



## Cow-based Traditional Farming Practices as a Basis for Regenerative Agriculture: Andhra Pradesh Community Managed Natural Farming an Indian Perspective

Adupa Shanmuka<sup>1</sup>, N.V. Kumbhare<sup>2\*</sup>, L. Muralikrishnan<sup>3</sup> and Kanchan Sinha<sup>4</sup>

<sup>1</sup>Scientist, Agricultural Extension, ICAR-DGR (Gujarat), India.

<sup>2</sup>Principal Scientist, Division of Agricultural Extension, ICAR-IARI, New Delhi, India.

<sup>3</sup>Scientist, Division of Agricultural Extension, ICAR-IARI, New Delhi, India.

<sup>4</sup>Scientist, Division of Agricultural Statistics, ICAR-IASRI, New Delhi, India.

(Corresponding author: N.V. Kumbhare\*)

(Received: 16 February 2024; Revised: 05 March 2024; Accepted: 23 March 2024; Published: 15 April 2024)

(Published by Research Trend)

**ABSTRACT:** As we journey toward more sustainable and eco-friendly agricultural practices, we must recognize the wealth of wisdom embedded in the traditions and practices of indigenous communities and the experiences of generations past. These invaluable insights offer a blueprint for a more harmonious relationship between humans and the environment. Andhra Pradesh has a rich agricultural heritage, with centuries-old farming practices rooted in traditional wisdom. Natural farming with a cow-based regenerative agriculture approach in Andhra Pradesh exemplifies the potential for sustainable and holistic farming methods to address the challenges of modern agriculture while respecting and leveraging traditional knowledge and indigenous resources. Many traditional herbal and medicinal plants are integrated into natural farming systems. These plants offer multiple benefits, including pest management, soil improvement, and supplementary income for farmers. It is a model that combines environmental management with the economic well-being of farmers, contributing to a more resilient and sustainable agricultural future in the region. Farmers draw upon this indigenous knowledge to implement regenerative farming methods.

**Keywords:** Regenerative Agriculture, Natural Farming, Cattle, Traditional Cow-based farming, Indigenous Knowledge, Andhra Pradesh.

### INTRODUCTION

By 2050, there will be 9.5 billion people on the planet; therefore, feeding them will involve maintaining the sustainability of land and water resources in the face of a changing climate. Land degradation is a problem that affects production significantly in more than 80 countries, but it is particularly critical in poorer nations. Many smallholder farmers, especially in developing countries, are disproportionately affected by land degradation and climate change due to their reliance on rain-fed agriculture and limited access to resources and technology. More than 1 billion people in developing nations have already had their livelihoods, economic well-being, and nutritional health at stake due to the effects of land degradation (FAO, 2019). Adopting sustainable agricultural practices, such as conservation agriculture and regenerative agriculture, can help combat both land degradation and climate change by improving soil health and sequestering carbon. Conservation agriculture, as defined by the United Nations Food and Agriculture Organization (FAO, 2019), is “a farming system that promotes maintenance of a permanent soil cover, minimum soil disturbance, and diversification of plant species. Conservation agriculture primarily focuses on conserving soil and

minimizing soil erosion while maintaining or improving crop yields. Conservation agriculture primarily focuses on practices to conserve soil and minimize erosion while maintaining or improving yields. Regenerative agriculture, on the other hand, has a broader focus on improving soil health, biodiversity, and ecosystem regeneration as a means to achieve sustainability and resilience.

Regenerative agriculture has been proposed as an alternative means of producing food that may have lower or even net positive environmental and social impacts (Rhodes, 2017). It is a holistic approach that aims to regenerate and improve the overall health of the entire farming ecosystem, including soil, water, and biodiversity. Regenerative agriculture places a strong emphasis on soil health and works to enhance soil fertility, structure, and microbial activity through practices like cover cropping, crop rotation, and reduced tillage. It promotes increased biodiversity on farms by incorporating diverse crop and livestock systems, as well as creating habitats for beneficial insects and wildlife, and encourages the buildup of organic matter in the soil to improve its water-holding capacity and carbon sequestration. It often involves integrating livestock into the farming system to mimic natural ecological processes and improve nutrient

cycling. Regenerative Agriculture acknowledges and works with local environmental conditions and variations, aiming to adapt practices to specific locations.

