Innovation Guild

Rainmatter Foundation

WASSAN

CASE STUDY

BUILDING LOCAL ENTERPRISES FOR SUSTAINABLE MECHANISATION

MAY 2026

Innovation Guild

ABOUT INNOVATION GUILD

Conceptualized in 2023 by a group of experts working in rural development, Innovation Guild was aimed at bridging the gap between communities and innovators.

Since 2024, Innovation Guild has been fostering collaboration between local communities and technology providers with an aim to ensure that technological advancements effectively address real-world challenges at the grassroot level.

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INNOVATION GUILD : BUILDING INNOVATION ABSORPTION CAPACITY OF RURAL COMMUNITIES

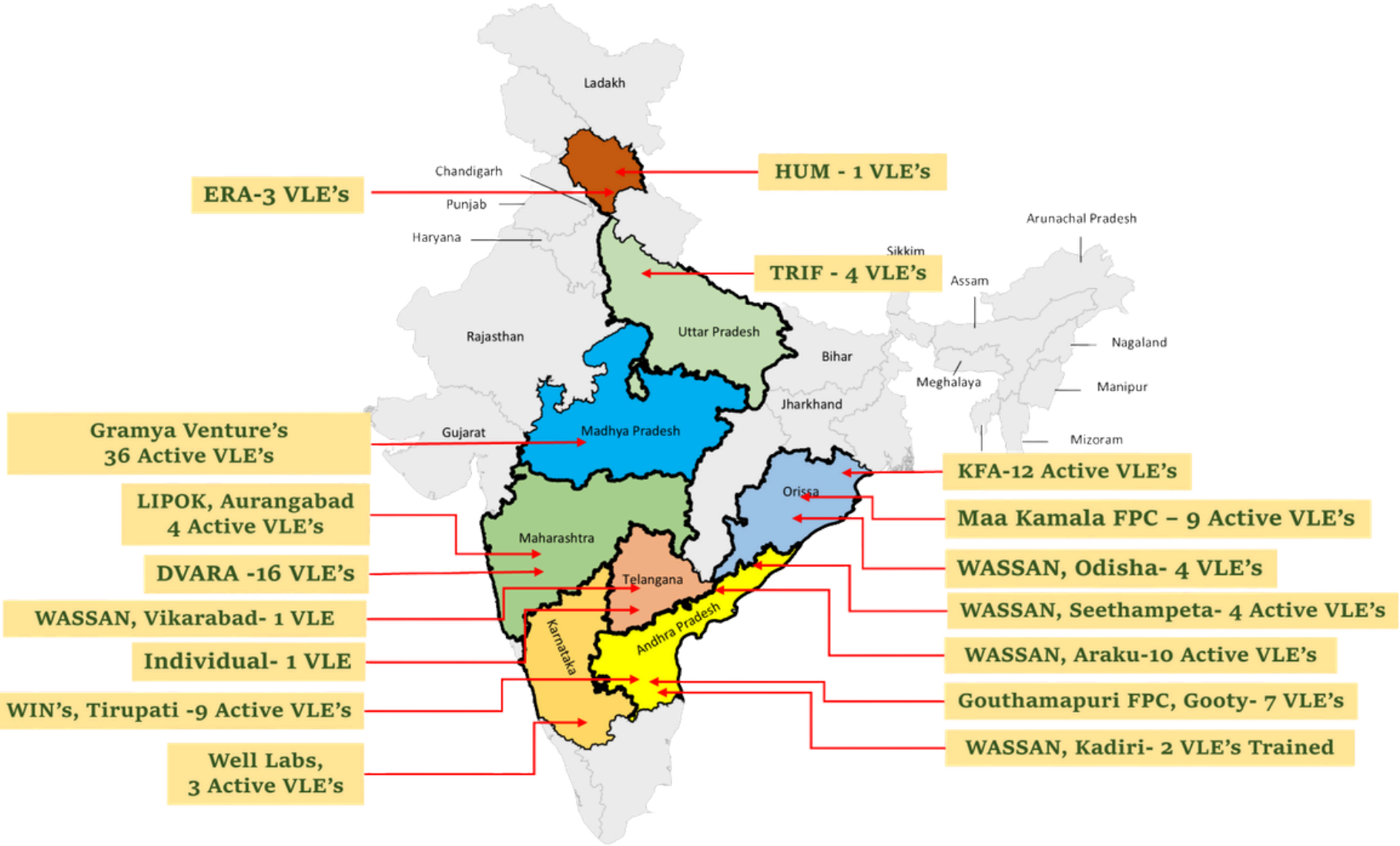
Sustainable farm mechanisation for small and marginal farmers requires more than the availability of appropriate tools, it depends on the presence of local actors who can bridge technology and enterprise development. In many rural regions, promising innovations fail to scale not because of technical shortcomings, but due to the absence of last-mile entrepreneurs who can demonstrate, adapt, repair, and sustain these technologies within the community.

Recognising this critical gap, Innovation Guild instituted the Village Level Entrepreneur (VLE) Fellowship as a strategic mechanism to nurture early adopters who can anchor mechanisation services at the grassroots. The fellowship is designed to reduce entry barriers for rural youth and skilled individuals such as ITI graduates and progressive farmers who have the motivation and local trust but lack access to capital and structured mentorship.

The VLE Fellowship serves two interlinked purposes:

- First, it de-risks early adoption of new and context-specific technologies by providing fellows with structured handholding, exposure to innovators, and initial enterprise support.
- Second, it accelerates learning and feedback loops by positioning VLEs as on-ground experimenters who test, adapt, and refine technologies in real farming conditions.

Till Date, Innovation Guild has facilitated 114 VLE's with fellowship with more than 100+ implementations on ground


Ladakh
Chandigarh
Punjab
Haryana
Rajasthan
Uttar Pradesh
Bihar
Sikkim
Arunachal Pradesh
Assam
Nagaland
Meghalaya
Manipur
Mizoram
Jharkhand
Gujarat
Madhya Pradesh
Orissa
Maharashtra
Telangana
Andhra Pradesh
Karnataka
HUM - 1 VLE's
ERA-3 VLE's
TRIF - 4 VLE's
Gramya Venture's
36 Active VLE's
LIPOK, Aurangabad
4 Active VLE's
DVARA -16 VLE's
WASSAN, Vikarabad- 1 VLE
Individual- 1 VLE
WIN's, Tirupati -9 Active VLE's
Well Labs,
3 Active VLE's
KFA-12 Active VLE's
Maa Kamala FPC – 9 Active VLE's
WASSAN, Odisha- 4 VLE's
WASSAN, Seethampeta- 4 Active VLE's
WASSAN, Araku-10 Active VLE's
Gouthamapuri FPC, Gooty- 7 VLE's
WASSAN, Kadiri- 2 VLE's Trained

1 EMPOWERING RURAL ENTERPRISE:

A Case Study on a Village-level Entrepreneur Selling Manual tools

India's agriculture sector is dominated by small and marginal farmers, who constitute nearly 86% of the total farming population. Mechanization is often limited, and manual labor remains the primary means for farm operations due to limited access to mechanized tools. One of the major challenges faced by small farmers is weed management, which directly impacts crop yield and farm productivity. Manual weeding, traditionally performed by hand pulling or using rudimentary tools like khurpi and sickle, is labor-intensive, time-consuming, and a major source of drudgery, especially for women farmers who contribute over 75% of the labor in weeding activities.

