

**Policy Recommendations to promote an effective and efficient natural farming value chain in  
Andhra Pradesh.**

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## ABSTRACT

This report aims to understand the reasons why natural farming is gaining traction in the modern era. It then goes into the policies and schemes developed by the Indian government to encourage its uptake. The study then shifts gears to focus on the Orvakal Mandal of Kurnool District, Andhra Pradesh. The paper is focused on tracing the value chain of natural produce- Production, Marketable Surplus, Preparation for Sales, and At Sales Point. Each stage of the value chain brings challenges that reduce the scaleup of the natural farming ecosystem. This paper explains the subcomponents of each stage and lays out the challenges faced by all major stakeholders: farmers, retailers, and consumers. The paper then goes on to analyse how the systemic issues at each stage hinder the growth of natural farming in India despite government push and financial incentives. The paper ends by providing policy recommendations for each of the above-outlined stages as well as certain directions for future research.

**Keywords:** Natural Farming, Organic Farming, Certification, APCNF, RySS, Value Chain, Smallholder Farmers

**SELF-DECLARATION**

This is to certify that the thesis submitted by me titled “Policy Recommendations to promote an effective and efficient natural farming value chain in Andhra Pradesh” is my original work and has not previously formed the basis for the award of any Degree, Diploma, Associateship or Fellowship to this or any other University.

**Garima Goel**

**CERTIFICATE OF THE SUPERVISOR**

This is to certify that the thesis titled “Policy Recommendations to promote an effective and efficient natural farming value chain in Andhra Pradesh” is original work undertaken by Ms. Garima Goel under my supervision and guidance as part of his/her Master degree in this Institute. The thesis may be sent for evaluation.

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## GLOSSARY

Term	Definition
<b>APCNF</b>	Andhra Pradesh Community Managed Natural Farming
<b>BPKP</b>	Bharatiya Prakritik Krishi Paddhati
<b>COP</b>	Confederation of Parties
<b>EU</b>	European Union
<b>FAO</b>	Food and Agriculture Organisation
<b>FGD</b>	Focus Group Discussion
<b>FiBL</b>	Research Institute of Organic Agriculture
<b>GHG</b>	Green House Gas
<b>Ha</b>	Hectares (of land)
<b>ICAR</b>	Indian Council for Agriculture Research
<b>ICRP</b>	Internal Community Resource Person
<b>MMTL</b>	Model Mandal Team Lead
<b>MT</b>	Master Trainer
<b>NF</b>	Natural Farming
<b>NGO</b>	Non- Governmental Organisations
<b>NMNF</b>	National Mission on Natural Farming
<b>PKVY</b>	Paramparagat Krishi Vikas Yojana
<b>RYSS</b>	Rythu Sadhikara Samstha
<b>S2S</b>	Seed to Seed
<b>S2S(W)</b>	Seed to Seed (Whole)
<b>SGD</b>	Sustainable Development Goals
<b>SHGs</b>	Self Help Groups
<b>UIC</b>	Unit In Charge

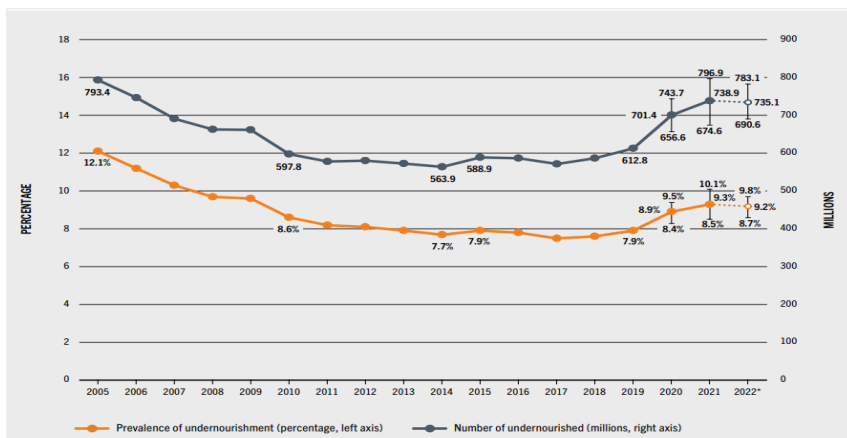
<b>UN</b>	United Nations
<b>VOs</b>	Village Organisations
<b>WHO</b>	World Health Organisation
<b>ZBNF</b>	Zero Budget Natural Farming

## CHAPTER 1: INTRODUCTION

Currently, humankind is dealing with several crises. In 2015, the world committed to work towards ending poverty, protecting the planet, and building a more inclusive world. This commitment was solidified when the ‘United Nations’ (UN) adopted the “Sustainable Development Goals” (SDGs) as a universal call and collaboration action framework for countries to work towards these goals and achieve it by 2030. There are 17 goals decided, the 2<sup>nd</sup> of which was “No Hunger”. Goal 2 was aimed to ensure that a more transparent and inclusive agricultural market is developed across the world which promotes the success of small farmers, incentivizes additional technology and resources, and implements policies in a way that helps make agriculture more resilient to develop capacity for adaptation to climate change and all the related disasters impacting food security (United Nations, 2015).

However, the current implementation of this goal is not on track. “The Food and Agriculture Organisation (FAO) of the United Nations” has been publishing its flagship report on “The State of Food and Agriculture” since 2017. In the 2023 version, the numbers for global hunger, malnourishment and stunting are staggering and shows a sharp increase from 2019 due to factors like the global pandemic, conflict situations, climate variability, economic slowdowns, and an increasing rate of urbanisation (FAO, 2023). As shown in Figure 1, 9.2% of the world population suffered from chronic hunger compared to 7.9% in 2019. This means that approximately 122 million more people faced hunger in 2022 than in 2019, pre-pandemic.

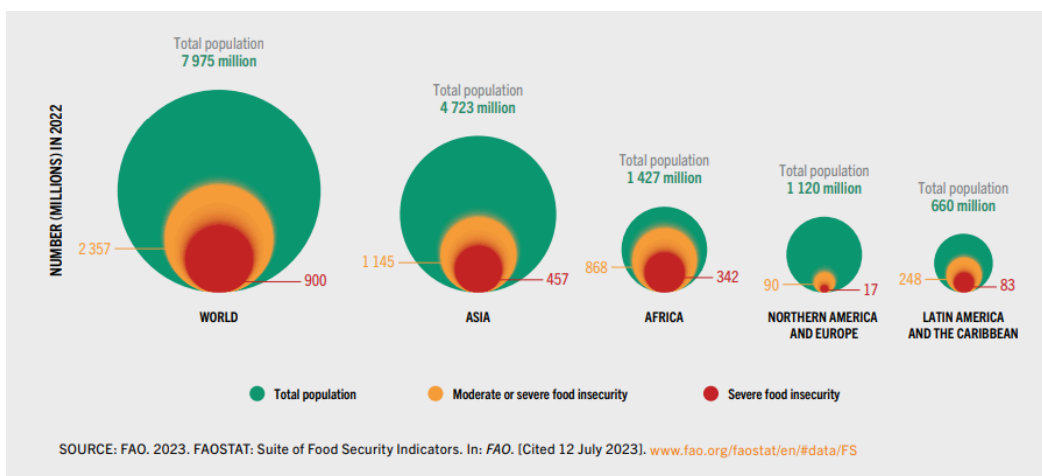
**Figure 1:** Global Hunger Levels see a steep rise from 2019



**Source:** FAO’s ‘The State of Food Security and Nutrition in the World’ 2023

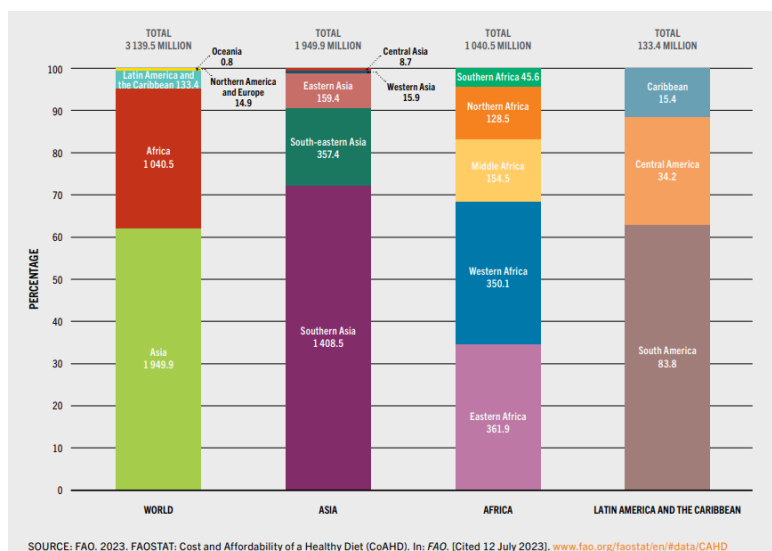
The Asian and particularly South Asian story is even graver. Figure 2 demonstrates that of the total 2.4 billion world population facing food insecurity, nearly 1.1 billion or half of this population hails from Asia. Within Asia, South Asia houses more than one-third (i.e. 809 million people) of the ‘world’s moderately or severely food insecure population’ as depicted by Figure 3 (FAO, 2023).

**Figure 2:** Disparity in Distribution of Food Insecurity across regions of the world



**Source:** FAO’s ‘The State of Food Security and Nutrition in the World’ 2023

**Figure 3:** Most food insecure population in Asia comes from South Asia



**Source:** FAO’s ‘The State of Food Security and Nutrition in the World’ 2023

These abysmal numbers have been reducing the confidence of the world towards achieving SDG Goal 2 by 2030. However, amid gory data, organic agriculture has been emerging as a possible path towards sustainable production and development.

## CHAPTER 2: LITERATURE REVIEW

When you search for organic agriculture, various definitions of it crop up across sources. Terms like organic/natural/agroecological are commonly used to talk about this phenomenon. Given its increasing traction, in 1999, FAO constituted a Working Group on Organic Agriculture. According to the “Codex Alimentarius Commission, the United Nations” body that oversees the world’s food standards, organic agriculture can be defined as a

“Holistic production management system that avoids use of synthetic fertilizers and pesticides, minimizes pollution of air, soil, and water, and optimizes the health and productivity of independent communities of life, plants, animals and people” (FAO’s Working Group on Organic Farming, 2007)

In other words, organic is not a ‘product’ claim but a ‘process’ claim. Organic products require certifications that act as assertions of its authenticity. These assertions help the consumer in choosing the products to buy. ‘Product Claims’ relate to the characteristics of the final products which are labeled with statements such as “Organic”, “Certified Organic” “100% organic” or similar sounding statements. “Process Claims”, however, looks at the methodology and practices used across the value

chain of organic products. The process claim helps in making sure that the product's organic process can be tracked till the source. The product claims are the recent norms, but the process claims are essential to improve customer's trust in the authenticity of organic produce,

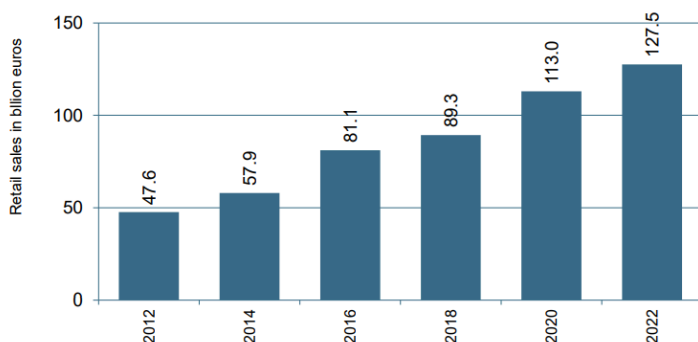
The origin of organic farming cannot be traced to one area as it is a culmination of traditional agricultural practices in countless villages and farming communities across the millennium. The small farmers in developing countries have always been managing complex farming systems adopted specifically to cater to their local conditions. The ultimate aim of these practices is to develop more productive systems for low input and subsistence farms and develop an efficient method to manage and utilize locally available resources. These practices started getting dominated by mechanised/fertilizer-heavy modes of agriculture with the industrial revolution and mass production.

