൽപാദിപ്പിക്കുന്നതിനുള്ള
'പാർട്ടിസിപേറ്ററി ഗ്യാരണ്ടി സിസ്റ്റം (പിജിഎസ്) സർട്ടിഫിക്കേഷൻ:
ഒരു അനലിറ്റിക്കൽ സ്റ്റഡി**

സംഗ്രഹം

ആഷിക ശശീന്ദ്രൻ

2018-11-031

ജൈവ പച്ചക്കറികൾ ഉൽപാദിപ്പിക്കുന്നതിനുള്ള പാർട്ടിസിപേറ്ററി ഗ്യാരണ്ടി സിസ്റ്റം (പിജിഎസ്) സർട്ടിഫിക്കേഷൻ വിവരിക്കുക, കേരളത്തിലെ വിഎഫ്പിസികെ കർഷകർക്കിടയിൽ സർട്ടിഫിക്കേഷൻ നടപടിക്രമം കണ്ടെത്തുക, ഉൽപാദനം, വിപണനം എന്നിവയിൽ പിജിഎസ് കർഷകരുടെ പങ്ക് വിശകലനം ചെയ്യുക എന്ന ലക്ഷ്യം അടിസ്ഥാനമാക്കിക്കൊണ്ട് ജൈവ പച്ചക്കറികൾ ഉൽപാദിപ്പിക്കുന്നതിനുള്ള 'പാർട്ടിസിപേറ്ററി ഗ്യാരണ്ടി സിസ്റ്റം (പിജിഎസ്) സർട്ടിഫിക്കേഷൻ: ഒരു അനലിറ്റിക്കൽ സ്റ്റഡി' എന്ന പഠനം 2019-2020 കാലയളവിൽ നടന്നു. പിജിഎസ് നടപ്പാക്കുമ്പോൾ നേരിടുന്ന തടസ്സങ്ങൾ പഠിക്കുകയും പ്രശ്നങ്ങളെ മറികടക്കാൻ ഉചിതമായ നിർദ്ദേശങ്ങൾ നൽകുകയും ചെയ്തു. വിഎഫ്പിസികെയുടെ കീഴിൽ പരമാവധി സജീവമായ പിജിഎസ് പ്രാദേശിക ഗ്രൂപ്പുകളുള്ള കേരളത്തിലെ കാസർഗോഡ്, ഇടുക്കി, കോട്ടയം, തൃശ്ശൂർ ജില്ലകളിലാണ് പഠനം നടത്തിയത്. 80 പിജിഎസ് കർഷകരാണ് സാമ്പിളിൽ ഉള്ളത്, അതിൽ ഓരോ ജില്ലയിൽ നിന്നും 20 പേരെ തിരഞ്ഞെടുത്തു. വിദഗ്ദ്ധരുടെ റേറ്റിംഗിലൂടെ പതിമൂന്ന് സ്വതന്ത്ര വേരിയബിളുകൾ തിരഞ്ഞെടുത്തു, കർത്തവ്യ പ്രകടനവും ദത്തെടുക്കൽ സ്വഭാവവും തിരഞ്ഞെടുത്ത ആശ്രിത വേരിയബിളുകളാണ്.