To address these challenges, there is a strong need to promote the use of affordable, lightweight, and efficient manual weeding tools tailored to the needs of small farmers. Engaging village level entrepreneurs (VLEs) as technology providers can bridge this gap effectively by facilitating access to tools, providing demonstrations and creating a self-sustaining rural enterprise ecosystem around agricultural innovation. During the VLE scouting process, Mr. Ashok Gorre, associated with Innovation Guild as Innovator suggested a young individual's name i.e., Mr. Shaik Baji Baba.

Shaik. Baji Baba is a 22-year-old curious and driven individual who is always looking to learn and grow. He belongs to Kodad of Suryapet district where paddy (1,27,832 ha), cotton (65,670 ha), red gram, and green gram are major crops. He completed his degree in B.A political science. Shaik Baji also shared that manual weeding and cotton sowing is done by women workers by bending (a drudgerious process) which can be eliminated by taking up low-cost sowing tools.

Shaik Baji is experienced in mechanical works and expressed his interest in doing sales of manual tools to farmers all over India at an affordable price and becoming a trusted provider of agricultural tools for rural farmers. Through the Innovation Guild fellowship program, VLE was able to purchase tools and set up an inventory with a small storage room in his home. He is selling tools directly to farmers (Word-of-mouth marketing) and through his social media account at an average profit margin of 30-40%.

A. TRADITIONAL PRACTICE

- High physical drudgery
- Musculoskeletal disorders
- Reduced labour efficiency
- Capacity of 0.015 - 0.02 ha/hr
- Labour requirement of 100-120 man hours/ha

B. MODERN MANUAL TOOLS

- Ergonomic design - reduced drudgery
- Affordable for smallholders
- Improved worker productivity
- Capacity of 0.05 - 0.07 ha/hr
- Reducing labour requirements by 40-60%

"I belong to kodad mandal of suryapet district. I have collaborated with small tools manufacturing innovators and brought manual tools from them with the support of innovation guild fellowship. I am actively doing sales of manual weeding tools, and in the kharif, seed sowing tool suitable for cotton will get more sales requests. I have given my tools to local fertilizer shops to showcase for the visitors."

Shaik. Baji Baba

S.No.	Type of Tool	No. of Units Purchased	Purchasing Price, Rs.	No. of Units Sold	Selling Price, Rs.	Profit, Rs.
1	Blade weeding tool	50	220	50	400	20,000
2	Solar pests trap	10	970	10	1350	13,500
3	Seed sowing tool	15	500	15	650	9750
	Total		**28,200**	**23**		**43,250**

2 EMPOWERING RURAL ENTERPRISE: The Journey of VLE Chandra Reddy in Driving AGNICART's Mechanization

Innovation Guild in collaboration with Gouthamapuri FPC has explored potential villages in and around Gooty to understand the landscape as well to identify the potential VLE's. Inperson meetings were conducted on 07-01-2025 where innovation guild concept was presented to the community, conducted technology gap exercise and collected current challenges from the farmers with respect to their village.

During the exercise, a significant bullock population was noted and are currently limited to weeding in vegetable crops. Due to lack of orientation related to bullock drawn implements and easy access to tractors, small farmers often end up spending more money on tillage. Advances in bullock operated implements were showcased and connected with Mr. Sasi Kumar, AgniCart, an IG innovator.

Innovation Guild facilitated in-person meetings with Mr. Sasi Kumar, founder of Agnicart and VLE's. Mr. Sasi interacted with the VLE's and understood the requirements, and a demo unit was sent to Gooty for the VLE's to conduct field trials and check the suitability.

Mr. Chandra Reddy, a Village Level Entrepreneur (VLE) has demonstrated strong entrepreneurial abilities encompassing sales, marketing, customer engagement, and digital promotion. As part of AGNICART's rural outreach, he led machine demonstrations across key agricultural clusters in Pattikonda and Ananthapur APMC, supported by additional farmer interactions in Ramarajupalle and Vadiyampetta. His initiative has generated over 100+ farmer enquiries, marking him as a high-performing VLE in AGNICART's network.

Demos and Engagement Activities

1. Pattikonda Demo (15th September)

- Conducted a full-field demonstration showcasing all three tools.
- Engaged over 40 farmers and local agri-dealers.
- Demonstrations focused on time savings, ease of use, and seedbed uniformity benefits.
- Led to 35 immediate enquiries from progressive farmers and custom-hiring centers.

2. Ananthapur APMC Demo (14th September)

- Targeted dryland farmers and FPO representatives.
- Addressed queries on field adaptability and cost-effectiveness.
- Directly secured 9 preliminary sales commitments within one week after demo.

3. Ramarajupalle & Vadiyampetta Engagements

- Conducted follow-up sessions providing farmers with hands-on use of the equipment.
- Shared product features through live social media streams, boosting online visibility and enquiries.
- Collected operational feedback to fine-tune sales messaging and performance insights.

4. Sales and Marketing Insights

- Generated 100+ product enquiries through demos and digital outreach.
- Highlighted after-sales service and ease of assembly to convert interest into purchase orders.

Through Innovation Guild's support I have received Agnicart Multipurpose cultivator to promote among farmers in my area. I have conducted demonstrations at Pattikonda, Anantapur APMC markets and other villages. During these demos more than 100 farmers showed interest in this machine. Many farmers are interested in using it for their farming activities. To improve my knowledge and enhance sales, I would like to receive sales training from Mr. Sasi Kumar, the innovator of Agnicart, so that I can promote the product more effectively and reach more farmers.

VLE Mr. Chandra Shekhar Reddy

S.No.	Product	Purchase Price (Rs)	Selling Price (Rs)	Margin (Rs)	Potential Sales Value (10 Units)
1	Multipurpose Bullock Drawn 5-Row Cultivator with Cart	42,750	45,000	2,250	22,500
2	Double Bearing Disc Plow (4 Disc Model)	19,000	20,000	1,000	10,000
3	5 Row Pipe Cultivator (New Model)	19,000	20,000	1,000	10,000

3 From Breakdown to Breakthrough: Village Entrepreneur in Machinery Maintenance

At Innovation Guild, we are building an ecosystem of enablers to bridge the technology gap by gaining deeper understanding of the community requirements and ensuring the reach of relevant innovations. We are creating an active network of Village Level Entrepreneurs (VLE's) who can provide local repair and services for innovations to improve the technology absorption capacity of the rural communities.

During the in-person meetings and technology gap assessment in North Coast of AP, it was noted that power weeders are extensively being used for tillage and intercultural operations because of the uphill agriculture but there is no support service available. Through Innovation Guild capacity building program, Mr. Kuda Venkatesh has received complete hands-on training on power weeder repair and maintenance at SRFMT&TI, Anantapur.

Capacity building enabled VLE Kuda Venkatesh to actively engage in repair and maintenance of local machinery on a day to day basis. Through Innovation Guild fellowship, VLE was able to set up his own service shop, purchase spares and carry out services.

Along with services, VLE was able to get sales requests for power weeders and pepper threshers from fellow farmers. Also he is actively training individuals on repairs allowing them to explore more career opportunities.

By bridging the service and sales gap in machinery maintenance, Mr. Kuda Venkatesh has not only improved farming efficiency but also created sustainable economic opportunities in his village.

> Most compliants in my area are on weeder engine trouble. I don't know piston timing setting and rings arrangement, which I learnt in this training. This training is useful to me in carrying out repair work to my community.
>
> I will pass my learnings to my fellow farmers and educate them.