The organic farming discussion started emerging again around the 1960s when farmers and consumers started questioning the long-term health effects of consuming products for human beings and the environmental effects of chemical inoculants in agricultural production. The type of production methods chosen in organic agriculture depends on both agro-ecological as well as socio-economic conditions. FAO's working group highlights community development as a prominent method to promote organic agriculture. Consumers of the world are increasingly looking to invest and consume 'environmentally friendly' and 'socially just' products. There is increasing acknowledgement amongst organic farmers from different countries on the need to "join with their neighbors, set up support networks, share what they know, pool their resources, establish themselves as an organized force and, of course, provide quality products" (FAO, 2007).

#### *International Growth of Organic Farming*

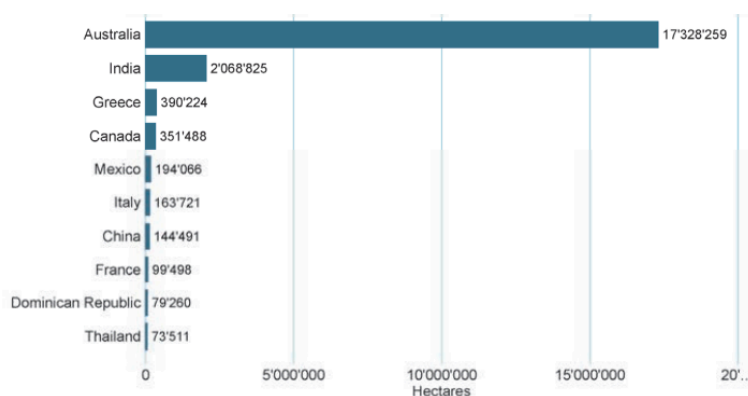
In the recent decade, the uptake of organic agriculture has increased rapidly across countries and communities. "The World of Organic Agriculture is an annual report published by "Research Institute of Organic Agriculture FiBL and IFOAM – Organics International". The 25<sup>th</sup> edition of this report published in 2024 aims to provide a snapshot and review of the global market and trends in organic agriculture. According to the report, 188 countries are currently involved in organic farming of some sort. Two percent of the entire world's farmland (nearly 96.4 million hectares) is organic (Willer, H; et. al, 2024).



**Figure 4:** Growth in Global Organic Retail Market 2012-22

**Source:** Ecovia Intelligence

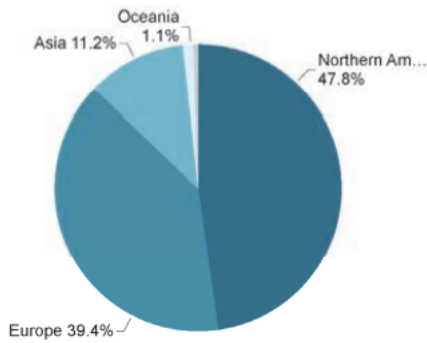
The growth rate of organic farmland has been unprecedented with some countries taking the lead. Just in 2022, the world organic farmland increased by a whopping 26.6 percent (20.3 million hectares). The largest increase was observed in countries like Australia, India and Greece. (Figure 5)

**Figure 5:** “Top 10 countries with highest increase in organic agricultural land 2022”

**Source:** “FiBL Survey”

The consumer demand for organic produce is also on a steady hike. Global market for organic food and drinks reached about 135 billion euros in 2022. As depicted in Figure 6, North America was the market lead with 64.4 billion euros, followed by Europe (53.1 billion euros) and Asia (15 billion euros). Major factors contributing to the increase in sales has been cited are disease prevention, building personal immunity, ethical reasons (especially in countries like France and Germany), avoidance of Genetically Modified Organisms (GMOs), environmental concerns (in countries like Denmark)

**Figure 6:** “Distribution of Organic Retail Sales by Region 2022”



Source: “FiBL- AMI Survey 2024”

### *International Policy Ecosystem*

On 30 May 2018, the European Union (EU) passed a regulation on organic production and labeling and overall marketing of organic products. They have developed a very detailed one on how to identify the ‘group of operators’ i.e. the farmers who would conduct organic production, the major principles of organic farming and the rules that the group of operators need to abide by in the processing, packaging, labeling, certification, and marketing of the said products. The regulation also outlines a common organic logo of the European Union, and the methods followed to investigate the authenticity of the ‘organic products’ (European Parliament, 2018).

This regulation clearly states that “Official controls performed in accordance with Article 9 of Regulation (EU) 2017/625 for the verification of compliance with this Regulation shall be performed throughout the entire process at all stages of production, preparation and distribution on the basis of the likelihood of non-compliance” (European Parliament, 2018, p. 43). It means that the European Union is focusing on the ‘process claim’ to deliver a more authentic organic product to the end consumer. They implement that through on-the-spot inspections, sampling of batches, check records and signed declarations of authenticity by the ‘group of operators’. European Union also developed a monitoring mechanism within the government system. The regulation states that the authorities can organize audits (at least once a year) to the control bodies to whom the task of monitoring the organic process has been delegated. The rules state out the process and action taken by the government in case of non-compliance of rules at any stage of the process. While the investigation of the product is

underway, the related brand and the product cannot (European Union, 2019, p. 47). It also outlines the procedure for import and export of organic produce for European Union.

Countries like Thailand, Brazil, Hungary and the African continent is also increasing their organically produced area. Thailand's organic market is dominated by rice and field crops (W. Edwardson, et.al, 2013). The organic sector grew at an astonishing rate in Thailand 'thanks to a combination of factors, including the rapid growth of international organic trade, the emergence of domestic markets for organic produce, favorable government policies, and the establishment of the organic conversion system'. Brazil's organic production increased from 100,000 ha in 2000 to 900,000 ha in 2007. But according to Edwardson (author of the paper outlining case studies on these countries), the growth is not linked to the consumer's demand but the retailers pushing organic products as a competitive strategy. Government push and strengthening of institutional relationships are also deemed as important factors. Hungary's organic market is majorly powered by export demands of European Union which make for ~95% of Hungary's organic produce. The scale up of organic is due to the government's interventions through area subsidies, trainings, and other related programs.

Africa is estimated to account for about 3% of certified organic land but 23% of the African producers are involved in organic farming (W. Edwardson, et.al, 2013, p. 17). This shows that more smallholder farmers, and not commercial farmers, are involved in organic farming in Africa. The interesting aspect is that the African market is growing not because of the push by the government, but through private engagement of Non-Governmental Organisations (NGOs) and entrepreneurs sizing the new market.

Africa majorly exports to the EU with growing interests from America, Japan, Middle East and South African markets.

### *Indian Policy Ecosystem*

Organic farming has been a part of India's oral history for millenniums. Such practices were documented with different names such as natural farming, Rishi Krishi, 'eco-farming', 'Panchagavya', 'Vrikshayurveda', 'Homa farming', 'permaculture', 'Vedic Agriculture', and 'Zero Budget Natural Farming' (ZBNF) (Sharma, S.K, et al., 2023). Over the years, there have been various proponents of natural farming in the Indian subcontinent including Shri Narayana Reddy from Karnataka, Shri Shripad Dabhilkar from Maharashtra, Shri Deepak Suchde from Madhya Pradesh,

Shri G. Nammalvar from Tamil Nadu, Shri Subhash Palekar and Shri Bhaskar Save (fondly known as the 'Gandhi on Natural Farming') from Gujarat

At the "26<sup>th</sup> session of the United Nations Framework Convention on Climate Change" (COP-26), India pledged to become carbon neutral i.e. to balance out the emissions of the country with the carbon sinks of the country to ensure net neutrality of carbon by the year 2070 (PIB, 2023). To reduce the Green House Gas (GHG) emissions, India plans to increase the carbon sinks i.e. area under vegetation which can absorb excess carbon from the atmosphere, in the subcontinent. Given this background, organic farming has become an area of interest for the government due to chemical-free produce, improved soil fertility, and higher benefits to farmers due to low input cost, and higher yield (Sharma, S.K, et al., 2023).

Chemical-free agriculture has been gaining importance in the Indian subcontinent and the current government developed and invested in multiple schemes at the central and state level to encourage its uptake by the farmers. In the current parliamentary session in February 2024, Members of Parliament (MPs) Shri Vinayak Raut and Shri Sanjay Jadhav asked about the role of the government in improving the adoption of natural and organic farming. The minister of agriculture and farmer's welfare gave the following reply:

"Government is promoting organic farming without use of chemical fertilisers in the country since 2015-16 through the schemes of "Paramparagat Krishi Vikas Yojana (PKVY) and Mission Organic Value Chain Development for Northeastern Region (MOVCDNER)". PKVY is being implemented in all the States across the country except the Northeastern (NE) States. MOVCDNER scheme is being implemented exclusively in the NE States for promotion of organic farming. Both the schemes stress end-to-end support to farmers engaged in organic farming i.e. from production to processing, certification and marketing and post-harvest management Training and Capacity Building are integral part of the scheme. "Incentives to farmers for producing and using organic fertilizers/manure are inbuilt in these schemes as on-farm and off-farm organic inputs. Direct Benefit Transfer (DBT) is provided to the farmers for using organic inputs.

Government is promoting natural farming from 2019-2020 through a sub-scheme namely Bharatiya Prakritik Krishi Paddhati (BPKP) under Paramparagat Krishi Vikas Yojana

(PKVY)". So far 4.09 lakh ha area has been sanctioned for natural farming in 8 states under BPKP across the country. An area of 1.48 lakh ha has also been sanctioned for promotion of natural farming along the Ganga Corridor under Namami Gange Project. To motivate farmers to adopt natural farming and to enhance the reach of natural farming, the Government has formulated National Mission on Natural Farming (NMNF) as a separate and independent scheme by up scaling the BPKP.

The schemes for Natural and Organic Farming are implemented through the State Governments and the data of the farmers who have adopted Natural and Organic Farming are available from the States Governments/ Uts.

However, a total of 40.99 lakh farmers have been registered under organic farming across the country as certified by National Programme for Organic Production (NPOP) and Participatory Guarantee System (PGS)". (Minister of Agriculture and Farmer's Welfare, 2024)

The Indian ecosystem for natural farming has been under evolution from 2015 till the present date (Annexure 2 outlines the evolution in a tabular form). In 2015, central government initiated a scheme called 'Pramaparagat Krishi Vikas Yojana' (PKVY). (Sharma, et.al., 2023, p. 6). PVVY aimed to promote natural farming and improve soil health and empower farmers through institutional development. The scheme provided for financial assistance with 60% of the cost borne by center and 40% by states (90%-10% in the case of North Eastern States). This scheme applies to smallholder farmers with less than 2 ha of land. For the next couple of years, various state governments like that of Andhra Pradesh, Gujarat, and Himachal Pradesh developed their natural farming programs. In May 2018, Himachal Pradesh initiated a scheme called "Prakritik Kheti Kaushal Kisan" to promote natural farming. Karnataka initiated a pilot implementation of ZBNF. It has earmarked 2000 hectares of land spread across all 10 agro-climatic zones of the state to understand the space better (Sharma, S.K, et al., 2023).

There was confusion about the kind of farming that is considered 'organic'. In 2018, government revised PKVY scheme guidelines to include different farming models like Natural farming, Rishi

Farming, Vedic Farming, ZBNF etc. The guidelines clearly state that the state governments are free to choose any form of organic farming depending on the farmer's choice. This helped states like AP improve their resolve to shift to natural farming and pledge to become a 100% natural farming state by 2024.

Research efforts to study this space also started to take shape. In 2019, Indian Council of Agriculture Research (ICAR) started a committee to empirically validate the 'Subhash Palekar Natural Farming Model'. More research in this space continued in 2021 when ICAR started a research study on "Evaluation and Validation of Natural Farming Practices in different agroecologies" conducted across 16 states and 20 locations. It also started developing a curriculum of natural farming for courses at undergraduate and graduate levels.