വിശകലനത്തിൽ, പിജിഎസ് കർഷകരിൽ 67.5 ശതമാനം മധ്യവയസ്സ് (47-60) വിഭാഗത്തിലാണെന്നും 60 ശതമാനം പേർ ഹൈസ്കൂൾ തലം വരെ വിദ്യാഭ്യാസം നേടിയിട്ടുണ്ടെന്നും കണ്ടെത്തി. പ്രതികരിച്ചവരിൽ ഭൂരിഭാഗവും (55%) ജൈവകൃഷിയിൽ ഇടത്തരം കൃഷി പരിചയമുള്ളവരും (68.75%) ഇടത്തരം ഭൂവുടമകളുമാണ് ജൈവ കർഷകരിൽ പങ്കുതിയോളം പേർക്കും (47.5%) വാർഷിക വരുമാനത്തിൽ ഇടത്തരം നിലവാരമുണ്ട്. പിജിഎസ് കർഷകരിൽ പങ്കുതിയിലധികം (53.75%) പേർക്ക് ഓർഗാനിക് സർട്ടിഫിക്കറ്റ് ഇല്ലായിരുന്നു, കൂടാതെ പിജിഎസ് കർഷകരിൽ ഭൂരിഭാഗം പേരും വിവരങ്ങൾ കണ്ടെത്തുന്ന പെരുമാറ്റം (66.25), പരിസ്ഥിതി ദിശാബോധം (80%), മനോഭാവം (77.25%), അറിവ് (55%), സുസ്ഥിരത (55%), മാർക്കറ്റ് ഓറിയന്റേഷൻ (53.75%), പരിശീലനം (68.75%) എന്നിവയിൽ നല്ല രീതിയിൽ പ്രദർശിപ്പിച്ചു.

വ്യക്തിഗത കർത്തവ്യ പ്രകടനത്തെ അടിസ്ഥാനമാക്കി നടത്തിയ പിജിഎസ് കർഷകരുടെ വിശകലനത്തിൽ 75 ശതമാനം പേരും ഇടത്തരം വിഭാഗത്തിൽ പെട്ടവരാണെന്നും ഉയർന്ന വിഭാഗത്തിൽ 15 ശതമാനവും താഴ്ന്ന വിഭാഗത്തിൽ 10 ശതമാനം പേരും ഉണ്ടെന്നും കണ്ടെത്തി. പിജിഎസ് ഗ്രൂപ്പിലെ അവരുടെ പ്രകടനത്തെ അടിസ്ഥാനമാക്കി കർഷകരുടെ വിതരണം 72.5 ശതമാനം ഇടത്തരം വിഭാഗത്തിൽ പെട്ടവരാണെന്നും ഉയർന്നതും താഴ്ന്നതുമായ വിഭാഗങ്ങൾക്ക് തുല്യമായ (13.75%) പ്രതികരണമുണ്ടെന്നും വെളിപ്പെടുത്തി. വ്യക്തിഗത കർത്തവ്യ പ്രകടനത്തിന്റെ (38.86) ശരാശരി മൂല്യം സാമൂഹിക കർത്തവ്യ പ്രകടനത്തിന്റെ (22.9) ശരാശരി മൂല്യത്തേക്കാൾ കൂടുതലാണ്, ഇത് പിജിഎസ് കർഷകരിൽ ഉയർന്ന വ്യക്തിഗത റോൾ പ്രകടനത്തെ സൂചിപ്പിക്കുന്നു.

വ്യക്തിഗത കർത്തവ്യങ്ങൾക്കിടയിൽ, നാല് ജില്ലകളിൽ നിന്നുമുള്ള പ്രതികരിക്കുന്നവരിൽ വ്യക്തിഗത ടാസ്ക് പ്രാവീണ്യം, വ്യക്തിഗത ടാസ്ക് അഡാപ്റ്റിവിറ്റി, വ്യക്തിഗത ടാസ്ക് പ്രോക്റ്റിവിറ്റി എന്നിവയുടെ സവിശേഷതകൾ കാണിച്ചുവെന്ന് ഘടക വിശകലനത്തിന്റെ ഫലങ്ങൾ വെളിപ്പെടുത്തി. സാമൂഹിക കർത്തവ്യത്തിൽ നാല് ജില്ലകളിലും ഗ്രൂപ്പ് മെംബർ പ്രോക്റ്റിവിറ്റി പ്രദർശിപ്പിച്ചു, കോട്ടയം, കാസർഗോഡ് എന്നിവിടങ്ങളിലെ കർഷകർ ഗ്രൂപ്പ് മെംബർ പ്രാവീണ്യം പ്രദർശിപ്പിക്കുകയും കാസർഗോഡിലെയും തൃശ്ശൂരിലെയും കർഷകർ ഗ്രൂപ്പ് മെംബർ അഡാപ്റ്റിവിറ്റി പ്രദർശിപ്പിക്കുകയും ചെയ്തു.