VLE Kuda Venkatesh

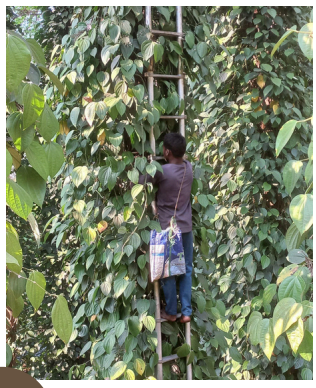
S.No.	Type of Science	Income (Rs.)
1	General Service (oil engines, weeders and other processing equipment)	7,900
2	Power weeder repair and spares	11,500
3	Oil Engines repari and spares	7,200
	Total (Rs)	**26,600**

4

Connecting Solutions:
Village-Level Entrepreneurs for Impact

Mechanisation in India is hindered by a combination of challenges such as limited awareness, access constraints, affordability, lack of technical infrastructure, and low trust in new technologies. To understand these challenges, Innovation Guild keeps engaging with the community, allowing farmers to voice their experiences, highlight existing barriers, and share insights on their current farming practices.

Araku and Paderu, located in the Eastern Ghats of Andhra Pradesh, pepper cultivation spans approximately 98,000 acres (Araku, Ananthagiri, Chintapalli, and Paderu). The process of harvesting and threshing black pepper is entirely manual, following age-old techniques passed down through generations. Pepper harvesting season typically falls between December and March. The harvested spikes are kept in bags for 12-24 hours or heaped and covered overnight to ease the threshing process.



Post-harvest handling is crucial to get a high-quality product. Due to lack of technology, pepper spikes are often threshed manually by rubbing or trampling underfoot (image 3) until the pepper detaches and it is time-consuming, inefficient, and may damage the pepper. It typically requires 4 laborers working 8 hours a day to process 100 kg, with a daily wage of Rs. 300 per labour amounting to Rs. 1,200 per day or Rs.12 per kg. After threshing, the mixture contains pepper, broken stems, leaves, and dust which are then handpicked manually.

To address this challenge, Village-Level Entrepreneurs (VLEs) played a crucial role in facilitating the adoption and sales of mechanical pepper threshers. Innovator Mr. Peter of M/s TransformTech has sent a Demo to create awareness on the machine among the farmers as well as to witness the efficiency of pepper threshers in real-time. Awareness was created in both Araku and Paderu area by VLE's Jairam and Kuda Venkatesh and received 7 sales requests. Innovator came forward to send the pepper thresher units to the location free of cost without any partial payment facilitating last-mile delivery and sales support.

In contrast to traditional practice, a mechanical pepper thresher (Image 4) cost Rs. 35,000 with a capacity of 300 kg per hour with one operator and a helper. Including electricity and maintenance, the total processing cost comes down to just Rs. 0.30 per kg, resulting in a 97.5% cost reduction compared to manual methods.

Cost Component	Manual (Rs/Kg)	Mechanical (Rs/Kg)
Labout cost	12	0
Depreciation	-	0
Total Cost/Kg	12	0
Processing Capacity / day	~100 Kg	~1,800 Kg
Labour required	4 Persons	2 Persons

S.No.	Machine	Area	Purchasing Price, Rs. (Inc. Trans)	No. of Units sold	Selling Price (Rs).	Profit (Rs)
1	Pepper Thresher	Araku	33,300	2	35,000	3,400
2	Pepper Thresher	Paderu	33,500	5	36,000	12,500

VLE's acted as connectors, facilitators, and enablers in the introduction and distribution of pepper threshers. Beyond just selling the machines, VLEs were trained to offer maintenance and support, ensuring that the technology didn't just arrive–but stayed and thrived.

No more waiting for technicians from distant towns and no more downtime during harvest season ensuring longevity of the machines.

5 Empowering Rural Farmers through Mechanization: A Case Study on Bed-Making Machinery

Mechanisation in India is hindered by a combination of challenges such as limited awareness, access constraints, affordability, lack of technical infrastructure, and low trust in new technologies. In person meetings, technology gap exercise and field visits in collaboration with WIN's and Praneeksha FPC, Bhakarapeta were conducted to showcase the importance of support services, entrepreneurship in rural areas. During the field visit, bed making was noted as a major problem statement consuming more than 120 labour hours per acre (20 workers for 8 hours (1 Day)). Manual bed making was seen in tomato, a major crop covering 30,000 Ha in pileru division (6 mandals).

By identifying the problem statement and mapping it with the solution provider through innovation guild, Peraiah was able to adopt the machine using the IG fellowship.

He has a catchment of about 950 acres surrounding his village with an outreach to six villages and 250 families. Tomato cultivation is carried out throughout the year allowing the VLE to carry out his rental service in surrounding villages. The adopted tractor operated attachment can cover 1 acre in an hour and VLE charges a net custom hiring charge of Rs.1,000 per hour (includes tractor hiring charge).

He belongs to Dasari gudem village of Chinnagotigallu mandal, Tirupati. He owns 5 acres of land and a tractor and grows sugarcane, paddy, and vegetables. Peraiah expressed that manual bed making for vegetable crops is labour intensive and can be reduced by adopting bedmakers. Although bed making cum mulch sheet laying machines are widely available, adaptability has been low due to lack of awareness and financial constraints.

VLE was able to cover around 90 acres with his tractor operated bed maker making a profit of Rs. 54,000/-. VLE is successfully carrying out the rentals and is on his way to meet the submitted business plan i.e., assuming an operation window of 20 days with an average rate of return of Rs. 30,000 per season (excluding diesel, maintenance and service).

KEY TAKEAWAYS / IMPACT ON THE COMMUNITY

- Reduction in cost of cultivation for farmers
- Employment generation to VLE
- Social and economic improvements in the village
- Adoption of mixed cropping (mango/tomato)

"With bed maker, farmers are able to finish the operation in time. I have given rental services at kothapalli, dasarigudem and challavaripalli from last two seasons and have covered more than 90 acres upto february and earned Rs.54,000 excluding the expenses. Farmers are satisfied with the performance as it neatly piles up the soil and avoid the labour use, Since I got benefited from WIN's and Praneeksha FPC through Innovation Guild, I charged Rs.1000 per hour on organisation requests and for others Rs. 1200."

VLE Mr. P. Peraiah

S.No.	Village Name	No. of Acres	Income Earned, Rs.	Profit, Rs.
1	Sirigala vari palli	20	24,000	12,000
2	Bodireddy gari palli	15	18,000	9,000
3	Rajuvari palli	20	24,000	12,000
4	Kothapalli	25	30,000	15,000
5	Dendharla vari palli	10	12,000	6,000
	Total	**90 acres**	Rs. 108000	**Rs. 54,000**

6 Building Local Mechanisation and Service Ecosystems through Village Level Entrepreneurs

In Collaboration with Gramya Ventures

INTRODUCTION

Across rural India, farm mechanisation efforts have largely focused on making machines available through subsidies, group ownership models, or one-time distribution. Yet, field realities consistently reveal a different picture: machines lie idle, partially functional, or abandoned within a few seasons. The problem is rarely the absence of technology; rather, it is the absence of systems that support technology use.

Innovation Guild (IG), in collaboration with Gramya Ventures, has been working across diverse rural landscapes to understand this gap. Through field-based technology gap assessments, IG observed that mechanisation failures are deeply rooted in three interconnected issues: absence of viable service-based enterprises, lack of local repair services and limited operational skills.