The central government started developing new schemes such as Bharatiya Prakritik Krishi Paddhati (BPKP) in 2020-21. BPKP was constituted as a sub-mission to PKVY which was launched in 8 states to promote traditional agricultural practices and provide the space to farmers from buying inputs for a period of 6 years. In 2021, Prime Minister Narendra Modi emphasised the importance of chemical-free farming in the National Conclave for natural farming. "We need not only to re-learn the ancient knowledge of agriculture but also to sharpen it for modern times" (Modi, 2021).

Finally, in 2023, the government launched 'National Mission on Natural Farming'. This mission has committees at the central, state, regional, block and village level with the aim to create clusters of natural farming practicing farmers and financially support their activities. The aim of this scheme is to eventually organise the farmer clusters into Farmer Producer Organisations (FPOs). The scheme lays out financial outlay for training of Community Resource Persons (CRPs) through Master Trainers, running of Farmer Field School (FFS) amongst others (MoA&FW, 2022). The scheme also includes elements of soil testing, on-farm manure production infrastructure, certification, and market development.

#### *RySS and APCNF*

Andhra Pradesh is the front-runner in developing and implementing a natural farming program. "Andhra Pradesh Community-Managed Natural Farming (APCNF)" run by Rythu Sadhikara Samstha (RYSS) is a state-wide agroecological transformation of the farming practices of its 6 million farmers

over 6 million hectares and 50 million consumers. It is the largest transition to agroecology in the world, with 630,000 farmers (Sandhu, H., et al, 2023). The roots of Community-Managed Natural Farming in Andhra Pradesh lie in a social movement initiated by farmers who faced increasing debts after they had shifted to high-input chemical-based farming during the 1960s Green Revolution. The debt-ridden farmers shifted to agroecology-based farming, known as “Zero Budget Natural Farming (ZBNF)”, which promised lower cost input and over the decades, millions of farmers in Karnataka and Andhra Pradesh have been practicing it.

Andhra Pradesh’s Community-Based Natural Farming (APCNF) defies the popular belief that chemical fertilisers guarantee better yields. Though many governments, including India’s, express interest in natural farming techniques, there is limited scientific literature that compares APCNF’s costs and benefits with prevalent farming systems. The study named “Natural Farming Through a Wide-Angle Lens: True Cost Accounting Study of Community Managed Natural Farming in Andhra Pradesh”, fills the gap by providing an evidence-based evaluation of natural farming in Andhra Pradesh to encourage a broader global uptake.

According to the study, natural farming achieved remarkable results compared to other dominant farming systems in the Andhra Pradesh region. On average, farmers practicing natural farming harvested four crops, with an 11% higher yield of prime crops such as paddy rice, maize, millet, finger millets and red gram. They saw a 49% net increase in their income (Pandey, K., 2023). To encourage natural farming, the government of India, in March this year, formulated the “National Mission on Natural Farming (NMNF)” with an initial budget of Rs. 4.59 billion for 2023-24

The study uses “The Economics of Ecosystems and Biodiversity for Agriculture and Food Systems (TEEBAgriFood) framework”: “a holistic approach to comprehensively examine food systems and systematically identify links between agricultural practices and human well-being so that appropriate policy responses can be developed and adapted globally” (Sandhu, H., et al, 2023). The TEEBAgriFood Framework systematically analyses the complex interlinkages that are the basis of eco-agri-food systems by identifying the material, yet invisible, links that food systems have with our well-being. Current macroeconomic metrics such as gross domestic product (GDP) and current dominant policies and regulations mostly ignore the food system’s link to the human well-being and

are geared toward only increasing per hectare (ha) productivity (focusing on tons per ha or counting kilocalories and translating them into monetary values).

There are various studies done on the advantages and yield efficacy of natural produce. They focus on assessing the changes in expenditure on plant nutrients and protection inputs (PNPI), paid-out cost of cultivation, gross and net values of crop output, and impact of those changes. The program run by APCNF is also in its initial stage of shifting farmers from chemical to natural farming by awareness and capacity building. Due to this, the data collected by the program is on the number of farmers shifting from chemical to natural farming and not more detailed data to facilitate profitable sales of natural produce in the market. Thus, there is a lacuna in terms of research on ways and methods to strengthen the value chain of natural produce once products are produced and ways that the premium costing of natural produce can be transferred to the farmer.

Through this research, I aim to understand the following research questions:

- What are the factors that strengthen or weaken the value chain of naturally/organically produced agricultural products?
- Is there any relation to practicing natural farming rigorously and getting more benefit in selling the marketable surplus of natural/organic produce?
- What factors of the value chain influence factors to shift to natural/organic farming produce?
- How can the supply chain be strengthened so that the benefits of selling natural produce reach the smallholder farmers?

The next section would elucidate the process of designing the research.



### **CHAPTER 3: RESEARCH METHODOLOGY**

My study is a mix of qualitative and quantitative research methods with the aim of providing policy recommendations to promote an effective and efficient natural farming value chain in Andhra Pradesh.

To conduct this study, I used both secondary and primary modes of research. I scanned the international and Indian policy landscape to understand the status of organic/natural farming and what steps are being taken to mainstream this approach of farming. Major sources for my research included United Nations (UN) Reports, government regulation documents, journal articles, government reports and parliamentary questions.

For primary research, I kept my focus on Andhra Pradesh and specifically the Orvakal Mandal at Kurnool District. This was done in consultation with my project supervisor at Kautilya School of Public Policy and mentors at RySS. The main reason behind choosing one mandal was to ensure a more nuanced understanding of natural farming value chains in a bounded manner. It would help in documenting the insights for a value chain and act as a case study to give directional inputs and policy recommendations that RySS can deploy for strengthening the value chain for natural produce in Andhra Pradesh.

#### **3.1 Profile of the Orvakal Mandal, Kurnool District**

Orvakal is a village and a Mandal Headquarter of Orvakal Mandal in Kurnool district in the state of Andhra Pradesh. It is situated 23 kms away from district headquarter Kurnool. Orvakal is a part of Panyam (Assembly constituency) for the Andhra Pradesh Legislative Assembly. The village is home

to the Orvakal Rock Garden, which are silica and quartz rock formations amongst pools of water.

Figure 7 shows the map of Orvakal Mandal

**Figure 7:** Map of Orvakal Mandal



**Source:** APCNF Internal Documents

**Table 1:** Agricultural profile of Orvakal Mandal

<b>Major Crops</b>	Cotton, Red gram, Bengal gram, Tobacco, Maize, Paddy
<b>Soil Types</b>	<ul style="list-style-type: none"> <li>● <b>Red Soil</b></li> <li>● <b>Black Soil</b></li> </ul>
<b>Cropping Pattern</b>	<ul style="list-style-type: none"> <li>● <b>96%: Rainfed</b></li> <li>● <b>4%: Irrigated</b></li> </ul>
<b>Number of Self-Help Group (SHGs) members</b>	2145
<b>Number of Village Organisations (Vos)</b>	7

**Source:** Internal APCNF Documents

It is well connected to Kurnool, Nandyal, Hyderabad, Bangalore, Tirupati and Chennai

through road. Kurnool Railway station is the nearest railway station. The airport at Orvakal is to

serve air transport needs of the people of Kurnool City. Table 2 shows that the mandal has a majority of marginal farmers with less than 1 hectare of land. As the study aimed to understand how smallholder farmer's role can be increased in the value chain, this location aligns with the study objective.

**Table 2:** Land owning Distribution in Orvakal Mandal

Type of Owner	Agricultural Holding (in Numbers)	Agricultural Land (in hectares)
Marginal Farmers (<1 Ha)	9,476	5,038
Small Farmers (1-2 Ha)	4,232	5,915
Semi Medium Farmers (2-4 Ha)	2,173	5,759
Medium Farmers (4-10 Ha)	644	3,577
Large Farmers (>10 Ha)	49	671
<b>TOTAL</b>	<b>16,574</b>	<b>20,959</b>

**Source:** Internal APCNF Documents

APCNF deploys field staff in the mandal to help the farmers shift to natural farming practices such as 'Beejamrutam', 'Ghanajeevamrutam', 'Dravajeevamrutam', 'Neemastram', 'Vepaginjala Kashayam', 'Kanuga nuneey', 'Dashaparani', 'Panchakavya', 'Pullati Majjiga' and 'Enzyme' (APCNF, 2023).

Table 3 outlines the cadres that APCNF has deployed at the field.

**Table 3:** APCNF Staff in Orvakal Mandal

Designation of Cadre	Number in the Mandal
<b>ICRP (Internal Community Resource Person)</b>	<b>29</b>
<b>Unit In Charge (UIC)</b>	<b>8</b>
<b>Master Trainer (MT)</b>	<b>2</b>
<b>Model Mandal Team Lead (MRTL)</b>	<b>1</b>

**Source:** Interview with APCNF Staff

APCNF has devised categories to monitor and identify farmers who have shifted to natural farming.

The categories include:

**C1 farmers** i.e. the farmers that have adopted natural farming practices partially.

**S2S farmers** (Seed to Seed) i.e. the farmers that adopt all the practices in natural farming but in a partial piece of their land.

**S2S(W) farmers** (Seed to Seed (Whole)) i.e. Farmers who adopt all practices of natural farming in their entire land. Table 4 explains the total farmers in Orvakal Mandal under each category.

**Table 4:** Number of NF Farmers in different APCNF Categories in Orvakal Mandal

APNCF Category of NF Farmers	Number
C1 Farmers	341
S2S Farmers	72
S2S(W) Farmers	0
<b>TOTAL</b>	<b>413</b>

**Source:** Internal APCNF Documents

For this study, I chose to conduct the following primary research from multiple stakeholders in the value chain of natural produce- from farmers to final consumers. Below I have detailed the method for primary research. The identity of the respondent would be anonymized while sharing analysis in the next chapter.

- 1) **Focused Group Discussions with smallholder farmers practicing Natural Farming:** A focused group discussion was organised by inviting 9 farmers (4 from Upalapadu Village and 5 from Uyyalawada village). The discussion aimed to understand the farmer's demographics, agricultural profile, cropping practices, marketing practices, and any challenges faced in the value chain. The discussion also touched upon the activities that the farmers think the government can do to strengthen their position in the market.
- 2) **One on One Interviews with Small- and Large-Scale Retailers:** This canvas of middlemen is large as each middleman works on their unique business model to maximise their available

resources and profits. I interviewed retailers both from Tier 2 city (Kurnool) and Tier 2 city (Hyderabad)

- a. Mr. Sam<sup>1</sup> own a retail shop in Kurnool and a permanent stall in the Rythu Bazaar (farmer's market) in Kurnool
- b. Mr. Babu<sup>2</sup> own a processing unit and a millet café in front of the collectorate of Kurnool.
- c. Mr. Rana<sup>3</sup> is an end-to-end player. He is a farmer owning 70 acres of land in the Nagar Kurnool district and transports the produce to sell in his retail shop in Hyderabad.
- d. Mr. Pramod<sup>4</sup> is a pure play retailer aggregating organic produce from farmers and other organic sellers to run an organic supermarket in Hyderabad. He also has his own label of organic produce and runs an organic pizza café.

3) **Online Survey of consumers of Natural Produce:** I floated an online survey to understand what factors help the consumer shift from widely available chemical produce to natural produce. The survey also aimed to understand their flexibility in paying a premium and engaging directly with the farmers through different modalities. The survey had 121 responses. Of the 121 respondents,

- a. **Age:** ~74% were in the age bracket of 18 years-30 years, 21% from 30-50 years, 5% from 50-65 years.
- b. **Gender:** 55% were male, 45% were female.
- c. **Location:** 52% hailed from North India, 23% from South India, 9% from West India, 8% from East India, 6% from Central India and 2% from Northeast India
- d. **Education Level:** 60% of the respondents are postgraduates, 32% are undergraduates, 3% are Ph. D holders and 5% have other degrees.