Regenerative agriculture practices have been gaining momentum in India as farmers and organizations recognize the importance of sustainable and environmentally friendly farming methods. Natural Farming can be defined as “chemical-free and livestock-based farming”. Soundly grounded in agroecology, it is a diversified farming system that integrates crops, trees, and livestock, allowing the optimum use of functional biodiversity (Niti Ayog, 2023). Internationally, Natural Farming is considered a form of regenerative agriculture—a prominent strategy to save the planet. It has the potential to manage land practices and sequester carbon from the atmosphere in soils and plants, where it is useful instead of being detrimental. Natural farming is often associated with specific philosophies and practitioners, such as the Japanese farmer and philosopher Masanobu Fukuoka and his "One Straw Revolution" approach. Natural Farming is not new to Indian agriculture. Many farmers have made an independent effort to adopt natural farming with considerable results. Some farmers adopted natural farming even before Mr. Palekar, inspired by Masanobu Fukuoka's book "One Straw Revolution," a pioneer in natural farming in Japan. These include Bhaskar Save (Gujarat), Sripada Achyuta Dabholkar (Maharashtra), Narayan Reddy, and Kailash Murthy (Karnataka), and many more (Nadkarni, 1988; Goswami and Subhojit 2017). Though their success stories have been heralded they remain as one man wonders even after 30 years.

The principles of natural farming are (APCNF, 2023):

- Soil to be covered with crops 365 days (Living root)
- Diverse crops, trees
- Minimal disturbance of soils
- Integrate animals into farming
- Biostimulants as necessary catalysts
- Increase organic residues on the soil
- Use indigenous seed
- Pest management through botanical extracts
- No synthetic fertilizers, pesticides, herbicides, weedicides

Natural Farming is built on four wheels, non-negotiable rules, principles, or a collection of farming techniques that would improve crop yields and soil health with no additional inputs or expenses. These include (i) *Jivamrita* (life tonic); (ii) *Bijamrita* (seed protection tonic); (iii) *Acchadana* (mulching) and (iv) *Waaphasa* (soil aeration/moisture); (Palekar, 2005; 2016; Devarinti, 2016; Bishnoi *et al.*, 2017). Natural farming advises cutting back on irrigation and just watering alternating furrows at midday. Other pest management strategies include *Neemastra*, *Agniastra*, and *Brahmastra*, which are homemade insect and pest control remedies (Palekar, 2005).

The attractiveness of NF to the agricultural community lies in the fact that maintaining optimal output levels and minimizing cultivation costs would significantly increase the profit margin. It has been shown that using homemade pesticides is an efficient way to control

agricultural pests without causing crops any financial harm. It has been discovered that live mulching, particularly with leguminous crops, is not only a secondary source of revenue but also a defense against nutrient depletion by crops. It is certain that mixed cropping, particularly with short-lived legumes, vegetables, and even medicinal plants, has diversified farmers' sources of revenue. The fact that vegetables with high vitamin and mineral content are often marketed after being sufficiently supplied for domestic use acts well for eradicating the prevalent malnutrition in rural regions, Anand and Kumar (2020). Natural farming has many positive social and economic effects in addition to being effective from an agronomic view. The majority of those who adopted natural farming claimed that over time, they noticed improvements in soil conservation, seed diversity, and quality production as a result of doing so. Small and marginal farmers primarily use the natural farming method because of its simplicity, versatility, and significantly lower production costs, Lakhani *et al.* (2020).

To strengthen, popularize, and sustain natural farming, Government of India has introduced a Bhartiya Prakritik Krishi Paddhati (BPKP) as a sub-scheme of Paramparagat Krishi Vikas Yojana (PKVY) during the 2020-21. Initially, Government of India introduced its first policy on organic farming in 2005, it was modified and launched as Paramparagat Krishi Vikas Yojana (PKVY) during 2015-16 to support farmers and conserve the environment from the damage caused by chemical-based farming. Since 2020-21, an amount of 4980.99 lakhs was released. The government has allocated a budget of Rs. 4645.69 crores for a period of 6 years (2019-20 to 2024-25) to promote natural farming. The Government of Andhra Pradesh is leading with 1.0 lakh ha area under natural farming under Bhartiya Prakritik Krishi Padhthi (NITI Aayog, 2023). To scale up Natural farming techniques, the Government of Andhra Pradesh, Department of Agriculture established Rythu Sadhikara Samastha (RSS) in 2014. RySS's goal is to reach all 6 million farmers and 8 million hectares of agricultural land by 2024. Natural farming in Andhra Pradesh is named Andhra Pradesh Community Managed Natural Farming (APCNF) to recognize that the program is farmer-centric, follows a farmer-to-farmer extension system, and is driven by innovations. The program seeks to advance ecological, chemical-free, climate-resilient agriculture and give sustainable means of subsistence farming to small and marginal farmers. Traditional plant-based inputs derived from local flora are used in natural farming. Many traditional herbal and medicinal plants are integrated into natural farming systems. These plants offer multiple benefits, including pest management, soil improvement, and supplementary income for farmers. For instance, botanical extracts from neem, custard apple, and other indigenous trees serve as biopesticides, promoting pest control without synthetic chemicals. AP is home to indigenous cattle breeds like Ongole and Gir. These breeds are well adapted to local conditions and are integral to natural farming practices. They provide valuable resources such as cow dung and cow urine, which are used in