This article brings together multiple field interventions such as weeding services, spraying, flour milling, quality testing, repair ecosystems, and structured capacity building to demonstrate how local service ecosystems, anchored by Village Level Entrepreneurs (VLEs), can make mechanisation sustainable, inclusive, and livelihood-generating.

FROM FIELD DIAGNOSIS TO ECOSYSTEM THINKING

Bhopal and the adjoining districts of Raisen and Betul in Madhya Pradesh are predominantly rainfed agricultural landscapes, where farming is closely tied to the monsoon and seasonal rainfall variability. The region is characterized by small and marginal landholdings, mixed cropping systems, and a high dependence on labour.

To nurture innovation driven agricultural solutions, technology gap assessments were conducted across Lulka, Nayapura, Magarda and Darwai Jamthi villages, Raisen and Betul District, Madhya Pradesh. The objective was to understand local cropping patterns, identify labour bottlenecks, and explore opportunities to promote Village Level Entrepreneurs (VLEs) who could offer decentralized farm services.

The discussion highlighted the need for sprayer rental services, repairs, processing, and farm gate level quality testing. These findings led to a critical shift in approach. Instead of asking "Which machine is needed?", Innovation Guild and Gramya Ventures began asking:

Who will operate, repair, service, and sustain this machine locally?

a. Power Sprayer Rental Services – Reducing Drudgery & Creating Rural Livelihoods

Across many villages, farmers continue to rely on knapsack sprayers, a widely used tool, places significant physical strain on the farmers. Prolonged hours of carrying 20L tanks on the back lead to fatigue and inefficiency, especially across larger plots. On average, spraying an acre requires 10+ tanks, meaning hours of repetitive, back-breaking effort. If outsourced, custom hiring costs are Rs. 40 per tank, which quickly adds up for smallholder farmers. With over 500+ acres of farmland, and at least 150 acres requiring seasonal spraying, the absence of a local service provider posed both an agricultural challenge and a livelihood opportunity.

To address this, through IG's innovator network, mapped the challenge with innovations viz., Niyo Battery Sprayer from NiyoFarmTech and Pallav Sprayer from Auto Studio Pvt. Ltd. Unlike traditional sprayers, these sprayers are battery and solar powered, and eliminates the need for carrying weight on the back. On-field demos were conducted with farmers and VLEs in Lulka, Nayapura and Magardha villages to create hands-on experience.

While the overall response was positive, farmers also highlighted certain areas for improvement:

- Difficulty in propelling the sprayer in water logged fields
- Pressure tends to drop when spraying farther distances
- Battery capacity feels inadequate for extended operations

After the extensive trials and demonstrations with the battery-operated Niyo sprayer and the solar-operated Pallav sprayer, and given the sloping terrain in these areas, we identified the need for power sprayers in a custom hiring setup.

Five VLE's Nitesh, Hemant, Prakash, Rajesh, and Gajanand came forward to adopt power sprayers and provide rental spraying services. They charged Rs.1 to 1.5 per litre, translating to Rs. 200 to 300 per acre, depending on travel time and field conditions.

VLE's are actively doing power sprayer rental business at Rs. 1 per litre (avg 200 ltr per acre). Among the VLEs, Nitesh from Lulka served the highest number of farmers (20) and covered the largest area (50 acres), earning Rs. 10,000, the highest income in the group. Hemant from Magarda followed with 12 farmers and 30 acres, generating Rs. 9,000. VLE's Nitesh and Hemanth have already got their returns and are on their way to profits. Gramya has taken the initiative to bring in T-shirts printed with Innovation Guild and Gramya logo's.

मेरा नाम नितेश नंदवंशी है। हमें जो स्प्रे मशीन दी गई है, उसका पाइप बहुत छोटा है जिससे काम करने में थोड़ी दिक्कत होती है। लेकिन एक चीज बहुत अच्छी दी गई है। वायर लपेटने की जो सिस्टम दिया है, वो बहुत अच्छा है। सबसे बड़ी समस्या यह है कि इसकी बैटरी बहुत कम समय तक चलती है, बैटरी कम चलने के कारण बार-बार खेत से घर और घर से खेत में जाना पड़ता है।जिससे किसानों को बहुत ज्यादा परेशानी हो रही है। इसके अलावा, दूरी बढ़ने पर प्रेशर भी कम हो जाता है।

Nitesh Nandvanshi

Rajesh Dhurve

मेरा नाम राजेश कुमार है। मुझे इनोवेशन गिल्ड और ग्राम्या के माध्यम से पावर स्प्रेयर उपलब्ध कराया गया है| इससे मैं अपने खेतों की फसलों पर दवाई का छिड़काव करता हूँ, और किसी को ज़रूरत पड़ती है तो उनके खेतों पर भी दवाई का छिड़काव करने के लिए मैं किराए पर ले जाता हूँ। इससे बढ़िया आमदनी हो रही है और इससे मुझे फ़ायदा हो रहा हे। पहले मैं पुराने हाथ वाले पंप से चलाता था, उससे बहुत दिक्कत आती थी। इस पंप से कोई दिक्कत नहीं आती। इसमें क्या है कि टंकी में दवाई घोलकर दवाई आसानी से स्प्रे कर सकते हैं।

	Manual Spraying	Power Spraying
Time required	3-4 hours per acre	45-60 minutes per acre
Tank refills	10-12 per acre	Single 200 L tank covers 1 acre
Fatigue and drudgery	Very high	Minimal
Constitency of spray	Poor	Uniform, fine Mist
Outsourced cost	Rs. 40 per tank (Rs. 400-800 per acre)	Rs. 200-300 per acre
Average cost saving for the farmer: Rs. 150-250 per acre (35-50% cheaper)		

VLE Name	Nitesh	Hemant	Prakash	Rajesh	Gajanand Darwai
Village Name	Lulka	Magarda	Nayapura	Nayapura	Jamthi
No. of Farmers Served	20	12	6	6	5
Charges per Liter	Rs 1	Rs 1.5	Rs 1	Rs 1	Rs 1
Total Acres Covered	50 Acres	30 Acres	12 Acres	20 Acres	9 Acres
Total Income (Paddy Season)	Rs 10,000	Rs 9,000	Rs 2,400	Rs 4,000	Rs 1,800

The success of the power sprayer rental model also laid the foundation for future interventions such as battery weeders, paddy reapers, on-field graders and other crop-specific innovations furthering Innovation Guild's mission of technology adoption through local entrepreneurship.

b. Women-Led Flour Mill Enterprise

In many villages of Raisen and Betul Districts, a common and critical issue was observed regarding the absence and non-functionality of local flour milling facilities, which significantly affected daily life and livelihoods. Over 80 families across these villages faced severe difficulties due to the lack of proper flour mills. Many residents were forced to travel to neighboring village Bineka for grinding services. For most households, traveling to Bineka at least twice a month, covering an average round trip distance of 10 km.

To address this gap four VLEs Omwati Barkare, Savita, Jay singh and Mathali Bai from Khapariya, Champner, Borpani and Agariya villages were identified and mapped with flour mills. This intervention aimed to restore access to local milling services, reduce travel burden on households, and create sustainable livelihood opportunities at the village level.

Over time, the VLEs were able to serve multiple households on a regular basis and generate income through service fees collected per grinding cycle. The availability of local flour milling services improved convenience for the community while enabling the VLEs to earn supplementary livelihoods. Overall, the intervention not only addressed a critical service delivery gap but also strengthened village-level entrepreneurship and contributed to sustainable income generation in the region.