ദത്തെടുക്കൽ ഘടകത്തിന്റെ ഫലങ്ങൾ പ്രകാരം, പിജിഎസ് കർഷകരിൽ ഭൂരിഭാഗവും അതായത് 67.54 ശതമാനവും ഇടത്തരം ദത്തെടുക്കൽ വിഭാഗത്തിൽ പെട്ടവരാണ്, തുടർന്ന് 17.5, 15 ശതമാനം താഴ്ന്നതും ഉയർന്നതുമായ ദത്തെടുക്കൽ വിഭാഗത്തിൽ പെടുന്നു. ശരാശരി ദത്തെടുക്കൽ അളവ് (എക്യു) 67.54 ശതമാനമാണ്, പരമാവധി എക്യു യഥാക്രമം 81.66 ഉം 51.94 ഉം ആണ്. ശുപാർശ ചെയ്യുന്ന രീതികളുടെ കാര്യത്തിൽ, ഇരുപത്തിനാല് മേഖലകളിൽ ഒമ്പത് മൊത്തത്തിലുള്ള ദത്തെടുക്കൽ ശതമാനം 90 ൽ കൂടുതലാണ്.

പരസ്പര ബന്ധത്തിന്റെ ഫലങ്ങൾ പഠനത്തിനായി തിരഞ്ഞെടുത്ത 13 സ്വതന്ത്ര വേരിയബിളുകളിൽ 10 വേരിയബിളുകൾ പിജിഎസ് ശുപാർശ ചെയ്യുന്ന ജൈവ രീതികളെ ആശ്രയിച്ചുള്ള വേരിയബിളുമായി ബന്ധപ്പെട്ടിരിക്കുന്നുവെന്ന് വെളിപ്പെടുത്തി. സർട്ടിഫിക്കറ്റ് നില, ജൈവകൃഷിയിലെ പരിചയം, പരിശീലനം, വിവരങ്ങൾ കണ്ടെത്തുന്ന സ്വഭാവം, മാർക്കറ്റ് ഓറിയന്റേഷൻ, പാരിസ്ഥിതിക ദിശാബോധം, മനോഭാവം, അറിവ് എന്നിവ 5% പ്രാധാന്യമുള്ള തലത്തിൽ 1% പ്രാധാന്യമുള്ള സ്വതന്ത്ര വേരിയബിളുകൾ പ്രാധാന്യമർഹിക്കുന്നു.

കമ്പോള ബന്ധത്തിന്റെ അഭാവവും ജൈവ ഉൽപ്പന്നങ്ങളുടെ അത്യപ്കരമായ വിലയുമാണ് പിജിഎസ് കർഷകർ നേരിടുന്ന പ്രധാന തടസ്സങ്ങൾ. പിജിഎസ് സർട്ടിഫിക്കേഷനെക്കുറിച്ച് ഉപഭോക്താക്കളുടെ അറിവില്ലായ്മ ശരിയായ വിപണനത്തിന് കർഷകർക്ക് ഒരു തടസ്സമായി തുടരുന്നു. കീടങ്ങളും വന്യമൃഗങ്ങളുടെ ആക്രമണവും സർക്കാർ പിന്തുണയുടെ അഭാവവുമാണ് കർഷകർ നേരിടുന്ന മറ്റൊരു തടസ്സങ്ങൾ. ഈ പരിമിതികളെ മറികടക്കാനുള്ള തന്ത്രം വിഎഫ്പിസികെയുടെ ശരിയായ മാർക്കറ്റ് ബന്ധം വികസിപ്പിക്കുകയും ഉപഭോക്താക്കളിൽ പിജിഎസ് ഓർഗാനിക് ആയി ഉൽപ്പന്നങ്ങളെ തിരിച്ചറിയുകയും ബ്രാൻഡ് ചെയ്യുകയും ചെയ്യുക എന്നതാണ്. മാത്രമല്ല, കീടങ്ങളും മൃഗ ആക്രമണവും അനുഭവിക്കുന്ന കർഷകർക്ക് വിള ഇൻഷുറൻസും മറ്റ് ആനുകൂല്യങ്ങളും നൽകണം.