preparing organic formulations like "Jeevamrutha" and "Ghanajeevamrit." These formulations enhance soil fertility, microbial activity, and plant growth. Traditional seed varieties have been conserved and utilized in AP's natural farming initiatives. Preserving seed diversity is crucial for maintaining food security and resilience in agriculture. In AP, farming communities actively share their traditional knowledge and experiences. Farmers' networks, local cooperatives, and government-led training programs facilitate knowledge exchange, enabling the wider adoption of sustainable farming practices. One of the significant achievements of the Government of Andhra Pradesh has been the rapid scaling up of natural farming. The number of farmers who practice Natural Farming has increased 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. Hence a detailed study on the inputs in natural farming has been done on farmers of Andhra Pradesh which includes cow-based traditional methods of preparation of biostimulants that help in soil microbial development and pest and disease management in crops. Natural farming is a cost-effective farming method, but for farmers who don't own cattle, the basic inputs such as cow dung and urine also must be purchased from goshalas and other farmers. Having their own cattle and indigenous breeds will help farmers make the natural farming model more sustainable and economical. The study also analyses the cost incurred in preparation of all inputs with and without cattle owned by farmers along with its preparation and role in natural farming.

## METHODOLOGY

Both purposive and random sampling techniques were used for the selection of respondents based on the research objective. The state of Andhra Pradesh was purposively selected and from six agro-climatic zones of Andhra Pradesh, two districts named Guntur and Kurnool were selected randomly. 2 blocks named Kollipara and Mangalagiri from Guntur and Kalluru and Guduru from Kurnool were selected randomly. A total of 8 villages drawn randomly 2 villages from each block were selected for the study. The villages from Guntur are Attotha, Davuluripalem, Nuttaki, Chinavaddapudi. The villages from Kurnool are Bollavaram, Chinnatekuru, N.Nagalapuram, Chanugondla. Twenty (20) respondents from each village including only adopters of natural farming were selected randomly. 160 respondents from two districts will constitute the sample of the study. Both primary and secondary data were collected for the study. Data was collected from the respondents using a personal interview method with the help of a semi-structured interview schedule designed for this purpose. The farmers were thoroughly interviewed about all the natural farming inputs used for different crops and their methods of preparation. A detailed analysis of the ingredients and the cost of preparation for one acre was analyzed for ease of understanding. The cost analysis was averaged based on data from all 8 villages and presented in tabulated format. The cost was analyzed

for both the farmers who own cattle and those who don't own. The analysis provides a detailed understanding of the difference in input costs in traditional farming methods like natural farming with and without cattle.

## RESULTS AND DISCUSSION

The inputs in natural farming were divided into 3 categories. They are Biostimulants, Growth regulators, and botanical extracts for pest management. All these 3 inputs are homemade natural products prepared from the traditional knowledge of villagers using indigenous cattle and trees available in their area. The preparation of the inputs and their necessary raw material quantities, benefits to crop along costs are presented below.

### Biostimulants:

**Beejamrith:** Beejamrith is a treatment used for seeds, seedlings, or any planting material. Beejamrith is effective in protecting young roots from fungus as well as from soil borne and seed-borne diseases that commonly affect plants after the monsoon period.