VLE Name	Omwati Barkare	Savita	Urmila	Sangeetha Kakodiya
Village Name	Magardha	Lulka	Nayapura	Champren
Charges per Kg	2	2	13	3
Avg. Daily Processing Quantity (Kg/Day)	47	44	1	20
Monthly Number of Kg's Processed	1,171	1,090	202	200
Total Income	Rs. 2415	Rs. 2180	Rs. 202	Rs. 919

c. Sheela Didi and the Single Wheel Weeder

A Success Story from Lulka Village, Raisen District, Madhya Pradesh

Lulka village covers more than 500 acres with Maize, Paddy, Millets as major crops. Weeding is a major challenge requiring at least 5 labour for 1 acre/day increasing dependence on labour as well as farming expenses. In particular, women endure hours of backbreaking labour, making weeding exhausting and time-consuming. To overcome these challenges, Sheela Didi, an active VLE from Lulka village, Raisen district, adopted the Single Wheel Weeder and transformed the way weeding is done in her community.

In around a month, Sheela didi successfully used the machine across 30 acres of land reducing the weeding time to just 8–10 hours per acre. Farmers, especially women, found it easy to use, efficient, and farmer-friendly. The machine's simple design made it accessible to women farmers, reducing drudgery. Through her role as a VLE, Sheela didi training the fellow farmers on machine operating and renting it out to neighboring farmers, ensuring wider adoption and community-level impact.

The success of Sheela didi demonstrates the power of appropriate mechanization at the grassroots level. By bridging the gap between innovators and rural communities, the Innovation Guild has enabled her to reduce drudgery, save costs, improve yields, and emerge as a local change-maker. Her journey is a testimony to how simple innovations, when matched with the right champions like VLEs, can create scalable community impact.

"पहले एक एकड़ की निराई करने में मुझे 5 दिन लगते थे। अब सिंगल व्हील वीडर से मैं वही काम कुछ ही घंटों में कर लेती हूँ। इससे पैसा बचता है, फसल अच्छी होती है और मेहनत भी बहुत कम लगती है। मैं इसे दूसरी दीदियों के खेतों में भी चलाती हूँ और इससे अच्छी कमाई हुई है।"

— SHEELA DIDI

d. Decentralizing Quality Assurance: Empowering Farmers and VLEs through Farm-Gate Testing

Small and marginal farmers and Farmer Producer Organizations (FPOs) often face significant losses due to quality-based rejections by institutional buyers such as ITC, Parle, Britannia, and ethanol plants. While farmers invest heavily in production, they usually lack awareness of industry quality parameters and do not have access to tools to test their produce before it reaches procurement centers or mandis. As a result, produce that does not meet moisture, density, or cleanliness standards is rejected, forcing farmers to sell at lower prices after incurring transportation and handling costs.

Recognizing this persistent gap, a Village- Level Quality Check Lab model that enables pre-assessment of produce at the farm gate was conceptualized. The model ensures that farmers can make informed decisions on whether to sell to institutional buyers or local markets, thereby minimizing rejection risks.

The solution was mapped to a Village-Level Enterprise (VLE) approach, where local entrepreneurs are trained and operate portable quality testing labs and provide services on a fee-for-service basis.

Three VLEs were identified and onboarded across three villages:

- **Chokelal Mathekar** – Belmandai Village, Amla Mandal, Betul District
- **Chandradev** – Jamthi Village, Amla Mandal, Betul District
- **Amit Kose** – Mangona Khurd Village, Amla Mandal, Betul District

Each VLE serves farmers cultivating wheat, maize, and soybean, the major crops in the region. Each VLE Lab was equipped with battery-operated, portable testing equipment, enabling mobility and field-level operation. The labs are designed to function at village aggregation points or directly at farmer locations.

VLEs received structured training on operating quality testing equipment and Interpreting test results. Training was supported by ITC professionals and third-party quality experts. VLEs also spent two days at ITC collection centers to gain first-hand experience of procurement protocols and quality benchmarks.

Farmers pay a nominal fee of Rs. 150 per sample for quality testing. After minimal operating expenses (~Rs. 5,000), VLE Chokelal Mathekar earned a net seasonal income of ~Rs. 40,000.

Outcomes and Impact

- Reduced quality-based rejections at procurement centers
- Improved farmer decision-making on market channels
- Lower logistics and handling losses
- Creation of sustainable village-level livelihoods.

e. Capacity Building as the Backbone of Service Ecosystems

Early experience made one thing clear: VLEs cannot succeed on technology access alone. Without structured capacity building, even motivated VLEs struggle to troubleshoot machines. Capacity building, therefore, became a core intervention, not a supporting activity.

Innovation Guild and Gramya Ventures adopted a need-based, hands-on capacity building approach, aligned with the actual service roles VLEs were expected to perform. Training was designed not as classroom instruction, but as practice-intensive exposure to real machines, real faults, and real field conditions.

A key milestone in this journey was the five-day residential training programme at the Central Farm Machinery Training and Testing Institute (CFMT&TI), Budni, conducted in December 2025. Seven VLEs from Lulka, Magarda, Bineka, and Nayapura villages participated in the programme.

VLE Name	Charan Lal
Village Name	Champren, Nayapura
Machinery name	Tool Kit
No. of farmers served	8
Type of service	General services for flour mill and portable power sprayer and bearing and shaft issues, motor issues for flour mill
Total income generated	Rs. 1,650/-

The training went far beyond basic operation. VLEs dismantled and reassembled brush cutter engines, carried out oil and filter changes, diagnosed faults in power weeders and reapers, and operated machines under field conditions. Exposure to tractor systems, processing machinery, water pumps, and even drone spraying expanded their understanding of how diverse technologies fit into local farming systems.

Importantly, each VLE was provided with a basic repair toolkit viz., spanners, pliers, screwdrivers, wrenches allowing them to immediately translate learning into service delivery.

CONCLUSION

The evidence demonstrates that addressing mechanisation gaps in rainfed landscapes requires a shift from asset-centric interventions to service-oriented, enterprise-led models. In regions such as Bhopal, Raisen, and Betul where agriculture is highly sensitive to rainfall variability, labour shortages, and narrow operational windows - timely access to appropriate mechanisation services is critical for sustaining farm productivity and livelihoods. By combining context-specific technology validation, capacity building, and continuous handholding, the model not only improved access to farm operations but also created viable livelihood opportunities for rural youth within their own communities.

Make	Eicher	Compression ratio	17.5'0.5:1	Type	Inline, plunger	Filters	Full flow, paper elem
Model	398 ED	Type of cylinder head	Cast aluminum alloy with swirl port	Fuel injectors:		Pump	Gear type
Type	Air cooled, four stroke direct injection, diesel engine	Type of cylinder liners	Dry, non-replaceable	Make	Bosch, India	Cooling system:	
Engine speed(rpm):		Type of combustion chamber	Direct combustion, re-entrant type	Type	Multiholes (5 holes)	Type	Air cooled
Maximum speed at No load	2300-2400	Arrangement of valves	Overhead, inline	Injection timing	13°1 degree before TDC	Starting system:	
Low idle speed	650-750	Valve clearance(cold):		Firing order	1-3-2	Type	12V DC, Ele
Speed at maximum torque	1000-1400	Inlet valve,(mm)	0.10	Governor:		Electrical system:	
Rated speed(rpm):		Exhaust valve(mm)	0.10	Make	Bosch India	Battery	Lead acid type
For PTO use	2150	Fuel system:		Type	Mechanical, centrifugal, variable speed governor	Capacity and rating	12V,75 Ah at 2
For drawbar use	2150	Type of fuel feed system	Gravity and force feed	Air intake system:		Generator:	
Cylinder & Cylinder head:		Fuel tank:		Pre-cleaner type	Centrifugal with transparent dust collector	Type	Alternator
Number	Three	Capacity,(L)	47.3	Air cleaner type	Oil bath	Output rating	14V, 35A
		Location	Above flywheel housing	Exhaust system:		Transmission system:	
						Clutch	Dual dry friction

7 Transforming Tamarind Processing through Innovation

Tamarind processing has long been a labour-intensive activity, especially in rural regions like Chandalguda in Jeypore, Koraput district, Odisha. Traditionally, the deseeding and pulp cake-making processes are performed manually, often by women using rudimentary tools or even bare hands. This method demands long hours of repetitive hand movements, resulting in physical strain, particularly on the fingers, wrists, shoulders, and back.