വിശ്വസനീയമായതും പ്രസക്തവും ചെലവ് കുറഞ്ഞതുമായ ഒരു സംവിധാനമായാണ് പിജിഎസ്സുടങ്ങിയത്. ഈ പഠനത്തിന്റെ കണ്ടെത്തലുകൾ സൂചിപ്പിക്കുന്നത് രജിസ്റ്റർ ചെയ്ത പിജിഎസ് കർഷകരിൽ വ്യക്തിഗത കർത്തവ്യ പ്രകടനം സാമൂഹിക കർത്തവ്യ പ്രകടനത്തേക്കാൾ വലുതാണെന്നാണ്. പിജിഎസ് കർഷകരിൽ ജൈവ സമ്പ്രദായങ്ങളുടെ തീവ്രത ഗണ്യമായി ഉയർന്നുവെന്നും കണ്ടെത്തി(67.5%). ഫലപ്രദമായ പ്രവർത്തനത്തിനായി, വിഎഫ്പിസികെ അവരുടെ നിലവിലുള്ള പിജിഎസിനെ അവലോകനം ചെയ്യേണ്ടതാണ്, അവരുടെ സിസ്റ്റം നടപടിക്രമങ്ങൾ നിർമ്മിക്കുന്നതിനായി അവരുടെ എല്ലാ പ്രധാന പങ്കാളികളെയും രൂപകൽപ്പനയിൽ പങ്കാളികളാക്കാനും പ്രാപ്തമാക്കാനും പ്രോത്സാഹിപ്പിക്കുകയും ചെയ്യുന്നു.

Appendices

APPENDIX I



KERALA AGRICULTURAL UNIVERSITY
COLLEGE OF AGRICULTURE
Department of Agricultural Extension
Vellayani - 695 522, Thiruvananthapuram

Dr. A.K Sherief
Professor
Department of Agricultural Extension

Mobile : 9447429615
E-mail : sherief.ak@kau.in
Date: 05-12-2019

Sir/Madam,

Ms. Aashika Sasindran (Ad. No. 2018-11-031), the Post Graduate student in the Department of Agricultural Extension, College of Agriculture, Vellayani is undertaking a research study entitled “ Participatory Guarantee System (PGS) certification for production of organic vegetables: An analytical study” as part of her research work. Variables supposed to have close association with the study have been identified after extensive review of literature.

Considering your vast experience and knowledge on the subject, I request you to kindly spare some of your valuable time to examine the variables critically and to rate the relevancy of them with the continuum provided. Any other variables found suitable for the study may also be kindly suggested inorder to improve the quality of the study. I request your goodself to kindly return the list duly filled at the earliest in the self-addressed stamped envelope enclosed with this letter.

Thanking you

Yours faithfully

(A.K Sherief)



KERALA AGRICULTURAL UNIVERSITY
COLLEGE OF AGRICULTURE
Department of Agricultural Extension
Vellayani, Thiruvananthapuram - 695 522

TITLE OF STUDY

“PARTICIPATORY GUARANTEE SYSTEM (PGS) CERTIFICATION FOR PRODUCTION OF ORGANIC VEGETABLES: AN ANALYTICAL STUDY”

OBJECTIVES OF THE STUDY

To study the Participatory Guarantee System (PGS) certification for production of organic vegetables and analyze the role of PGS farmers in the certification procedure, production and marketing and examine the constraints faced in the implementation of PGS among the VFPCCK farmers in Kerala.