Benefits of Beejamrit:

- Enhanced Seed Germination
- Improved Soil Health
- Natural Nutrient Source
- Disease Suppression
- Enhanced Root Development
- Stress Tolerance

### Preparation and Cost incurred with and without cattle:

Ingredients	Quantity	Without cattle (Rs. /-)	With cattle (Rs. /-)
Cow Dung	5 kgs (2Rs. Per Kg)	10	0
Cow Urine	5 liters (5 Rs. Per liter)	25	0
Lime	50 grams	0	0
Soil	Hand full	0	0
Water	20 liters	0	0
<b>Preparation Cost</b>		<b>35</b>	<b>0</b>
<b>Preparation Time</b>		<b>2 Days</b>	
<b>Shelf Life</b>		<b>Immediate Use (2 Days)</b>	
<b>Recommended Dosage:</b>			
Dosage varies depending on the specific crop, seed type, and local practices. Generally, a 1:10 ratio is commonly used, which means mixing 1part Beejamrit with 10 parts of seeds.			



Fig. 1. Farmers preparing Beejamrith

**Ghanajeevamrit:** A solid form of Jeevmaritha is prepared by farmers in areas where water availability is scarce. The farmers prepare Ghanajeevamritha during the off-season and store up to a maximum of six months to be used in the next crop season.

**Preparation and Cost incurred with and without cattle: TYPE I**

Ingredients	Quantity	Without cattle (Rs. /-)	With cattle (Rs. /-)
Cow Dung	400 kgs (2Rs. Per Kg)	800	0
Chickpea Flour	8 kgs	800	800
Jaggary	8 Kgs	400	400
Cow Urine	5liters (Rs.5/Liter)	25	0
Water	Sufficient amount	0	0
<b>Preparation Cost/ 4 quintals</b>		<b>2025</b>	<b>1200</b>
<b>Preparation Time</b>		<b>2 Days</b>	
<b>Shelf Life</b>		<b>6 Months</b>	
<b>Recommended Dosage</b>		<b>4 Quintals/ Acre</b>	

**TYPE II Ghanajeevamrit:** Any cattle dung+ Dravajeevamrit. @ 200l Dravajeevamrit for 1000kgs of Dung. It is only prepared by farming having their cattle.

Ingredients	Quantity	Cost Incurred in Preparation (Rs. /-)
Any animal Dung	1000 kgs	0
Dravajeevamrit	200 l	300
<b>Preparation Cost/ 10 quintals</b>		<b>300</b>
<b>Preparation Time</b>		<b>Stored Dung from many months</b>
<b>Shelf Life</b>		<b>Immediate Use</b>
<b>Recommended Dosage</b>		<b>10 Quintals/ Acre</b>

**Dravajeevamrit:** Jeevamrith is a fermented microbial culture. It provides nutrients, but most importantly, acts as a catalytic agent that promotes the activity of microorganisms in the soil, and also increases the population of native earthworms.

Benefits of Jeevamrit:

- Soil Health Improvement
- Microbial Activity
- Nutrient Supply
- Increased Water Retention
- Enhanced Root Development

**Preparation and Cost incurred with and without cattle:**

Ingredients	Quantity	Without cattle (Rs. /-)	With cattle (Rs. /-)
Cow Dung	10 kgs (2Rs. Per Kg)	20	0
Cow Urine	10 liters (5 Rs. Per liter)	50	0
Chickpea Flour	2 kgs	200	200
Jaggary	2 Kgs	100	100
Water	200 liters	0	0
Soil	Hand Full	0	0
<b>Preparation Cost</b>		<b>370</b>	<b>300</b>
<b>Preparation Time</b>		<b>2 Days</b>	
<b>Shelf Life</b>		<b>One Week</b>	
<b>Recommended Dosage</b>			
<b>200liters/ Acre x once in fortnight = 2000 lit/acre</b>			



**Fig. 2.** Farmer preparing Jeevamrith

### Growth Regulators

**Panchagavya:** Panchagavya is an organic agricultural concoction used in traditional farming practices to enhance plant growth, improve soil health, and boost crop yields. It is made from five products derived from the cow, which is why it is called "Panchagavya," where "Pancha" means "five" and "gavya" refers to cow-related substances. The five ingredients are cow dung, cow urine, cow milk, cow curd, and cow ghee.