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<sup>1</sup> Anonymized name

<sup>2</sup> Anonymized name

<sup>3</sup> Anonymized name

<sup>4</sup> Anonymized name

- e. **Occupation:** 57% of respondents are employed in the private/government space, 27% are students, 8% are freelancers, 4% are entrepreneurs, 2% are homemakers and 2% in other professions.
- f. **Average Monthly Income:** 56% of respondents have average monthly salaries of more than Rs 1 lakh, 24% between Rs 50 thousand to Rs. 1 lakh, and 20% between Rs 25 thousand to Rs 50 thousand.
- g. **Marital Status:** 67% of the respondents are single, 15% are in a relationship, 10% are married with children and 8% are married with no children.

**4) One-on-one interviews with APCNF cadres:** I interviewed different cadres of APCNF at the mandal level and at the head office level to get insights on the APNCF interventions, their effectiveness and their future plans. The field staff at Kurnool district was also instrumental in arranging and facilitating interviews with farmers and local retailers.

The next chapter will detail the areas of discussion and insight with different respondents.

## CHAPTER 4: DISCUSSIONS AND ANALYSIS

This study aims to understand the current ways in which the value chain operates for natural farming: from farm to consumers. From my secondary and primary research, four major themes emerge: ‘Production’ Stage, ‘Marketable Surplus’ Stage, the ‘Preparation for Sales’ Stage, and ‘At Sales Point’ Stage (depicted in Figure 8).

The ‘Production’ stage refers to the actual farming stage where farmers conduct all the farming activities (sowing, flowering, harvest, pest control, etc.) in a natural farming approach. For farmers shifting from chemical farming, this stage has a growth curve. The ‘Marketable Surplus’ stage is the stage from which the value chain to the consumers is determined. This stage also includes the transition from farmers to middlemen and the factors influencing the price point for farmers. At the ‘Preparation for Sales’ stage, the aspects related to final consumption are taken care of. This includes final processing, packaging, and labeling to provide the right details to the consumer. This stage also features certification in a big way to ensure the authenticity of the natural process. The final stage of ‘At Sales Point’ is when the consumer comes in direct contact with the seller. The location, marketing approach, and authenticity check help in higher sales at this stage.

**Figure 8: Themes for Discussion**

Production	Marketable Surplus of Farm	Preparation for Sales SaSaSaleRetail	At Sales Point
Shift to Natural Farming Identification of Crops Sowing Stage Flowering Stage Harvest Stage Yield Output	Marketable Surplus with farmer Farm Storage Farm Level Processing (Grading/Sorting) Negotiation for sale with traders Quality Testing Certification Transportation	Storage Secondary/Tertiary Level Processing Packaging Labelling Certification	Location Modality of Connect Marketing Strategies Pricing Certification/ Authenticity Check

In the next section, I would describe the nuances of each theme and its subcomponents from different the lens of different stakeholders and develop an intersectional understanding of the gaps in the value chain.

#### **4.1 Production Stage**

Currently, in India, the incentives of shifting to natural farming are balanced by the disincentives reducing the number of farmers practising. We can look at the production stage by studying the experience of extreme ends of farmers: the smallholder farmers in Upalapadu and Uyyalawada village and a large holder farmer named Mr. Rana owing 70 acres of unspoiled land.

In the case of smallholder farmers, they were all originally practicing chemical farming. They were introduced to the concept of natural farming by the government cadre of Internal Community Resource Person (IRCPs). This cadre is usually embedded within the local area and is a part of SHGs, VOs and other local congregations. IRCPs inform the farmers about the harmful effects of chemicals on the soil in the long run. The farmers of these villages decided to shift to natural farming when they found out that the cost of production is lower in the natural farming approach.

“In natural farming, it costs us Rs 15-20 thousand per acre across the production cycle. In chemical, it used to cost us Rs 50-60 thousand per acre. And the soil is getting increasingly bad. And at the end of the day, we get the same income of ~Rs 1 lakh/acre”. (R, Thota, personal communication, March 27, 2024)

Mr. Rana, who was an ex-investment banker, shifted to farming in 2014 to pursue his passion for agriculture. He started from chemical farming but the cost of inputs for him was increasing at an increasing scale every year. He also was dissuaded by the quality of the yield that he felt was too dangerous for personal consumption and he was yet taking it to the market for sales. This led him to sell his land and buy an unspoiled land where he could start afresh.

“For producing curry leaves in one acre, I buy saplings and Rs 8000 worth of fertilisers for one acre. And next year, I have to buy 1.5 times more dosage than I bought this year to keep the same yield. And the usage is indiscriminate, like an antibiotics course as no one knows what’s the right method. One farmer says put that; the shopkeeper gives a combination of 3



chemicals saying that at least one would work. At the end, the yield is so contaminated that I do not store my produce for my family. For our own consumption, we produce separately and keep it aside. I realised that something that I am not ready to eat, I am selling it to others and that made me feel bad”. (T. Rana, personal communication, April 9,2024)

Mr. Rana allowed his new 70-acre land to remain fallow for the first two years and allowed his neighbors to let their cattle graze/do rent-free rainfed cultivation in the land to increase the nutrient and fertility level of the land (through cow dung and natural manure) before starting his production. As he was shifting to natural farming, Mr. Rana read various books, visited natural farms, interacted with farmers who had been doing farming before the onset of the Green Revolution and visited organic shops to understand the lay of the land. He also studied the water flow of his land during the rainy season to understand how he can best use it to develop an ecosystem in his field.

“Before Green Revolution, we had natural farming only. India was never short of food grains. It happened during the British period when famines like the Bengal famine occurred. They were sending food to the United Kingdom creating a food shortage. But in the earliest times, history never said that there was an agricultural shortage, or anyone died of famine. Agricultural produce was one of the largest economies of India. People had no access to chemicals and in natural ways, India would produce abundantly”. (T. Rana, personal communication, April 9,2024)

According to Mr. Rana, natural farming is an art. “It is a wholesome act where you have to be aware of your surroundings”. In the starting years, Mr. Rana struggled to produce yield as he was learning the ways of natural farming.

There are challenges in natural farming. As FAO document also pointed out that natural/organic farming is a ‘process’ claim rather than a ‘product’ claim, the development of bio-inoculants needs to keep in mind the different kinds of farm waste produced to utilise them in the mixture.

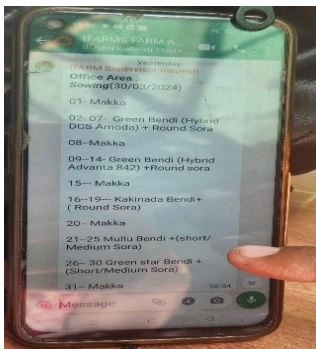
“Choose the ingredients based on your farm waste. I make agnastram (for pest management) which requires chili. I make agnastram only when I have leftover chili on my farm. When I have to make Jeevamuthram, it requires jaggery. I have to buy jaggery. When my papayas are

not sold and are ripened, I use it instead of jaggery and make Jeevamuthram. So, I save the cost. If I use jaggery, cost goes up. If government makes and sells to farmers, there would be margin added at every touch point and the cost increases. So, you have to prepare your inoculants by keeping your farm surplus in mind. Pest rotten crop becomes chicken feed. Leftover produce at the shop is taken back to the farm and taken to the poultry shed. This is a real zero-wastage farm. There is no wastage for us". (T. Rana, personal communication, April 9,2024)

There is more manual work in developing and spraying bio-inoculants as compared to chemical farming. The bio-inoculants have to be manually prepared as there are fewer store-bought versions of the same. While they had to spray every 10-12 days in chemical farming, the same work they have to do every 3-4 days in natural farming. This takes away their rest time during crop cycles. Mr. Rana, owner of 70-acre land, also had a similar experience.

"I have to give nitrogen to plants. In Chemical, I would buy NPK from the shop and spray it. In natural farming, I would have to make fisherman acid. As an alternative to pesticides, I make Agnastram. For that, I have to source cow urine, garlic, mirchi, boil the ingredients. This is time-consuming. So, in natural, financial cost decrease, but the human efforts are more". (T. Rana, personal communication, April 9, 2024)

One of the principles of natural farming is that the soil needs to be covered with crops all 365 days of the year (Galab, S., et al.,2022). Mr. Rana develops a farm schedule of his different agricultural practices. This is done so that he harvests his crop in a way that there is continuity of nutrients to the soil. Figure 9 shows that the crops are chosen in such a way that they can mutually protect each other. Mr. Rana put rows of sunflower and marigold to attract the pest to them and save the main crop. Corn (Makka) is sown to act as a line of fence against sunlight which can later be sold as well.



**Figure 9:** Mr. Rana’s field crop sowing plan with his field supervisors

There are a lot of farmers out there who believe that if they don’t put any fertiliser for most parts of the agricultural process, they can still claim to be ‘organic’. “80% natural is nothing. You are either 100% natural or 0% natural. Even one chemical spray is a bad spray”(T. Rana, personal communication, April 9, 2024). Even though there have been a lot of masters and PhD level research on chemical methods, research on natural methods is still to gain traction. The government, in their guidelines for ‘National Mission on Natural Farming’, states one of its objective as ‘to collect, validate and document Natural Farming practices being practiced in various parts of the country and to encourage participatory research with farmers on further up scaling’( MoA&FW, 2022). Despite the objective, the on-ground reality of research is different.

“Government is ready to give a PhD to some guy who tells how to spray a particular pesticide, its dosage and effectiveness. On the other hand, if I say I make Agnastram, spraying method, this is the effectiveness- No one is listening to me! Where is the research going on here?” (T. Rana, personal communication, April 9, 2024)

At the harvest stage, the experience of smallholder farmers “**is that the yield is lower than chemical in the first three years of natural farming**” (S. Thota, personal communication, March 27, 2024) However, this was not the experience of Mr. Rana. One plausible explanation for this is that the soil which has become used to the chemical inoculants takes some time to shift to natural bio-inoculants which explains the initial decrease in yield. Mr. Rana did not face this reduction in yield as he purchased virgin land that had previously not been used.

Input selling has become an ancillary revenue source for smallholder farmers who buy and sell products from each other based on availability of inputs. Chinnayana procures neem seeds for making

bio-inoculants at Rs 15/kg. He then converts it into powder which he sells to his fellow NF farmers at Rs 40 per kg. This acts as ancillary revenue for Chinnayana.

The farmers who shift to natural farming believe that it is an advantageous activity for the human community. After practicing NF for few years, these farmers swear by the taste and health benefits of the natural produce. “I had Arthritis and knee pain. But because of consuming NF-based produce, my knee pain is gone” (R. Nadella, personal communication, March 27, 2024).

Thus, the production stage of natural farming poses issues of increased manual labor, and a lack of tested methods for natural farming and pest management. The farmers shifting from chemical to natural farming experience a reduction in yield, and in input cost thus giving no extra incentive to make the switch.

#### 4.2 Marketable Surplus Stage

At this stage, the farmer usually faces obstacles related to storage, processing and sales negotiation with the intermediary. The smallholder farmer stores food equivalent to the consumption requirement of his family for one year. So, the marketable surplus of each farmer is a factor of his family size and the number of children and old age individuals in his family. Whatever is left is the marketable surplus of the farmer which they store temporarily in their home before selling it to the market.



**Figure 10:** Home Storage Room of a farmer in Upalapadu Village

As the farmer does not have access to sterile environments, their crop sometimes gets infested with pests at the storage space in their home rendering the harvest useless.