In the Chandalguda area, around 10,000 tamarind trees flourish, each yielding approximately 3 to 4 quintals of tamarind annually. The harvest season typically extends from mid-February to April—a 75-day window during which roughly 200 local farmers participate in harvesting activities. During peak season, the region sees an estimated daily yield of 400 quintals of raw tamarind.

Despite the large-scale production, tamarind processing continues to be a bottleneck due to outdated manual techniques. Women in the region are employed to deseed tamarind manually at a rate of ₹10 per kilogram, and similarly, tamarind cake making remains labour-intensive.

A collaborative effort involving field visits, technology gap assessments, and community meetings was undertaken by Innovation Guild in partnership with Maa Kamala Farmer Producer Company (FPC), Jeypore. These engagements highlighted a significant need for technological intervention in tamarind processing, primarily to reduce the physical toll on women workers and to enhance overall productivity.

Two local women, Mrs. Minati Harijan and Mrs. Daimati Harijan members of a local Self Help Group (SHG) came together and adopted tamarind deseeding and cake pressing machine with the support from the Innovation Guild fellowship.

FIELD OBSERVATION

An 8-member women SHG typically hand-deseeds 80–100 kg per 6 to 8 hour shift, then shapes the pulp into cakes manually.

Post-processing, the tamarind is procured and marketed through Maa Kamala Farmers Producer Company Ltd., which plays a pivotal role in value chain development. The SHG, empowered with machinery, has now transformed into a micro-enterprise. This unit not only facilitates efficient processing of tamarind but also allows the women to generate additional income by offering rental machinery services to other farmers.

Parameter	Traditional Method	Mechanised Method	Gain
Rated Throughput	100 kg per day*	40-50 kg/h Avg 360 kg/day	3.6 times manual
Labour Required	6-8 workers	2 operators	Reduction in labour
Labour cost	Rs.10 per kg = Rs. 1000 per day	Rs. 250 per person = Rs. 500	Saves Rs. 500/day
Processing cost per kg	Rs. 10	Rs. 1.6	84% saving in cost

With the support of a tamarind deseeder machine, VLE **Minati Harijan** provided deseeding services to around 33 farmers at a service charge of Rs. 6 per kg, generating a total income of approximately Rs. 46,700.

Following deseeding, tamarind cake making emerged as the next important value-addition step, helping increase market value. To support this stage, VLE **Daimati Harijan** with a briquetting machine, extending services to 44 farmers, generating an income of nearly Rs. 1 lakh through tamarind cake preparation.

IMPACT ON THE COMMUNITY

- Reduced Processing Costs
- Women Empowerment
- Enhanced Social Status

8 Empowering Rainfed Communities through Sustainable Mechanisation: Evidence from Narayanpatna Block, Odisha

INTRODUCTION TO THE LANDSCAPE

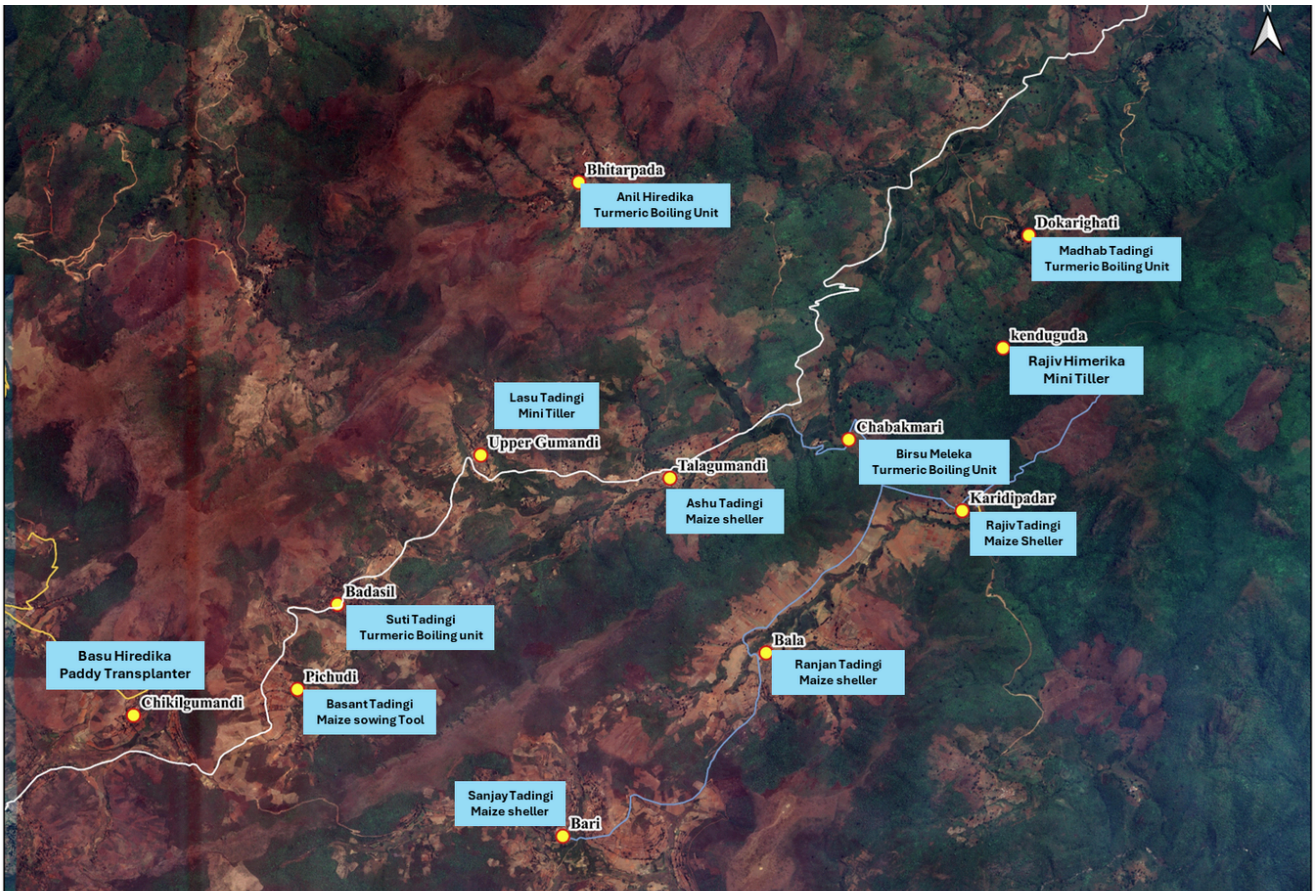
Rainfed regions form the backbone of Indian agriculture, supporting a large share of small and marginal farmers while remaining highly vulnerable to climate variability, labour shortages, and low public investment. Narayanpatna Block in Koraput district of Odisha is a rainfed, tribal-dominated landscape characterised by undulating terrain, small landholdings, and strong community-based farming practices.