**Benefits of Panchagavya:**

- Enhanced Plant growth
- Improved flowering and fruit setting
- Soil Health Improvement
- Microbial Activity
- Stress tolerance
- Nutrient Supply
- Increased Water Retention

**Preparation and Cost incurred with and without cattle:**

Ingredients	Quantity	Without cattle (Rs. /-)	With cattle (Rs. /-)
Cow Dung	7 kg (2Rs. Per Kg)	14	0
Cow Urine	10liters (5 Rs. Per liter)	50	0
Cow Milk	3 liters	168	0
Cow Curd	2 liters	140	0
Cow Ghee	1 kg	700	0
Jaggery	3 kgs	150	150
Tender coconut water	3 liters	150	150
Well ripened banana	One Dozen	50	50
Water	10 liters	0	0
<b>Preparation Cost/30l</b>		<b>1422</b>	<b>350</b>
<b>Preparation Time</b>		<b>One month</b>	
<b>Shelf Life</b>		<b>6 months</b>	
<b>Recommended Dosage:</b>			
Every 15 days. Direct spray at 3 %, i.e., 3-liter panchagavya in 100 liters of water			
If given through soil 10% or 10 lt panchagavya in 100 litres of water			
If mixed with irrigation water, then 50 liters Panchagavya per hectare.			

**Egg amino acid:** Egg amino acid is a natural and organic fertilizer that contains essential amino acids, vitamins, and minerals beneficial for plants.

Benefits of Panchagavya:

- Enhanced Plant growth
- Improved crop yield
- Soil Health Improvement

— Boost overall plant resistance to diseases and environmental stressors.

Ingredients	Quantity	Preparation Cost (Rs. /-)
Lemons	30	100
Eggs	12	85
Jaggery	250grams	15
Water	100 liters	0
<b>Preparation Cost</b>		<b>200</b>
<b>Preparation Time</b>		<b>20 Days</b>
<b>Shelf Life</b>		<b>6 Months</b>
<b>Recommended Dosage</b>	<b>250ml in 100lits of water/ acre</b>	

**Fish amino acid:** Fish Amino Acid Liquid (Fish Protein Hydrolysates) helps plants regulate

- Phototropism, and
- Photosynthesis,
- Stimulate carbon and nitrogen metabolism,
- Enhance nutrient availability in plant growth substrates,
- Increase nutrient uptake and nutrient use efficiency.

Ingredients	Quantity	Preparation Cost (Rs. /-)
Fish Waste	2 kg	0
Jaggery	2 kg	100
Water	200 liters	0
<b>Preparation Cost</b>		<b>100</b>
<b>Preparation Time</b>		<b>1 Month</b>
<b>Shelf Life</b>		<b>6 Months</b>
<b>Recommended Dosage</b>	<b>1litre in 200lits of water/ acre</b>	

**Sapthadhanyakura tonic:**

"Sapthadhanyakura" tonic is a traditional herbal formulation used in natural farming practices, particularly in South India, to promote plant growth, improve plant health, and enhance crop yields. The term "Sapthadhanyakura" translates to "seven seeds" in the local language, as the tonic is made from a blend of seven different seeds. Each seed contributes unique nutrients and properties beneficial for plant growth.

Ingredients	Quantity	Preparation Cost (Rs. /-)
Mustard seeds	100 grams	20
Fenugreek seeds	100 grams	20
Sesame seeds	100 grams	50
Sunflower seeds	100 grams	15
Black cumin seeds (Nigella sativa)	100 grams	10
Horse gram (Macrotyloma uniflorum) seeds	100 grams	15
Pearl millet (Bajra) seeds	100 grams	25
Cow Urine	5 l (5 Rs. Per liter)	25
Water	100 liters	0
<b>Preparation Cost</b>		<b>180</b>
<b>Preparation Time</b>		<b>1 Day</b>
<b>Shelf Life</b>		<b>Immediate Use</b>
<b>Recommended Dosage</b>	<b>5 liters in 100 lits of water/acre</b>	

**Botanical Extracts for Pest Management:**

**Neemastra:** Neemastra is used to prevent or cure diseases, and kill insects or larvae that eat plant foliage and suck plant sap. This also helps in controlling the reproduction of harmful insects. Neemastra is easy to prepare and is an effective pest-repellant and bioinsecticide for Natural Farming.

Ingredients	Quantity	Without cattle (Rs. /-)	With cattle (Rs. /-)
Cow Dung	5 kgs (2Rs. Per Kg)	10	0
Cow Urine	10 liters (5 Rs. Per liter)	50	0
Neem leaves	5 kgs	0	0
Grinding cost of leaves	5 Kgs	100	100
Water	200 liters	0	0
<b>Preparation Cost</b>		<b>160</b>	<b>100</b>
<b>Preparation Time</b>		<b>2 Days</b>	
<b>Shelf Life</b>		<b>6 Months</b>	
<b>Recommended Dosage</b>		<b>200liters/ Acre</b>	



**Fig. 3.** Farmer preparing Neemastra.

**Brahmastra:** This is a natural insecticide prepared from leaves that have specific alkaloids to repel pests. It controls all sucking pests and hidden caterpillars that are present in pods and fruits.