**Figure 11:** Pest-infested home-stored produce of a farmer.

APCNF is currently in the process of certifying the natural farmers through Participatory Guarantee System (PGS). Under this system, it forms the farmers in groups of 10, who are registered as a unit. Once the farmers are doing organic farming for a continuous period of three years, they are provided with the certificate. However, the certificate is taken away from everyone, even if one farmer out of the ten-stop producing organically. This is a loophole as a typical farmer shifts to natural farming because they see an opportunity to charge a premium. So, they agree to shift even though the yield is low in the initial years. The premium can be accessed by farmers if they are certified, but it takes at least three years to get certified and there is a dependency on farmer neighbors which can risk the certification itself. Additionally, the certification is also expensive. All of this dissuades the farmer from trying for certification.

The stage of selling your produce is the biggest bottleneck in providing the benefits of natural farming to the farmer. Currently, the farmer has to sell their produce to the commission agents who in turn sell it to the traders who sell it to retailers. Natural farming produce typically are sold at a price slightly above the price of chemically produced products. Now this increased price, or 'premium pricing' "can range from anything from 5% to 60%" (G.Ranga, personal communication, April 5, 2024). Because

of multiple touch points, the margin for premium costing gets subsumed by the intermediaries and the farmer receives the same price as they would if they had produced chemically.

“The trader/commission agent says that the farmer can produce in an NF way/chemical way, it would not affect their quotation. And if the NF farmers are not willing to sell them, they can go to other farmers/other villages with NF Farmers to buy the same crop from them. On top of this, for every 100 kgs of produce, they even take additional 2-3 kgs from us as depreciation cost as they say that they are bearing the risk of taking it to market”. (H. Gadde, personal communication, March 27, 2024)

When asked if the trader doesn't know that the farmer is producing naturally, the farmers unanimously lamented that even if the trader is aware of their natural practices, they don't seem to care about its benefits and would not increase the price. And they sell the produce to them as their produce is perishable and prone to pests. There are local consumers of their produce as well, but they are “also not ready to pay the premium pricing. They say that they do not care about the way the produce is created” (U.Vedappa, personal communication, March 28, 2024). A possible explanation for this phenomenon is that although the rural consumer does appreciate the advantages of naturally produced produce, the consumer quotes a lower amount to the farmers. They can do that as they are aware that the farmers are not getting the premium even through the traders and the Tier 2 population has limited savings. Given this, the farmer prefers selling to the commission agent/trader because they can buy in bulk before their produce gets wasted. Even when the farmer accepts the low price, there are issues such as credit and delayed payments for as long as two months which is a long period for a smallholder farmer (H. Yudda, personal communication, March 28,2024)

When asked as to how they would like to engage with the traders in the future, the farmers suggested they would like the IRCP cadre to act as intermediaries and facilitate the negotiation between traders and farmers. When inquired about the FPO in their vicinity, a farmer said that the “people running the FPO were not skilled enough. We did not trust them to handle the transactions and negotiations of our crops. After some years, the FPO got dissolved also.” (Y.Siddesh, personal communication, March 27, 2024). This statement brings various socio-cultural factors into the picture which have to be kept in mind while trying to organise any community into an enterprise.

Mr. Rana also believes that traders are a ‘cartel’ who ‘collude’ to create an artificial demand so that they can dictate the terms of purchase and undercut the farmer. In Hyderabad wholesale market, there is an auction of produce trucks by agents (individuals given tickets to facilitate the auction between buyers and sellers).

“Traders say that a lot of vehicles are there and there is demand but we would not increase price beyond this threshold. They decide amongst themselves that let us not cross over Rs 20 for tomatoes today.”

This study also engaged with small and large retailers of natural produce who aggregate their produce from different natural farmers. As authenticity of the produce is still hard to empirically verify, these traders buy from farmers that they previously know and trust or as referred by a common contact to be an ethical natural producer. Major factors checked by different retailers before buying the product is:

- Moisture content of the produce
- Number of Stones/dust matter in the produce
- Individual grain’s weight
- Taste of the Product
- Feel/Texture of the Product
- Validate their produce through their connections.
- One on One conversations with the farmer to understand their motivation and method.

Different individuals are working in every field. There are retailers whose aim is to empower smallholder farmers and others whose aim is to maximise profits while utilising the current market and both of them can co-exist together. One retailer thinks that “we should go the extra mile to help the farmer who is producing honestly” (T.Rana, personal communication, April 7, 2024) and the other thinks that showing emotions is weak.

“I buy only from rich farmers who do not need this income because small farmers’ cheat. You can say that we should encourage small farmers. But those emotions do not work in business. I consider my consumers as patients and so I have to be ruthless to the farmer” (P, Cherukuri, personal communication, April 9, 2024)

Traders/Commission Agents/retailers do not typically conduct quality testing on the agricultural produce bought from farmers. This is because one batch of quality testing for one product takes anywhere between Rs 12,000 to Rs 15,000. For a smallholder farmer or a retailer who works in small quantities and margins, such a steep cost for one batch quality testing removes the possibility of testing completely.

The pricing decision for retailers depends on their personal value system, market rate, farmer's situation and their connection with the farmer. Local retailers of Kurnool were able to charge a lower premium for the Kurnool customer than Hyderabad-based retailers are able to ask for from Hyderabad based customers. This in turn reduces this margin after allowing for value added costs. The income differentiation and lifestyle difference can be a plausible explanation for the difference in the price points of the Tier 1 and Tier 2 city customers. However, there are also retailers like Pramod who pay a premium to the farmer as he wants to keep the best quality in his store, which will attract customers and ensure repeat sales.

“MSP is for scrap products but not for premium products. Stores who care about organic products would give cut of the premium product to the farmer producing it. There is one turmeric I buy which is Rs 400/kg, another I buy I Rs 1000/kg. Which one would you like it make as MSP? People who are able to sell at Rs 1000, they'll be forced to buy at Rs 400. We should pay creamy amount for creamy product.” (P, Cherukuri, personal communication, April 9,2024)

Based on the interviews, we can gather that the retailers also believe in the advantages of naturally grown produce.

“My customers report weight loss, diabetic control and increased energy after eating a millet-based meal. My mother had cancer and the doctor gave her 2 days. I went to her home and made her eat millet-based meals. She stayed with us for 45 more days and I would always be grateful for that extra time with her” (V. Babu, personal communication, March 29,2024).

Some farmers take their produce to local Rythu Bazaars/Mandis where they are able to fetch a higher price for the same produce. This indicates that the location of the sale impacts farmers' negotiation

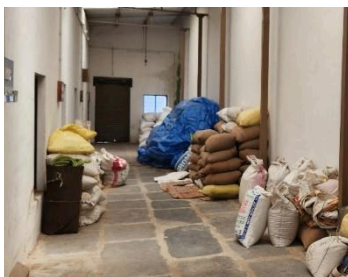


power with the traders. The transportation cost is borne by farmer/trader/both depending on specific connection and market price.

This stage brings out the problem of organization and negotiation power. The traders/intermediaries act as a ‘cartel’ influencing the price and margins of the agricultural ecosystem. The government envisioned FPOs to act as a balancing force to traders but currently individual farmers are engaging with the traders and thus, are not able to command a higher share of the premium pricing. Additionally, the market is not getting developed as farmers’ certification in PGS is linked to 10 other farmers ensuring authenticity in their farming practices. The cost of testing is high which dissuades the retailers to do batch testing and thus makes the system of checks and balances almost negligible. In the absence of this, the retailers only buy from the farmers that they absolutely trust and know personally. This reduces the scope of scaling the enterprise and the value chain considerably.

#### 4.3 Preparation for Retail Stage

This stage poses issues related to final consumption environment and the approach to provide it to the customers. Once the produce is taken from the farmer, the traders/retailers have to make sure that it is ready for final consumption. The bulk produce is stored/sold continuously depending upon storage availability. Mr. Sam does not have storage space, so he doesn’t buy in bulk in fear of wastage. He thus has to procure, market and sell continuously to ensure profit. On the other hand, Mr. Babu has his own processing unit where he can store the extra produce to be sold at a later date.



**Figure 12:** Storage space in Kurnool      **Figure 13:** Storage Space in Hyderabad

There are various layers of processing, and each layer impacts the pricing of the final product.

**Primary Processing:** This includes early processing like sorting and grating to convert raw materials into food commodities. This process is usually done manually or through sieves (Figure 14) or can be done automatically through a machine (Figure 15)



**Figure 14** Manual Sieve



**Figure 15:** Automated Sieve for Grading of Produce

**Secondary Processing:** Secondary processing is the conversion of ingredients into edible products – this involves combining foods in a particular way to change properties. Figures 17,18 and 19 showcases different machines utilised by the traders/retailers to process the produce to make it ready for final consumption.



**Figure 16:** Dehusling Machine



**17:** Oil Cold Pressing Machine **18:** Semolina Making Machine



**Tertiary Processing:** Tertiary food processing produces prepared convenience foods like canned soups or frozen dinners like in Figure 19.



**Figure 19:** Canned Natural Produce

The final stage for preparation and the major value add of the traders is the **packaging and labelling of natural produce**. Based on the resources of the retailer and the demographics of the regular customer, a retailer chose their packaging. As shown in Figure 20, Mr. Sam chose local packaging to keep his price low and margin better. But as shown in Figure 21, Mr. Rana utilises expensive packaging material to instill a sense of ‘confidence’ in the product’s quality.



**Figure 20:** Local Packaging with no label



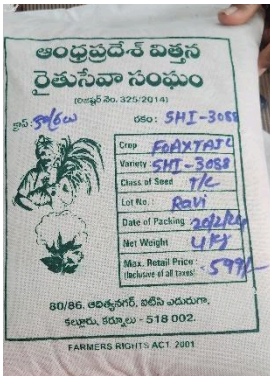
**Figure 21:** Expensive Packaging with label

To pack grains, retailers use different mechanisms. Some use vacuum packaging machines (Figure 22), some uses Nitrogen to remove pests. The cost of packaging can vary drastically (Fig 23,24)



**Figure 22: Low-cost packaging    23: Medium Cost Packaging    24: High-Cost Packaging**

Labelling is done by retailers to build their brand presence and provide details like ingredients, expiry date, and price of the product. The label usually contains the information about the certification that the producer may have, the overall ingredients and any other detail the manufacturer wishes to provide (Figure 25,26,27).



**Figure 25: Organic Seed Label    26: Organic Snacks Label    27: Organic Grain Label**

At the packaging stage is where certification and authenticity is talked about more robustly. This is the last stage of transformation of produce before it reaches the customer. Most retailers have a certification: either of Food Safety and Standards Authority of India (FSSAI) or Participatory Guarantee System (PGS) or government backed certification or third-party organisations like ITC, Ekalavya Foundation, Vimta etc. Because the certification being a ‘spot check’ and not check the process of produce, it brings in trust issues regarding authenticity.

“Certification is nothing in this field, it is Absurd. Today you get the certificate, tomorrow you spray chemicals. Who is checking it? The farmer thinks that the drizzles would lead to pest attack is more. So, the farmer can say I’ll spray a little pesticide and sell it off as ‘organic’. He thought to himself that it wouldn’t come into the soil. Currently, no certification can check that. It is only your personal ethics” (V. Rana, personal communication, April 9,2024)

Additionally, it is not enough for the retailer to have organic certification. If he is aggregating from farmers, he also needs a Transfer Certificate (TC) from farmer producers. When we talk of quality check, it is very expensive to do on a continuous basis.

“I get veggies every Wednesday and Saturday. Testing accepts only one batch and one product at a time. I sell 10 kgs of Bhindi, total cost is Rs 10,000. If I put Rs 12,000 for testing, what is the cost economics for that? I would never go for that, but it would help reduce authenticity. If it is 1000-1500, once in a while, I’ll test it. If I test, I can tell the farmer that you are cheating me. They cannot cheat anymore. There would be transparency” (P. Konidela, personal communication, April 9,2024)

This stage brings out capitalism in this market. Packaging in expensive bottles and vacuum-tight products fetch a better price in the market than selling the same product in local plastic bottles. This additional costing can only be afforded by individuals with deep financial resources which are most probably not going to the smallholder farmer. As the packaging stage is the closest to the consumer, the individual (with high financial resources) who is able to package in a more sophisticated way would command the highest margin of natural products ‘premium’.