Mechanisation options available in nearby towns are often expensive, oversized, and poorly suited to small plots and remote locations. As a result, farmers continue to rely on labour-intensive and sometimes unsafe traditional practices, leading to drudgery, post-harvest losses, and reduced incomes.

INTERVENTION DETAILS AND INSTITUTIONAL SUPPORT

(A) Participatory Gap Assessment and VLE Identification

As part of a structured technology gap assessment, Innovation Guild, in collaboration with Koraput Farmers Association (KFA), explored 12 villages in Narayanpatna Block of Koraput District to understand the local agricultural context and identify potential Village Level Entrepreneurs (VLEs). Through village meetings, field observations, and discussions with community members, key challenges related to crop establishment, harvesting, and post-harvest processing were identified.



THE ASSESSMENT HIGHLIGHTED FOUR MAJOR PAIN POINTS

- Manual maize shelling using unsafe methods such as bike rear-wheel rotation
- Labour-intensive paddy transplanting
- Manual harvesting of paddy and ragi
- Household-level turmeric boiling with very small batch sizes

Recognising the need for local ownership and continuity, KFA identified one interested Village Level Entrepreneur from each village.

(B) Technology Mapping and Design Rationale

Rather than introducing large, capital-intensive machines, the intervention prioritised small-scale, energy-efficient technologies that could be owned, operated, and maintained locally. Innovation Guild leveraged its innovator network to explore multiple options–including solar-powered, petrol-operated, and motorised solutions–before finalising technologies that balanced affordability, performance, and ease of maintenance.
Two priority interventions were taken forward:

- Small maize shellers for custom hiring services.
- A compact turmeric boiling unit suitable for village-level processing.

When Innovation Guild studied this agricultural landscape with the location of Village Level Entrepreneurs (VLEs), a comprehensive picture emerged:

- **Paddy-dominant zones:** VLEs in these clusters focused on mechanisation solutions that address transplanting, harvesting, and threshing challenges.
- **Maize and ragi uplands:** The geography (steeper fields and fragmented plots) made large tractor-based implements less suitable. Here, compact, low-energy machines like small maize shellers were mapped to serve multiple adjacent villages.
- **Turmeric clusters around village hubs:** These villages were best suited for value-addition mechanisation such as the compact turmeric boiling unit.

Using geographic information and cropping patterns, each VLE covered 3 to 5 adjacent villages with similar crop calendars to maximise machine utilisation. The mapping process in itself was participatory, VLEs contributed their local knowledge, which informed not only what machines were needed but where and when they should be deployed.

During key seasonal tasks such as paddy transplanting, maize deshelling, and turmeric boiling - villagers collectively contribute their time and labour, relying on traditional, household-level methods (e.g., using small pots for turmeric boiling).

(c) Outcomes and Impact

- **Maize Shelling: Improving Safety and Efficiency:** One such problem statement highlighted by the community is maize shelling, which is being done manually using traditional tools and by using a bike rear wheel rotation. The current practice is humanely dangerous and requires significant labour and time, especially during peak harvest periods. Many small and marginal farmers expressed that heavy tractor operated threshers from nearby towns are often nonresponsive during the season and demand high rental charges. Recognizing this challenge, Innovation Guild identified an opportunity to introduce a Maize Sheller as an affordable and locally manageable solution. The goal was to reduce manual drudgery, improve shelling efficiency, and promote the concept of shared community access to small farm equipment through local VLEs.

ADOPTION AND IMPACT

VLE's Ranjan Tadingi, Sanjay Tadingi, Rajiv Tadingi and Ashu Tadingi from 4 villages Bala, Bari, Karuvpadar and Talagumandi expressed strong interest in acquiring the maize sheller to carry out rental service in the village. Through Innovation Guild's Innovator network we have explored numerous solutions viz., solar powered, petrol operated and motorised to best suit the need and affordability of VLE's. A small affordable Maize Sheller was mapped to each VLE with IG fellowship as well as their contribution.

The machines achieved an average shelling capacity of nearly one tonne per hour. VLEs charged Rs. 75 per quintal, making the service affordable while generating steady income. Across the four villages, more than 140 farmers benefited, with VLE incomes ranging from Rs. 11,000 to Rs. 23,000 in a single season. Farmers reported reduced drudgery, faster turnaround, and lower post-harvest losses.

VLE Name	Ranjan Tadingi	Sanjay Tadingi	Rajiv Tadingi	Ashu Tadingi
Village	Bala	Bari	Karuvpadar	Talagumandi
Charges (Rs/Qtl)	Rs. 75/-	Rs. 75/-	Rs. 75/-	Rs. 75/-
No. of farmers served	48	48	48	48
Total Income	13,640/-	23,781/-	11,420/-	15,490/-

- **Turmeric Boiling:** Enabling Local Value Addition Turmeric boiling is a crucial post-harvest step that determines product quality and market value. In Narayanpatna, boiling was traditionally done at the household level using open pots, processing only 5–10 kg per batch and requiring intensive labour and fuel. Market-available boiling units were found to be oversized and unaffordable. Considering the ground capacities, a boiling unit with a capacity of 50-60 kg per hour was finalised. Responding to this gap, Innovation Guild collaborated with Prabath Industries to develop a compact turmeric boiling unit for small-scale requirements.

The Narayanpatna experience demonstrates that sustainable mechanisation in rainfed landscapes is most effective when anchored in local enterprise and community ownership. The model is highly replicable across similar tribal and rainfed regions, provided that interventions remain context-specific and participatory.

VLE Name	Bipin Tadingi	Madhab Tadingi
Village	Chabakmari	Dakrighati
No. of Kgs	580 Kgs	11095 Kgs
Total Income	Rs. 8,700/-	Rs. 5515/-

Technology Details

- Capacity: 50-60 kg/hr
- Cost: Rs. 39,000 (Earlier available model was 60 kg capacity costing over Rs. 60,000, making it inaccessible)

9 Himalayan Unnati Mission (HUM), Changar and Pangi Landscapes, Himachal Pradesh

Under the Himalayan Unnati Mission (HUM) in Himachal Pradesh, Innovation Guild undertook field-based technology assessments and pilot deployments to address critical gaps across Non-Timber Forest Produce (NTFP) and herbal value chains. The interventions focused on reducing drudgery, improving efficiency, and enabling village-level entrepreneurship through appropriate technologies.

TECHNOLOGIES DEPLOYED: NTFP HARVESTING TOOLS

NTFP produce is harvested from trees of varying heights, with different produce types requiring specific harvesting techniques. Traditional harvesting methods were time-consuming, unsafe, and resulted in losses due to improper tools.

Intervention

A complete harvesting tool kit comprising:

- Telescopic Pole
- Telescopic Pruner cum Saw
- Mango Picker

was provided as a demonstration set. Field demos were conducted in the Changar landscape in collaboration with ERA.

TECHNOLOGIES DEPLOYED: PULVERIZER

Context and Gap Identified

Haldi (turmeric), Amla, and similar herbal produce are abundantly cultivated in these landscapes. Pulverization is traditionally done manually, involving high drudgery, low efficiency, and inconsistent output quality. Key parameters studied are Type of produce, Pulverizing capacity requirement, Electricity availability and User capability and demand.