Ingredients	Quantity	Without cattle (Rs. /-)	With cattle (Rs. /-)
Cow Urine	20 liters (5 Rs. Per liter)	100	0
Neem leaves	2 kgs	0	0
Karanj Leaves	2 kgs	0	0
Custard apple leaves	2 kgs	0	0
Datura leaves	2 kgs	0	0
Castor leaves	2 kgs	0	0
Grinding cost of leaves	10 Kgs	200	200
Water	200 liters	0	0
<b>Preparation Cost</b>		<b>300</b>	<b>200</b>
<b>Preparation Time</b>		<b>2 Days</b>	
<b>Shelf Life</b>		<b>6 Months</b>	
<b>Recommended Dosage</b>		<b>6 liters/200liters of water/ Acre</b>	

**Agniastra:** It is used to control all sucking pests and caterpillars. Agniastra is considered to be effective against insects like Leaf Roller, Stem Borer, Fruit borer, and Pod borer.

Ingredients	Quantity	Without cattle (Rs. /-)	With cattle (Rs. /-)
Cow Urine	20 liters (5 Rs. Per liter)	100	0
Neem leaves	3 kgs	0	0
Tobacco leaves	1 kg	100	100
Green Chilli Paste	500 grams	30	30
Garlic Paste	500 grams	30	30
Water	200 liters	0	0
<b>Preparation Cost</b>		<b>260</b>	<b>160</b>
<b>Preparation Time</b>	<b>2 Days</b>		
<b>Shelf Life</b>	<b>3 Months</b>		
<b>Recommended Dosage</b>	<b>6 liters/200liters of water/ Acre</b>		

**Dashaparni:** Dashaparni acts as a substitute for Neemastra, Bramhastra, and Agniastra. It is used to control all types of pests and is used depending on the level of infestation. It is prepared from ten types of plant leaves.

Ingredients	Quantity	Without cattle (Rs. /-)	With cattle (Rs. /-)
Cow Dung	10 kgs (2Rs. Per Kg)	20	0
Cow Urine	10 liters (5 Rs. Per liter)	50	0
Green Chilli Paste	500 grams	30	30
Garlic Paste	500 grams	30	30
Paste of any 10 leaves	Required amount	0	0
Water	200 liters	0	0
<b>Preparation Cost</b>		<b>130</b>	<b>60</b>
<b>Preparation Time</b>	<b>40 Days</b>		
<b>Shelf Life</b>	<b>6 Months</b>		
<b>Recommended Dosage</b>	<b>6 liters/200liters/ Acre</b>		

**Fungicide:** Fungicide prepared with cow milk and curd is found to be very effective in controlling the fungus.

Ingredients	Quantity	Without cattle (Rs. /-)	With cattle (Rs. /-)
Cow Milk	3 liters (55Rs. /Liter)	165	0
<b>Preparation Cost</b>		<b>165</b>	<b>0</b>
<b>Preparation Time</b>	<b>4 Days</b>		
<b>Shelf Life</b>	<b>Immediate Use</b>		
<b>Recommended Dosage</b>	<b>3 liters of infected plant parts</b>		

**Coconut-Buttermilk Solution:** Helps enhance plant growth, repels insects, and increases resistance to fungal diseases. Also, it enhances flowering in plants.

Ingredients	Quantity	Without cattle (Rs. /-)	With cattle (Rs. /-)
Cow Milk	1 liter (55Rs. /Liter)	55	0
Coconut Milk	1 litre	300	300
<b>Preparation Cost</b>		<b>355</b>	<b>300</b>
<b>Preparation Time</b>	<b>10 Days</b>		
<b>Shelf Life</b>	<b>Immediate Use</b>		
<b>Recommended Dosage</b>	<b>500 ml for 10 liters of water/acre</b>		

**Cattle dung-Urine-Hing solution:** A large number of microorganisms present in the cow's dung and urine are useful for controlling many fungal diseases. Nutrients present in the mixture are useful for effective plant growth. It can be applied two to three times during the crop period.