Additionally, the misuse of certification is highlighted at this stage. Without eyes on the entire process, the consumers have to trust the farmers, the intermediaries, and the final retailer to maintain the authenticity of a natural product. This hinders building long-lasting trust and consistent demand.

#### **4.4 At Sales Point Stage**

Sales Point converge the consumer requirements and market development and brings to head the areas of improvement. When the product reaches the final consumer, the demographics and the location of

shop plays a big role. A supermarket store located at the main road of Hyderabad (Figure 28) can ask for a 50% premium on products, a retail store in alleys of Kurnool (Figure 29) can demand a 20% premium on products and an on-farm sale may not lead to any premium.



**Figure 28:** Store Front in Hyderabad



**Figure 29:** Store Front in Kurnool

To improve sales, some retailers also include employ different marketing initiatives such as:

4. **Selling hot food made of organic ingredients:** As most consumers are unaware of how to cook with organic produce and the taste of the same, some retailers go the extra mile to prepare food from naturally grown produce. This helps consumers experience the taste of natural produce and become regular customers.



**Figure 30:** Millet Based Tiffins in Kurnool    **Figure 31:** Organic Pizza Café in Hyderabad

**2. Using influential individuals to sell their produce:** The retailer in Kurnool has a direct connection with Dr Khader Vali, a renowned independent forest agriculture scientist and food expert from Mysore. He is known to have discovered medicinal values in 5 kinds of millets. Dr. Khader is very popular and reaches out to end users through his YouTube channel, WhatsApp lists, published books and in person workshops. Dr. Khader prescribes millet-based diets and provides a list of millet vendors in AP and Telangana. In this list, he has included Surya's shop and his number. In one of the in-person workshops which was also uploaded on YouTube, Dr Khader announced Surya's name and number in the gathering as well because of which Surya receives multiple orders through this platform.



**Figure 32:** Hoarding of Dr. Khader in Mr. Sam's Rythu Bazaar Stall

**3. Keeping a wide variety of the same products to cater to the consumer's needs:** We cannot expect the consumer to know exactly what they want. So, some retailers try to attract consumers by selling six varieties of Brinjal/Tomato etc. (Figure 33). Alternatively, they can keep different brands of the same product to provide a sense of an 'organic supermarket' (Figure 34)



**Figure 33:** Varieties of Sweet Potato



**Figure 34:** Organic Supermarket

**4. Trust Building Exercises with the customer:** Mr. Rana also uses different festivals to offer specific produce from his farm for free. He keeps 'Bel Patra' on Shivaratri, mango leaves on Ugadi and sugarcane pieces on Vinayaka Chaturthi. A variety of custard apples named 'Lakshman Fal' is known to help cancer patients. Mr. Rana gives Lakshman Fal for free during his Mandi every Wednesday and Saturday. He also offers a 'stay at farm' activity for consumers to witness the natural production process.

"I have ten tin shed rooms where 25-30 people can stay at one point. There is a fully equipped kitchen. We encourage people to come with their family. Children can pluck whatever they

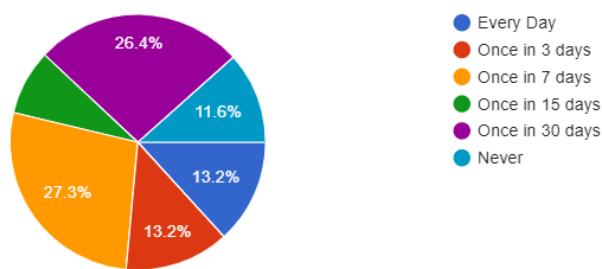


want from the farm. If they want to eat Bhindi curry, they can pluck it and make food from it. They can see the farm activities from morning to evening, what we are spraying, what we are doing, talk to my workers” (V, Rana, personal communication, April 9,2024)

After all these activities, the final price at the sales point is a function of consumer mindset, paying capacity, level of awareness and trust in the value chain in being authentic.

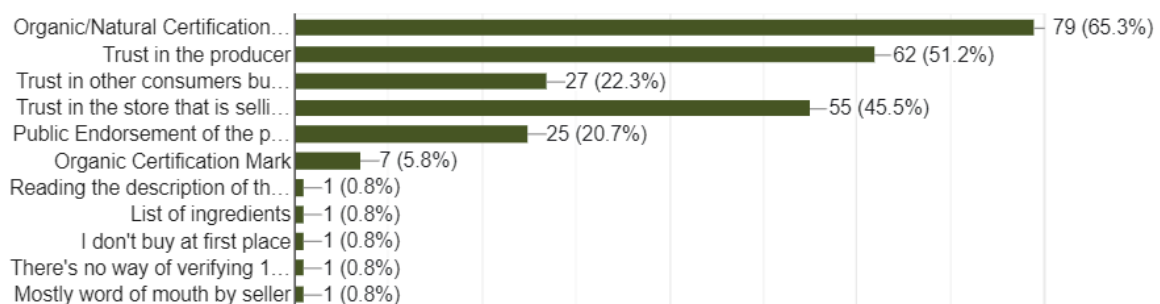
### *Consumer Perspective*

According to the consumer survey responded by 121 people (details of the same in Chapter 3), there is an increasing demand for natural produce. Figure 35 shows that ~90% of the respondents buy natural produce once in a month, with ~55% buying it at least once in a week. When asked about the reason for buying natural produce, 48% respondents chose ‘It is good for my family’s health’, followed by ‘It is environmentally beneficial’ (29%) and ‘I support local farmers and farming practices’ (26%).



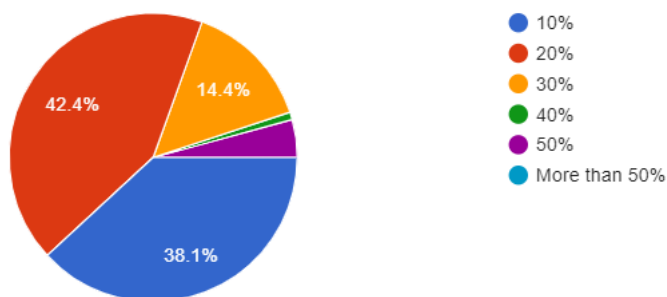
**Figure 35:** Frequency of buying natural produce

When asked about the methods of verification for authenticity, 65% of respondents trusted certification mark, 51% trusted the producer, 45% trusted the store that is selling organic produce and 21% trusted the influential individual who markets the product. (Figure 36)



**Figure 36:** Methods of Authentication by consumers of natural produce

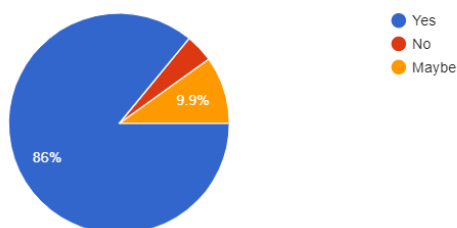
When asked about the willingness to pay a premium for naturally produced products, ~94% respondents were in the affirmation. However, the premium range differed. 43% of respondents were okay with 20% premium, 39% with 10% premium and 15% with 30% premium (Figure 37). This clearly indicates that contrary to retailer's assumption that the Tier 1 market is ready to pay as much as 50% or even double the price for organic produce, the consumers are still price sensitive.



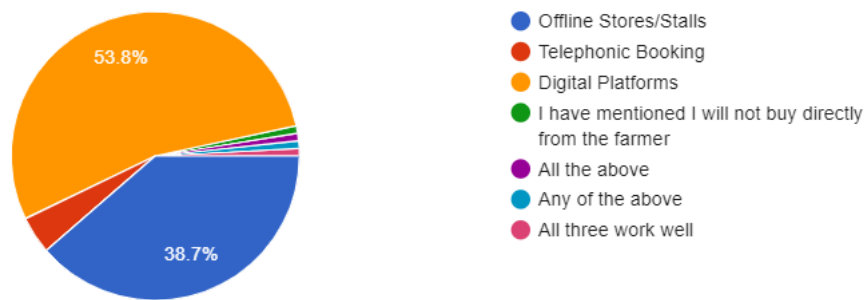
**Figure 37:** Premium Percentage Acceptance for Natural Produce

One of the more positive insights is that the final consumer (86% say 'Yes' and 10% say 'Maybe') is very accepting of buying the produce directly from the farmer. (Figure 38)

**Figure 38:** Acceptance of buying directly from farmer



When asked about the modality preferred for engaging with the farmer, ~54% of the respondents preferred digital platforms, ~39% preferred offline stores/stalls and ~4% preferred telephonic booking of produce. (Figure 39)



**Figure 39:** Preferred modality for consumers to engage with farmers.

## CHAPTER 5: CONCLUSION

This study brought up various layers of inequity in the agricultural market and how the farmers as the least benefitted in a profitable value chain. With natural farming coming up as one of the most promising solutions to counter climate change and preserve low- input and traditional forms of agriculture, this field warrants more research, discussion, and deliberation from all sections of society.

### At the Production Stage

This stage marks the beginning of the natural produce market and is hinged on more farmers shifting their age-old practices of chemical farming which they inherited from the Green Revolution and shift to low-input, traditional, and sustainable form of agriculture. Currently, there are incentives and disincentives for the farmers to enter the natural farming space.

#### Incentive to Shift

- Reduced Input Cost in natural farming.
- Mental satisfaction with producing crops that are healthy and beneficial for consumption.

#### Disincentives to shift to natural farming:

- Lack of understanding of efficacy of bio-inoculants
- More manual intensive impacting the shift to NF and development of strong farmer community. (The objective of shifting was cost reduction, so they have to make bio-inoculants on their own, and thus the increased manual work with same pricing is not giving an extra incentive to farmers practice chemical farming to make the switch. This

reduces the critical mass of farmers who are practicing natural farming and can help in research and perfecting the art of traditional agriculture in the modern world.

- Lack of empirical research on the methods and approaches of conducting natural farming and efficacy of different bio-inoculants.

These incentives tend to balance out the disincentives. This creates a friction amongst the farming communities and most tend to stick with the status quo without the presence of a tangible overpowering incentive. Lack of development of market for natural farming also acts a factor for farmers to stick with chemical farming.

### **At the Marketable Surplus**

With lesser number of farmers practising natural farming and most being smallholder farmers, the marketable surplus of natural produce is sizably less than the chemical produce when it is ready to go to the market. There are various issues like:

- Pest issue of the harvested crops due to lack of adequate storage spaces.
- The farmers are not able to take the premium price of a naturally produced product that the consumer is willing to pay. This is because the intermediary overpowers the sales transaction and gives the same price to natural farmers as they would to chemical farmers. And the additional profit that they make from the customer is kept with the intermediary.
- Farmers are currently dealing with traders' individually and are not organized into an enterprise structure which adds weight to their negotiating ability. The government, in its National Mission on Natural Farming, has envisioned developing clusters of natural farmers into FPO enterprises that can scale up production. However, ground realities, community politics, caste, gender, asset level, age, and other socio-economic factors come into the picture while deciding how the enterprise would be run and by whom. The application of this phenomenon in context of government's scheme is not discussed in its implementation guidelines.
- One batch testing for quality costs Rs 12,000-Rs 15,000 dissuading checks at every interchange point. This lack of checks calls to question the authenticity of the produce. It also

opens up natural produce retailers to risk of getting ‘tainted’ product that has been chemically produced but marketed ‘organic’.

- In the absence of proper authentication method for natural produce, the retailers only buy from the farmers that they absolutely trust and know personally. This reduces the scope of scaling the enterprise and the value chain considerably.