Table showing variables taken for the study

Variables are given in bold cases and their meaning is explained for its easy understanding. You may please rate the statement with a tick mark in the appropriate column against the statement with special reference to its importance to meet the objectives of the study. You are free to correct and suggest modification for the statements under each stated variable of study.

Sl. No.	Variable Operational definition	Relevancy rating (R - relevant)				
		Most R	More R	R	Less R	Least R
1.	Achievement motivation: Refers to the striving of farmers to good work and attain a sense of accomplishment.					
2.	Adherence to group norms: The degree to which the farmer behaves exactly according to rules and terms set by PGS-India					
3.	Age: Refers to the number of calendar years that have been completed by the farmer till point of observation					
4.	Annual income: The earning of the respondent for a period of one year is calculated as annual income.					
5.	Attitude: Refers to the degree of positive and negative approach of the farmer towards the PGS certification					

6.	Change proneness: Degree to which a farmer alter his behaviour, attitudes, feelings and thoughts towards PGS certification.					
7.	Cosmopolitaness: Refers is the tendency of the farmer to be in contact with outside his own social system based on the belief that all the needs of an individual cannot be satisfied within his own social system.					
8.	Decision making ability: Refers to the ability of farmer to identify and select a course of action among several alternative possibilities.					
9.	Economic motivation: Refers to the extent to which a farmer is oriented towards profit maximization and relative values he places on monetary gains.					
10.	Education: The academic qualification obtained by the farmer through formal and informal means by which, he/she can understand and interpret information.					
11.	Environmental orientation: The degree to which farmers are considered about his/her environment.					
12.	Experience in organic farming: It was measured in terms of number of years in organic farming.					
13.	Extension agency contact: Refers to the degree to which respondents comes in contact with an extension agent or agency and degree to which the respondent participates in such programmes					
14.	Family size: Refers to the number of family members in each PGS farmer's household.					
15.	Family type: Refers to the type of the family to which the PGS farmer belongs to.					

16.	Group cohesion: Refers to the tendency of farmer to be in unity with other members of PGS group.					
17.	Group leadership: Refers to the management of other PGS members of the group to achieve desired results.					
18.	Horizontality: Refers to the power sharing among the members of PGS group.					
19.	Individualism: Reflects the extent to which individuals emphasize their own goals over those of their clan or group					
20.	Information seeking behaviour: Refers to frequency of contact or exposure of a farmer to different sources for obtaining PGS related information.					
21.	Institutional interventions: Refers to the support received by PGS farmer from formal and non-formal institutions in terms of finance, training, technology and information.					
22.	Knowledge about PGS certification: Refers to the extent of information possessed by the farmer on organic standards and PGS certification.					
23.	Level of satisfaction: Refers to the degree to which the farmer feel satisfied with the PGS.					
24.	Market orientation: Refers to the means or opportunity to get the inputs for organic production as well as to sell the outputs.					
25.	Occupation: Farmer's vocation at the time of interview is considered as the occupation done by that farmer					
26.	Problem Solving ability: Refers to the ability of the farmer to identify the problem, find the solution, select the best one and apply it.					

27.	Resource Utilization: It is defined as the proper utilization of various available resources in the farmer's field.					
28.	Risk orientation: Willingness of farmer to take risk in adopting recommended practices by PGS-India.					
29.	Role perception: It refers to the member's perception of role of the PGS certification for organic farmers.					
30.	Scientific orientation: Refers to the degree to which farmer is oriented to the use of scientific methods in his cultivation.					
31.	Social Participation: Member farmers' involvement in formal and informal organisations and its degree is measured using social participation.					
32.	Team Working: Refers to the willingness of farmer to work together with other PGS group members.					
33.	Total land holding: The extent of land the PGS farmer possess and cultivate is termed as land holding.					
34.	Training: Refers to the number of trainings undergone by the PGS farmer in various activities related to organic farming and PGS certification.					
35.	Transparency: Refers to the degree to which farmers are aware of how the guarantee mechanism works, the process					
36.	Trust: Refers to the extent to which farmers trust each other and the organic certification should be an expression of this trust.					
37.	Suggestions:					