Ingredients	Quantity	Without cattle (Rs. /-)	With cattle (Rs. /-)
Cow Dung	5 kgs (2Rs/kg)	10	0
Cow Urine	5 liters(5Rs/liter)	25	0
Asafoetida	200 grams	450	450
<b>Preparation Cost</b>		<b>485</b>	<b>450</b>
<b>Preparation Time</b>	<b>5 Days</b>		
<b>Shelf Life</b>	<b>Immediate Use</b>		
<b>Recommended Dosage</b>	<b>5 liters for 200 liters of water/acre</b>		



**Fig. 4.** Farmer preparing Cattle dung-urine-hing solution.

**Vavilaku (*Vitex negundo*) kashayam:** The presence of many alkaloids makes Vitex an effective pesticide and fungicide. It acts as an anti-bacterial and anti-fungal.

Ingredients	Quantity	Preparation Cost (Rs. /-)
Vitex leaves	5 kgs	0
Soap nut powder	100 grams	150
Water	10 liters	0
<b>Preparation Cost</b>		<b>150</b>
<b>Preparation Time</b>	<b>One Day</b>	
<b>Shelf Life</b>	<b>Immediate Use</b>	
<b>Recommended Dosage</b>	<b>5 liters for 100 liters of water/acre</b>	

**Tutikada kashayam:** Can be used against Aphids, Jassids, Thrips

Ingredients	Quantity	Without cattle (Rs. /-)	With cattle (Rs. /-)
Datura leaves	8 kgs	0	0
Cow Urine	10 liters (5 Rs/Liter)	50	0
Water	100 liters	0	0
<b>Preparation Cost</b>		<b>50</b>	<b>0</b>
<b>Preparation Time</b>	<b>One Day</b>		
<b>Shelf Life</b>	<b>Immediate Use</b>		
<b>Recommended Dosage</b>	<b>10</b>	<b>liters for 100 liters of water/acre</b>	

**Maredupatra + Tulasi kashayam:** Helps to prevent major diseases like blasts in paddy.

Ingredients	Quantity	Preparation Cost (Rs. /-)
Bael Leaves	5 kgs	0
Tulasi	2 kgs	0
Surf	100 grams	20
Water	10 liters	0
<b>Preparation Cost</b>		<b>20</b>
<b>Preparation Time</b>		<b>One Day</b>
<b>Shelf Life</b>		<b>Immediate Use</b>
<b>Recommended Dosage</b>		<b>6 liters for 100 liters of water/acre</b>

All the basic raw materials used in the preparation was similar to the package of practices of natural farming offered by the NITI Ayog (2023).

## CONCLUSIONS

As we navigate the challenges of modern agriculture, it is crucial to embrace and integrate traditional and indigenous wisdom into natural farming practices. Traditional and indigenous knowledge systems provide a holistic approach to natural farming, emphasizing the interconnectedness of all elements within an ecosystem. They encompass a deep understanding of local environments, plant and animal life, and the intricate dynamics that sustain nature's balance. By doing so, we can nurture more resilient, ecologically sound, and culturally respectful agricultural systems. In this way, we not only reduce the environmental footprint of farming but also honor the profound connections between people, nature, and our agricultural heritage. While natural farming is a form of regenerative agriculture, it may have unique practices and philosophies that set it apart from other regenerative farming systems. Ultimately, the specific practices and principles of natural farming can vary, but they generally align with the broader goals of regenerative agriculture in promoting soil health, biodiversity, and sustainable farming practices.

**Acknowledgement.** The authors thank the Division of Agricultural Extension ICAR- IARI, New Delhi for providing the necessary facilities and ICAR for providing SRF funds for the researcher for the doctoral program. The authors are highly thankful to the RYSS (Rythu Sadhikara Samstha) of Andhra Pradesh State who facilitated the reach to farmers and

guided the researcher in the selection of villages and farmers. The authors are highly thankful to the staff of RYSS at the grassroots level who helped in rapport building with farmers and finally thankful to the farming community of Andhra Pradesh who are helping the great mission of sustainability with their natural farming methods.

**Conflict of Interest.** None.

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**How to cite this article:** Adupa Shanmuka, N.V. Kumbhare, L. Muralikrishnan and Kanchan Sinha (2024). Cow-based Traditional Farming Practices as a Basis for Regenerative Agriculture: Andhra Pradesh Community Managed Natural Farming an Indian Perspective. *Biological Forum – An International Journal*, 16(4): 191-197.