### **At the Preparation for Sales**

This stage decouples the farmer from the final consumer. It is run by middlemen undertaking value addition activities and taking majority of the premium without sharing it with the farmer

- Packaging material and its style decide the pricing of a natural product. Irrespective of their quality, a well-packaged product would fetch a higher price than a product left open/packaged in local material. This isolates the smallholder farmer and retailer to get a bigger chunk of the premium pricing.
- Additionally, the misuse of certification is highlighted at this stage. Without eyes on the entire process, the consumers have to trust the farmers, the intermediaries, and the final retailer to maintain the authenticity of a natural product. This hinders building long-lasting trust and consistent demand.
- The farmer does not have a certification but to be finally accepted in the market as ‘organic’ by consumer, they have to sell it to an intermediary that can package it into an organic marketing space.

### **At Sales Point**

Building consistent demand streams requires consumers to trust in the product and its benefits for themselves and their families.

- Currently the retailer is building trust through associating with natural farming experts, provide services like ‘hot food services’ from natural produce to make the consumer

experience the product and provide certain products which have shown medicinal and rejuvenation properties for the general human body

- As the use of the product almost feels ‘medicinal’, the retailers have a very personal touch while engaging with the customers which makes the customer trust the product enough to buy it for their vitality.
- This ‘personal touch’ is hard to recreate at a larger scale thus limiting the natural farming community and ecosystem.

## CHAPTER 6: POLICY AND RECOMMENDATIONS

Currently, all the interventions conducted by the government are under PKVY or BPKP, or NMNF. They are schemes, sub schemes, or missions showing the current government’s interest in engaging with natural farming. I recommend developing NMNF into a Bill which can be passed by both houses of the parliament to become an Act. Once it gains legal standing, operational action plans at every step (State, District, Block, Village, SHGs etc) can be aligned and the citizens can hold the government and the bureaucratic machinery legally accountable to provide them with the resources and the infrastructure required to build a strong natural farming ecosystem in India which is also profitable for the farmer.

Apart from that, following are certain recommendations that can be implemented at each stage of the natural farming value chain:

### At the Production Stage

- **Collection of Data by APCNF Cadres to estimate crop-wise naturally produced yield:** to start collecting data on the net sown area for natural farming (in the C1, S2S and S2S(W) category). Information should be collected category-wise and crop-wise. IRCP can collect this data through survey format. NFA (Marketing) and MMTL can spearhead this initiative. This would give a sense of how many acres of NF crop is sown for each crop so that a marketing plan can be created to facilitate sales platforms. This information would also help APCNF prepare the inputs for different crops.

- o **Pre-Sowing Stage:** Soil testing to understand the soil health and accordingly, help understand what samples to be sent for quality check at harvest and what inoculants to be put in the field.
- o **Flowering Stage:** Field evaluation to be conducted by ICRPs. This would help understand the plant population, uniformity in plant growth, and crop health.
- o **Between flowering and maturity stage,** the ICRPs should collect data for yield estimation per acre.

Based on this information, the Mandal can find out the total yield of a mandal through the following formula:

**Total Production of the Crops in the Mandal= Net Sown Area \* Average Yield**

- **IRCPs** to officially act as the representative/mediator on behalf of the farmer while negotiating price with the traders. With the lack of an enterprise structure and low negotiating power individually, farmers are not able to get a favorable price. The farmers think that presence of a government cadre in the negotiation would help in the negotiating ability of the farmer.
- **Utilize drone technology to collect the field data as well as support field practices of natural farmers:** The central government has a budgetary push on mechanization through their central sector scheme of “NAMO DRONE DIDI” which provides drones to 1500 women self-help groups to be rented to farmers for efficient agriculture (PIB, 2023). As the major challenge in natural farming is that is manual-labor heavy in comparison to chemical farming, better rent rates of drones for organic farmers can help incentivize farmers to shift to natural farming. Field data such as soil quality, spray patterns, moisture content would be helpful in accurately doing the agricultural practices.
- Fund research in national agricultural institutes on methods and best practices of preparing bio-inoculants and tests of their efficacy over the produce growth.

**At the Marketable Surplus Stage**

- Provision of a sterile storage space near Mandis where farmers can store their produce without fear of pest infestation. This would help farmers and retailers decouple production from marketing.
- **Quality Check** at the farm stage for farmer to use that knowledge to ask for a better price from the trader.
- Develop a Mandal-level platform (like Rythu Bazaar) where only natural produce is sold. This market would have sellers and buyers of only natural produce. This central location would help in improving the negotiation power. Alternatively, government can book permanent stalls in current Rythu Bazaar for natural producers.
- APCNF to onboard farmers to crop-specific WhatsApp groups of traders. APCNF cadres can act as facilitators of permanent crop contracts between farmers and traders.
- Subsidies for retailers to buy commercial transport for ease in logistics of natural produce.

#### **At the Preparation for Retail Stage**

- Reduce cost of batch quality testing at quality labs from Rs 12,000/batch to Rs 1000/batch. This would help retailers do spot check of the farmer's produce and develop a market of internal checks without the intervention of government.
- Currently, all certifications check quality 'at a given point' which reduces the trust of authenticity. Government needs to develop a process-based certification method that analyses the process of production at different milestones (sowing, weeding, flowering, maturing, storage etc.) through technology and provide a certification based on that. European Union Regulations on natural farming (2018) have a similar process certification that can be adapted for Indian context.
- Develop grading of different certification agencies (PGS, ITC, Ekalavya, State-owned) to ensure that the customer understands the difference between different certifications.
- The government of India to develop a uniform logo, packaging, and label for organic material directly sourced from farmers. The government can sell this branding kit at the nearest agricultural input sale shop. The farmer would be able to customize the packaging and label to add his/his farm's name. This would enable farmers to build their



brand and reach out to the consumer directly. This can be managed through the National Mission on Natural Farming

- Develop formalized community networks (farmers, FPOs, Restaurants, Organic Shops, Financial Institutions, Public Schools, cooking schools, urban families, agricultural influencers) to promote the consumption of natural produce. Similar structures have been created in Columbia (Familia de la Tierra) and Mozambique (The Maputo Earth Market).

#### **At Sales Point Stage**

- Subsidies for farmers to open their retail store in the nearest Mandal/Town. This would encourage youth entrepreneurship and employment and can be facilitated through government permissions.
- Plug in natural produce on '[eNAM](#)' which was launched by government in 2016 to integrate various small and large markets and facilitate pan India trade in agricultural commodities, Currently, the platform does not have a specific category of 'natural produce' which when added can gather advance demand for it streamlining the value-chain. There is a separate platform called 'Jaivik Kheti' for natural produce but it should have a section in eNAM as well.
- Every state implements big level schemes like 'Public Distribution System' and 'Mid Day Meals'. A percentage of the produce to be distributed (decided by the government) should be naturally sourced to supplement the nutrition of Indian citizens who are below or near poverty line. This simple distribution would have a big impact on the value chain.

## **CHAPTER 7: LIMITATIONS AND FUTURE SCOPE**

The paper had certain limitations such as time and language constraints. As my field was in Kurnool district of Andhra Pradesh, the major language spoken was Telegu. Due to this, I had to rely on translation from the field staff of APCNF to understand what the respondent is saying.

As there has been no proper study on value chain of natural produce, this paper aimed to describe the process and detail out the process from the pov of different stakeholders, The end aim was to provide a direction sense of what interventions can be undertaken by the government, market and society to strengthen such a supply chain.

The next step from this study would be check the viability of the policy recommendation specifically for Andhra Pradesh and develop pilot studies to understand their efficacy before scaling them across the state and if successful, the country. Additionally, apart from the recommendations given above, following directions can be looked upon as areas for further research in the policy space of natural farming and scale-up of its value chain.

- Explore innovative financing tools (such as blended finance) to provide bridge financing to natural farmers for input purchase, land leasing, certification cost and community enterprise development.
- Methods to build trust with consumer at a pan-geographical approach

- Rural Community Enterprise development linked to pooled certification and direct platform of farmers with final consumers

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## ANNEXURES

### **Annexure 1: (Question Guide) Focus Group Discussion with general Small and Marginal**

#### **Farmers**

1. Name
2. Age
3. Gender
4. Education Level
5. Village
6. Mandal
7. District
8. Name of the SHG/Village Organization (VO)
9. Since when did you shift to Natural Farming? (Number of years)
  - a. What made you take that decision? (SWITCH MOVEMENT)
  - b. What problems in conventional farming?
  - c. What do you like in Natural farming?
    - i. Nutritional Benefit
    - ii. Economic Benefit

#### **Agricultural Profile**

10. Land Owning (Leased/Owned)
11. What crops do you grow?

- a. Kharif (June- Dec)
  - b. Rabi: **(Feb-April)** What kind of crops do you grow?
12. How many crop cycles do you follow in a year?
- a. During Conventional Farming
  - b. During Natural Farming
13. Type of Soil?
14. Source of water irrigation?

### **Crops Cultivated in Kharif and Rabi (Experience of Chemical Vs Natural Farming)**

15. What are you currently growing?
16. What is the average income you earn in one crop cycle?
17. What are your major cost heads in one crop cycle? (Sapling Cost /Storing/Line Spacing/Weeding/Harvesting Cost)
18. How many family members work on agricultural land?
19. What agricultural practices (e.g.: Ghana Jeevamrutham, Drava Jeevamrutham, Kashayas) do you follow for growing your produce naturally? (from soil preparation to harvesting)
- a. Where did you get this awareness?
20. Is certification happening in your region?
21. According to you, what are the advantages and disadvantages of certification of the produce?

### **Marketing and Selling**

22. Usually, do you have a surplus of crops to sell in the market?
23. Do you conduct any value addition (Aggregation, Micro Processing, packaging)
- a. Primary: Sorting and Grading
  - b. Secondary: Minimal Processing (paddy to rice,
  - c. Tertiary Processing: Sugarcane to Sugar
24. How do you market and sell your produce currently?
25. What are the major challenges you face in selling your produce?

26. Do you have any support for marketing from RySS / any other?
27. Do you require any support for marketing your products in the market?
28. Have you heard about a Farmer Producer Collective? (Aggregators)
29. Are you a part of any farmer's collective?
  - a. If yes, why?
  - b. If not, why not?
30. If given a choice, what platform would you like to associate yourself with to reach the consumer directly?

#### **As a Consumer**

31. Are you a consumer of natural farming products as well?
32. Does you consumer your own yield or buy from other sources? Explain

**(Question Guide)** Online survey of consumers of natural produce

#### **Demographic Details**

1. Age
2. Gender
3. Location of Residence
4. Education Level
5. Occupation
6. Average Family Monthly Income
7. Marital Status

#### **Consumer Perception**

8. How frequently do you buy natural/organic produce?

9. What are the agricultural products that you like to buy which are naturally/organically produced?
10. What are the reasons why you buy natural/organic products (You are presented with different reasons along with scale of 1-5. Please choose a number 1 being the least likely and 5 being the most likely reason)
- a. It tastes/feels better.
  - b. It is good for my family's health.
  - c. It's environmentally beneficial.
  - d. I support local farmers and farming practices.
  - e. I want to avoid consuming Genetically Modified Organisms (GMOs)
11. Where do you currently buy natural/organic products from? (You can choose all that apply)
12. What factors would help you in verifying that the product is natural/organic? (If applicable, you may mark more than one)
13. Would you be okay paying a higher price (premium) for naturally produced products?
14. What percentage of the product cost would you be okay paying as a premium for a naturally produced product?
15. Would you be comfortable in buying the natural agricultural produce directly from the farmer?
16. What modality would you prefer while buying natural produce directly from the farmer?



17. What factors would help you increase your purchase of natural agricultural produce?

(Subjective Answer)

**(Question Guide)** One on One Interview with retail outlets/digital retail outlets/other sources selling natural farming produce.