APPENDIX II

**KERALA AGRICULTURAL UNIVERSITY
COLLEGE OF AGRICULTURE, VELLAYANI, THIRUVANANTHAPURAM
DEPARTMENT OF AGRICULTURAL EXTENSION
INTERVIEW SCHEDULE FOR FARMERS**

**Participatory Guarantee System (PGS) certification for production of organic
vegetables: An analytical study**

No:

Date:

Name of District

Name of Block

Name and details of the respondent

1. Name :
2. Age:
3. Educational Status:
4. Address:
5. Phone No:
6. Family members

Si No	Name	Age	Education	Relation with Head of family

7. Name of group:
8. PGS Local group:
9. Regional council:
10. Date of endorsement:
11. Do you have PGS certificate:
12. Area under cultivation:
13. Area under organic cultivation:

14. Experience in Organic farming:

15. Annual Income:

16. Crops Cultivated:

17. Role Performance

a) Individual Role Performance

Statements	Very High	High	Neutral	Less	Very Less
Individual task proficiency					
a).Carried out the core parts of your job well					
b).Completed your core tasks well using the standard procedures					
c).Ensured your tasks were completed properly					
Individual task adaptivity					
a).Adapted well to changes in core tasks.					
b).Coped with changes to the way you have to do your core tasks.					
c).Learned new skills to help you adapt to changes in your core tasks					
Individual task proactivity					
a).Initiated better ways of doing your core tasks					
b).Come up with ideas to improve the way in which your core tasks are done					
c).Made changes to the way your core tasks are done					

b) Group role performance

Statements	Very High	High	Neutral	Less	Very Less
Group member proficiency					
a).Coordinated your work with co-workers.					
b).Communicated effectively with your co-workers.					
c).Provided help to co-workers when asked, or needed					

Group member adaptivity					
a).Responded constructively to changes in the way your team works					
b).Dealt effectively with changes affecting your work unit (e.g., new members)					
c).Learnt new skills or taken on new roles to cope with changes in the way your unit works					
Group member proactivity					
a).Suggested ways to make your work unit more effective.					
b).Developed new and improved methods to help your work unit perform better					
c).Improved the way your work unit does things					

18. Adoption behaviour of farmers towards PGS certification

Sl No	Statements	Adoption				
		A	I	E	T	A
1.	Organic pledge					
2.	Peer appraisal					
3.	Attending Training					
4.	Group meeting					
5.	Maintenance of farm diary and records					
6.	Exposure visits					
7.	Maintenance of Buffer Zone					
8.	Integrated farming system					
9.	Intercropping					
10	Crop rotation					
11	Seasonal planting					
12	Selection of good seeds					
13	Green manuring					
14	Biofertilisers					
15	Mineral fertilisers in natural powdered form					
16	Traditional organic inputs (Panchagavya, jeevamrith)					

17	Composting					
18	Mulching					
19	Biocontrol agents					
20	Botanical extracts					
21	Bio-pesticides					
22	Traps(Pheremone, light, sticky)					
23	Sanitation of farm equipment					
24	Special storage structures for organic products					

19. Trainings attended related to PGS:

Sl.No	Name of Training	Remarks

20. Information seeking behaviour

Sl No	Source	Frequently(3)	Occasionally(2)	Rarely(1)
1	Radio			
2	Television			
3	Newspaper			
4	Magazines			
5	Agl.Literatures			
6	KIOSKs			
7	Mobile Phone			
8	E-extension			
9	Krishibhavan			
10	Fellow growers			