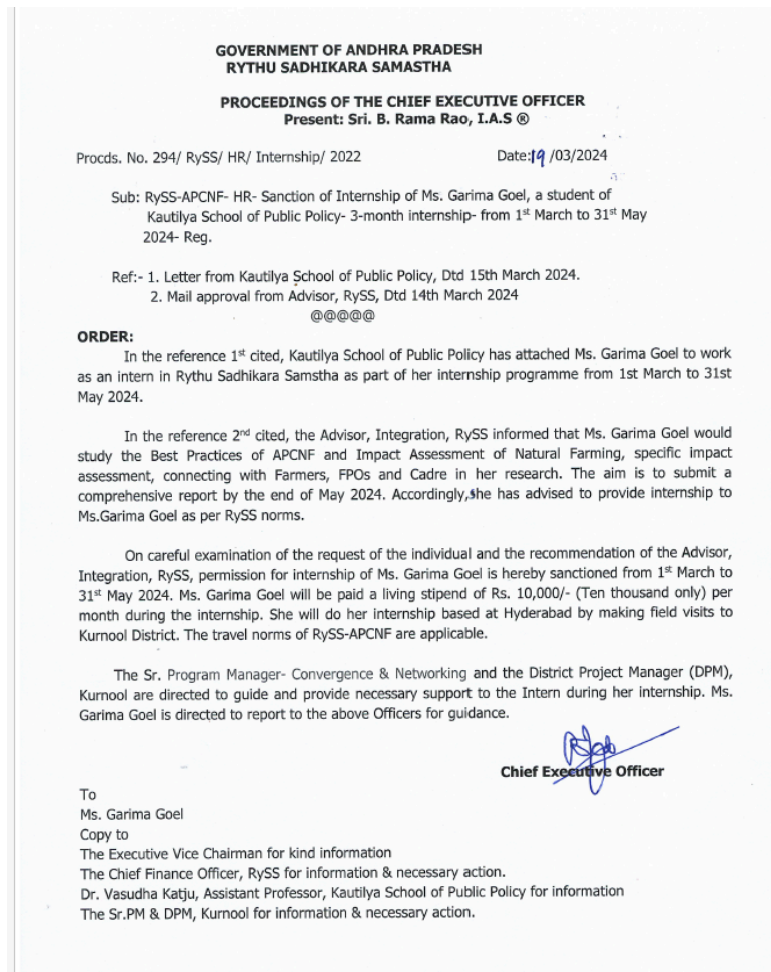
1. What is your business plan?
  - a) What are your major cost and revenue sources?
2. What is your annual turnover?
3. What are the products that are more likely to be sold if marketed as naturally produced?
4. Are you able to charge a premium for natural agricultural produce?
  - a) If yes, do you give a cut of the same to the farmer?
5. Do you get consistent demand for natural agricultural produce?
6. What, according to you, influences the consumers to buy natural produce?
7. What market and societal factors helped in growth of sales of natural produce?
8. How do you collaborate with farmers for your produce?
9. How do you aggregate and store the produce?
10. How do you verify that the produce you are buying is naturally produced?
11. Have you worked with FPOs during your operations? If yes, what has been your experience?
12. Does your platform work directly with subsistence farmers?
  - a. If yes - What technical and economic benefit to your product provide to subsistence farmers?
  - b. If not, why not?
13. What regulatory/policy changes would help in growing your business?

**Annexure 2:** Important events leading to development of modern natural farming in India

Sl. No.	Year	Concept/ scheme/statement	Key points
1	2015-16	Paramparogat Krishi Vikas Yojana (PKVY)	Govt of India initiated this programme to encourage farmers to switch from conventional to traditional farming practises and organic farming.
2	2016-17	A.P Community Managed Natural Farming (A.P.C.N.F)	Before 2020, this programme was called as A.P Zero budget natural farming programme which was started in the year 2016 by <i>Rythu Sadhikara Samstha</i> (RYSS) established in 2014 as a not-for-profit company under Section 8 of the Companies Act 2013 Govt. of A.P. This programme builds on an earlier programme of the State Govt.'s Rural Development Dept., called A.P. Community Managed Sustainable Agriculture. This was under implementation from 2004 to 2014. This precursor programme was a State wide programme covering both A.P. and Telangana States. The number of farmers who practice Natural Farming has gone up from 40,000 in 2016 to around 7,50,000 farmers and farm workers in 2020-21—an increase of 17 times in the last 4 years. The APCNF programme has been recognized as the world's largest agroecology programme in terms of the number of farmers enrolled.
3	2017	Gujarat Natural Farming and Organic Agricultural University	World's first University in organic agriculture and natural farming established in the year 2017 by Government of Gujarat and it is the only organic agricultural and natural farming university in India.
4	2018-19	Prakritik Kheti Khushhal Kisan Yojana	The Government of Himachal Pradesh launched this Zero Budget Natural Farming (ZBNF) practices to reduce the cost of cultivation.
5	2018	Revised guidelines of PKVY scheme	Various farming models like Natural Farming, Rishi Farming, Vedic Farming, Cow Farming, Homa Farming, ZBNF etc. were included and flexibility is given to state governments to adopt any model of Organic Farming including ZBNF depending on farmer's choice.
6	2018	Andhra Pradesh government rolled out a plan to become India's first state to practice 100% natural farming.	By 2024 Andhra Pradesh Govt. to convert state's 60 lakh farmers to chemical free agriculture/ZBNF.
7	2019	Natural Farming method Committee to validate SPNF model of natural farming	Indian Council of Agriculture Research (ICAR) constituted a committee to validate the Subhash Palekar Natural Farming Model
8	2019	Zero budget farming in the Budget document 2019-2020 (Speech) of Nirmala Sitharaman, Minister of Finance, Govt. of India, July 5, 2019	Announced for "Ease of Doing" business and ease of living both should apply to farmers too. We shall go back to basics on one count: Zero Budget Farming. We need to replicate this innovative model through which in a few States farmers are already being trained in this practice. Steps such as this can help in doubling our farmers' income in time for our 75th year of Independence.
9	2019-20 and 2020-21	Pilot project by Government of Rajasthan for promoting Natural Farming	A Pilot project in Tonk, Sirohi and Bansawara district through State Budget during 2019-20. During financial year 2020-21, the scheme was executed in 15 districts (i.e., Ajmer, Bansawara, Baran, Barmer, Bhilwara, Churu, Hanumangarh, Jaisalmer, Jhalwar, Nagaur, Tonk, Sikar, Sirohi and Udaipur) of the State.

10	2020-21	Bharatiya Prakritik Krishi Paddhati (BPKP)	This scheme as a sub-mission under the <i>Paramparagat Krishi Vikas Yojana</i> (PKVY) has been launched in eight states of India for promoting traditional indigenous practices, which give freedom to farmers from externally purchased inputs for the period of six years (2019-20 to 2024-25) with a vision of covering 12 lakh ha in 600 major blocks of 2000 hectare.
11	2020-21	Gujrat Model and Schemes for promoting Natural Farming in Gujrat	Natural Farming practices are being promoted under the Gujrat <i>Atma Nirbhar</i> package. Further, on 17 September 2020, two schemes were launched— <i>Sat Pagla Khedut Kalyanna</i> and <i>Pagala</i> for Natural Farming. Under Gujrat Model of Natural Farming, the financial assistance scheme, since <i>Gobar</i> and <i>Gomutra</i> are essential ingredients for natural farming, a monthly financial support of Rs 900 is given for maintenance of a cow of indigenous breed to 1.84 lakh farmers practicing natural farming. Similarly, subsidy of Rs 1,248 was provided to each farmer for purchasing natural farming kit to prepare <i>Jivamrit</i> . In addition to financial support for cow, about 13,000 farmers are given an incentive of Rs 5,000 per hectare (up to 2 hectares per farmer) for <i>Kharif</i> and <i>Rabi</i> season for practicing natural farming.
12	2020-21	Systematic Research Work on Natural Farming by ICAR	Under All India Network Programme on Organic Farming, ICAR-Indian Institute of Farming Systems Research, Modipuram started a study on “Evaluation and Validation of Natural Farming Practices in different Agro-ecologies” at 20 locations covering 16 States.
13	2021	National Conclave on Natural Farming on December 16, 2021	Prime Minister Shree Narendra Modi ji has been emphasizing on the importance of chemical free natural farming and said that “We need not only to re-learn the ancient knowledge of agriculture but also to sharpen it for modern times. In this direction, we have to do research afresh, mould ancient knowledge into the modern scientific frame”.
14	2021-22	Experiential Learning Units on Natural Farming	Three Experiential Learning Units (ELU) on Natural Farming have been established at CAU, Imphal and MPAUT, Udaipur during 2021-22 and at SKAUST, Jammu during 2022-23 for hands on training and developing entrepreneurial skills on natural farming among undergraduate students in agriculture in SAUs/CUs.
15	2022-23	Committee on Draft Syllabus on Natural Farming by ICAR	ICAR constituted a committee for developing syllabus and curricula of natural farming at undergraduate and post graduate level.
16	2022- 23	Union Budget 2022-23, Central Government	Initial focus is on farmer’s lands in 5 km wide corridors along river Ganga. States will be encouraged to revise syllabus of agricultural universities so as to meet the needs of natural, zero-budget and organic farming.
17	2023-24	National Mission on Natural Farming (NMNF)	This mission was launched by the Govt. of India to motivate farmers to adopt chemical free farming and enhance the reach of natural farming as a separate and independent scheme by up scaling the <i>Bhartiya Prakritik Krishi Paddati</i> (BPKP) that is Natural Farming - <i>Bhartiya Prakratik Krishi Paddhati</i> (NF-BPKP). This scheme will promote behavioural change in farmers to shift from chemical-based inputs to cow based locally produced inputs through continuous creation of awareness, training, handholding and capacity building of farmers in the initial years.
18	2023	National Committee on Natural Farming	ICAR constituted a committee to overview, accelerate, and monitor the research and area expansion under natural farming. The committee will also guide and streamline the standard protocols for the promotion of natural farming.

### Annexure 3: Official Letter from APCNF approving the field visit to Kurnool.



### Annexure 4: Field Pictures





Annexure 5: Newspaper article published on the research study in Kurnool in Sakshi Newspaper

# సాక్షి

## ప్రకృతి వ్యవసాయ పద్ధతులపై అధ్యయనం

కర్నూలు(అగ్రికల్చర్): జిల్లాలో జరుగుతున్న ప్రకృతి వ్యవసాయ పద్ధతులు, చిరుధాన్యాల వినియోగం కదితర వాటిపై గరిమా గోయల్ ఆనే యువతి మూడు రోజుల ప్రాజెక్టు వర్క్ కింద అధ్యయనం చేశారు. హైదరాబాద్లోని కొటియా స్కూల్ ఆఫ్ పబ్లిక్ పాలసీలో మాస్టర్ ఆఫ్ పబ్లిక్ పాలసీ చేస్తున్న గరిమా గోయల్ చివరి ఏడాదిలో ప్రాజెక్టు వర్క్లో భాగంగా అధ్యయనం చేస్తున్న ఆమె ఓరీజనల్ మండలంలో ప్రకృతి వ్యవసాయం చేస్తున్న రైతులతో గురు, శుక్రవారాల్లో ముఖాముఖి ఆయాధ్యయనం చేసి కలిగిన అనుభవాలను ఆమె మిల్లెట్ కేఫ్లో వివరించారు. మిల్లెట్ కేఫ్లో చిరుధాన్యాల వినియోగంపై వేణుబాబుతో చర్చించారు. కేఫ్లో చిరుధాన్యాలకు సంబంధించి ప్రత్యేకంగా మిల్లెట్ కేఫ్ ఏర్పాటు చేయడం, ఇందుకు జిల్లా యంత్రాంగం సహకరించడం శుభపరిణామమని పేర్కొన్నారు. సి.కౌంపు రైతుబజారులో నిర్వహిస్తున్న ప్రకృతి వ్యవసాయ ఉత్పత్తుల సౌలీసు పరిశీలించారు. కెమికల్ కల్ లేకుండా పండించిన పంటలకు మార్కెట్లో లభిస్తున్న డిమాండ్ను ఆరాతీశారు. ప్రకృతి వ్యవసాయ సిబ్బంది మల్లికార్జున తదితరులు ఆమె వెంట ఉండి ప్రకృతి వ్యవసాయ పద్ధతులను వివరించారు.