11	Any other			
----	-----------	--	--	--

21. Environmental Orientation

Sl No	Statements	Agree	Disagree
1	Indiscriminate use of pesticides causes environmental hazards		
2	Man is exploiting earth too much		
3	Man has to be greatly concerned about environmental issues like soil pollution, air pollution, water pollution etc		
4	There is truth in what environmental activist claim and we should lend our support to them		
5	The present trend is to reduce the use of chemicals. Do you agree that the older method of farming were safer than the present ones		
6	Agricultural process free of chemicals are more tastier and healthier		
7	Agro chemicals can be used during emergency situations		
8	Recommended dose of agrochemicals in correct quantity shall be used		

22. Attitude

Sl.No	Statements	A	UD	DA
1	It is worthful to adopt organic farming even by suffering initial losses			
2	PGS certification encourages organic farming.			
3	Traditional farming approach are more economic than the organic farming approach			
4	Third party organic certification is a tedious process			
5	It is possible to get good yield by adopting organic practices			
6	Organic farming should be practiced by all farmers			

- a) Farmyard manure c) Poultry manure
 b) Groundnut cake d) Green manure

24. Marketing Orientation

Sl No	Statements	Always	Frequently	Sometimes	Rarely	Never
1	One should grow varieties with high market demand					
2	One should sell his produce to the nearest market irrespective of price					
3	PGS farmer should get higher price to his organic products.					
4	VFPCCK ensures a reliable market for PGS farmers					

25. Sustainability

Sl No	Statement	Always	Frequently	Sometimes	Rarely	Never
1	The members are able to articulate the vision and goal of PGS formation					
2	Members regularly attend group meeting					
3	Weekly group meetings are conducted					
4	All the decisions and discussions are noted in minute book					
5	New marketing strategies are evolved by PGS members					
6	Members in group reduce every year					
7	PGS members attend skill development programmes					
8	The organic produce gets higher price in the market					

9	Being the member of the PGS is a liability					
---	--	--	--	--	--	--

26. Constraints

Sl No	Constraints	MI	I	QI	LI	NI
1	Lack of governmental support					
2	Involvement of local politics					
3	Lack of market for organic products					
4	Reduced Yield					
5	Lack of support for livestock under the scheme					
6	Unawareness of consumers about PGS certification					
7	Lack of market linkage					
8	Others					

27. Suggestions

APPENDIX III

KERALA AGRICULTURAL UNIVERSITY

COLLEGE OF AGRICULTURE, VELLAYANI, THIRUVANANTHAPURAM

DEPARTMENT OF AGRICULTURAL EXTENSION

OVERVIEW OF PGS

Participatory Guarantee System (PGS) is a quality assurance initiative that is locally relevant, emphasize the participation of stakeholders, including producers and consumers and operate outside the frame work of third party certification. As per IFOAM (2008) definition "Participatory Guarantee Systems are locally focused quality assurance systems. They certify producers based on active participation of stakeholders and are built on a foundation of trust, social networks and knowledge exchange". PGS is a process in which people in similar situations (in this case small holder producers) assess, inspect and verify the production practices of each other and take decision on organic certification (PGS-Green and PGS Organic).

PGS system has number of basic elements which embrace a participatory approach, a shared vision, transparency and trust. Participation is an essential and dynamic part of PGS. Key stakeholders (producers, consumers, retailers, traders and others such as NGOs, Societies/ Gram panchayaths/ State/Central Govt. organization/agencies /farmer etc..) are engaged in the initial design, and then in the operation of the PGS. In the operation of a PGS, stakeholders (including producers) are involved in decision making and essential decisions about the operation of the PGS itself. In addition to being involved in the mechanics of the PGS, stakeholders, particularly the producers are engaged in a structured ongoing learning process, which helps them improve what they do. This process is facilitated by the PGS group itself or in some situations a supportive NGO/ Societies, Gram panchayaths, State/Central Govt. organization/agencies etc. The learning process is usually „hands-on“ and involves field days or workshops. The idea of participation embodies the principle of collective responsibility for ensuring the organic integrity of the PGS.

PGS Philosophy

Participatory Guarantee Systems subscribe to the same ideals that guided yesterday's pioneering organic farmers. PGS programs require a fundamentally

ecological approach to agriculture that uses no synthetic chemical pesticides, fertilizers or GMO's, and further sustains farmers and workers in a cradle of long-term economic sustainability and social justice. The primarily local and direct market focus of PGS programs encourages community building, environmental protection and support to local economies in general.

Fundamental Values

Participatory Guarantee Systems share a common goal with third party certification systems in providing a credible guarantee for consumers seeking organic produce. The difference lies in the approach.

As the name suggests, direct participation of farmers and even consumers in the certification process is not only encouraged but may be required. Such involvement is entirely realistic in the context of the small farms and local, direct markets that PGS systems are most likely to serve. Active participation on the part of the stakeholders results in greater empowerment but also greater responsibility. This requires PGS programs to place a high priority on knowledge and capacity building – not only for producers but for consumers as well. This direct involvement allows PGS programs to be less onerous in terms of paperwork and record-keeping requirements – an important element, since PGS systems seek to be absolutely inclusive in bringing small farmers into an organic system of production. In stark contrast to existing certification programs that start with the idea that farmers must prove they are in compliance to be certified, PGS programs use an integrity based approach that starts with a foundation of trust. It builds from there with an unparalleled transparency and openness, maintained in an environment that minimizes hierarchies and administrative levels.

Advantages of PGS over third party certification system

In PGS organic farmers have full control over the certification process and are able to produce far more credible and effective system of quality assurance compared to third party certification. Important benefits of this system over third party certification system are as follows:

- a. The procedures are simple; documents are basic and use the local language understandable to farmers.

- b. All the members are local and known to each other. Being themselves practicing organic farmers have high degree of understanding on day-to-day knowledge or acquaintance of the farm.
- c. Peer appraisers are among the group and live in the same village, therefore have better access to surveillance
- d. Peer appraisal instead of third party inspections reduces cost
- e. Mutual recognition and support between Regional PGS groups ensures better networking for processing and marketing.
- f. Empowers farmers with increased capacity building
- g. Bring consumers to the farm without the need of middleman
- h. Unlike grower group certification system, PGS offer every farmer with individual certificate and each farmer is free to market its own produce independent of group.
- i. Consumers and buyers are often involved in production and verification process
- j. Random residue testing at regular intervals ensures the integrity and increases the trust.

Limitations of PGS

PGS certification is only for farmers or communities that can organize and perform as a group within the village or in close-by villages with continuous territory and is applicable on, on-farm activities comprising of crop production, processing and livestock rearing (including bee keeping) and off-farm processing "by PGS farmers of their direct products".

Individual farmers or group of farmers having less than 5 members are not covered under PGS. They either have to opt for third party certification or join the existing PGS local group.

PGS is applicable on on-farm activities comprising of crop production, processing and livestock rearing and off-farm processing "by PGS farmers of their direct products". Off-farm processing activities such as, storage, transport and value addition activities by persons/agencies other than PGS farmers away from the group are not covered under PGS.

Off-farm input approval granted by the group is applicable on the members of the same group and cannot be taken as a basis for universal approval for other groups. Off-farm inputs need to be approved by each group for their member's use on case to case basis. PGS ensures traceability only up to end till it is in the custody of PGS group. Once the product leaves the custody of PGS group there is no control of PGS on its integrity, Therefore PGS is ideal for local direct sales/ direct trade between producer and consumer and direct trade of packed finished product with PGS logo between PGS group and traders/ retailers.

But Local Groups and buyers in consultation with RC can devise some mechanism with full traceability records to allow use of PGS logo on products packed by traders/ retailers.