OUTCOMES

- The tools significantly reduced effort, time, and damage to produce.
- Based on successful demonstrations, two VLEs were identified: One in Changar and the other in Pangi
- Additional tool sets were provided to initiate a sales and rental-based service model.

Intervention

A mini pulverizing machine was sent for on-field demonstration.

OUTCOMES

- The demo showed excellent performance in terms of output quality and ease of use.
- Following successful demonstrations, SHG women members are being identified as potential VLEs.
- VLE **Veena Jamwal** from Duhak Village also purchased the pulverizer, started rental services
  - Served around 21 farmers
  - Pulverised 130 kgs
  - Earned around Rs. 785.
- These VLEs will take ownership of the machine and offer rental-based pulverizing services within the community.

TECHNOLOGIES DEPLOYED: MOBILE TUNNEL DRYER

Context and Gap Identified

Drying of herbal produce especially the Triphala and Haldi value chains were identified as a major bottleneck.

In the Changar landscape:

Haldi cultivation supports 100+ households across 6 Mahila Mandals

Each household produces approximately 10-15 kg annually

Key problems identified

Drying takes several months under traditional methods

High post-harvest losses

Manual pulverization adds to drudgery

Weather dependency affects quality and timelines.

Technology Details

Capacity: 50 kg

Cost: ₹10,000 (Earlier available model was 1-ton capacity costing over ₹1 lakh, making it inaccessible)

INTERVENTION

Innovation Guild collaborated with its innovator network and reached out to Grain Shell. In response:

- Mr. Ravindra Garu developed a compact dryer model specifically for small-scale requirements.

WAY FORWARD

These interventions demonstrate how need-based technology customization, combined with field demonstrations and VLE enablement, can create scalable, decentralized livelihood models in remote and ecologically sensitive regions. Innovation Guild will continue to refine these pilots and support VLEs in transitioning from demonstrations to viable rural enterprises.

10 Building Local Repair Ecosystems Through Trained Village Level Entrepreneurs

One of the most persistent barriers to effective farm mechanisation in rural landscapes is the absence of timely and affordable repair services. Gap assessments conducted in regions such as Kadiri, Seethampeta, and Araku, it became evident that while farmers had invested in machines like sprayers, power weeders, brush cutters, oil engines, and paddy reapers, they were highly vulnerable whenever breakdowns occurred. Even minor mechanical faults forced farmers to transport equipment to distant towns, resulting in delayed farm operations, higher costs, and abandonment of machines.

To overcome this, Innovation Guild adopted a need-based capacity building approach to strengthen local repair ecosystems. Rather than relying on external service centres, the focus was on identifying and nurturing Village Level Entrepreneurs (VLEs) from within the community who could provide repair and maintenance services locally.

Through partner organisations and community engagement, Innovation Guild identified motivated youth based on their willingness to learn, availability within the village, and trust among local farmers.

To build their technical capacity, Innovation Guild facilitated hands-on, practical training in collaboration with reputed institutions such as SSV ITI, Ananthapur; Southern Region Farm Machinery Training and Testing Institute (SRFMT&TI), Ananthapur; and Suryanirbhar Pvt. Ltd., Bengaluru.

The training focused on basic workshop practices, safe handling of tools, diagnostics, and repair and maintenance of commonly used farm machinery, including power weeders, brush cutters, oil engines, and paddy reapers. In addition to training, Innovation Guild provided VLEs with essential tool kits.

Following the training, VLEs began offering local repair and servicing support, significantly reducing machine downtime for farmers. Farmers benefited from lower repair costs and uninterrupted farm operations during critical agricultural windows.

VLE Name	Korra Gopal	K Sai Kumar	Soma Ganesh	Charan Lal
Village Name	Champaguda	Parigi	Mallireddy Palli	Champren
No. of Farmers Served	6	3	6	8
Total Income	Rs. 8000/-	Rs. 15,000/-	Rs. 7000/-	Rs. 1650/-

I have attended a training program at SRFMT &TI, where I learned about different services, repair and maintenance of power weeders. After the training, IG supported me with a welding machine, cutting machine, and a tool kit. With this support, I am now providing services by making ladders and windows for the local community. This has helped me to earn a regular income. I am thankful for the training and support, which helped me improve my skills and livelihood.

~ Korra Gopal

I have attended the training program provided by IG at SRFMT&TI and SSV ITI, where I learned about different services and gained practical skills. I also participated in a machinery repair camp, where I gained hands-on experience in sprayers and power weeder repair. After the training, IG supported me by providing a tool kit. With this support, I started providing services and earned income through my work.

~ Soma Ganesh

I have attended a training program at SSV ITI, where I learned about workshop tools and equipment and basic welding techniques. After the training, IG supported me with a fellowship. I own a small repair shop in my area, where I fabricate and sell cycle weeders. Through this work, I am able to generate a regular income. With IG's continuous support and community engagement, I am receiving sales requests from farmers as well.

~ K Sai Kumar

I have attended a five day training program at CFMT&TI, Budni where I learned about repair & maintenance and operations of different farm machinery and processing machinery. IG supported me with a tool kit. I have also involved in repair & maintenance training of papad making machine from RSDK industries and now doing services in my nearby villages for flour mills, sprayers and generating a regular income.

~ Charan Lal

Over time, these VLEs will establish themselves as trusted local service providers, earning regular income through repair charges and seasonal maintenance services. By embedding repair capacity within villages, future mechanisation efforts can become more resilient, cost-effective, and inclusive.



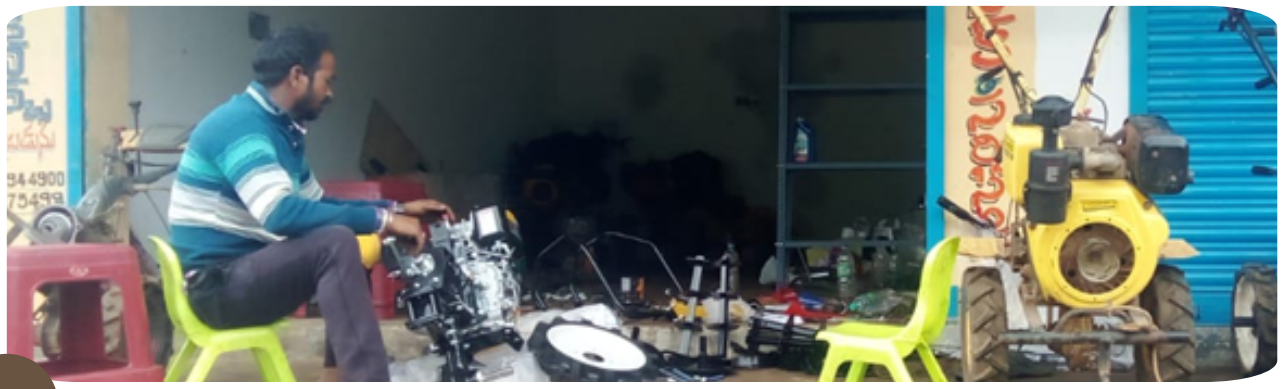












11 Weeding as a Service: Reducing Drudgery through VLE-Led Mechanisation

Weeding is one of the most labour-intensive, time-sensitive, and costly operations in smallholder agriculture. During Innovation Guild's field technology gap assessments conducted with partner organisations, weeding consistently emerged as a major challenge irrespective of geography, crop, or farming practice. Farmers reported heavy dependence on manual labour, with weeding costs ranging from Rs. 300 to 500 per labour per day, and requiring multiple labourers over several days depending on the crop and spacing.

Women form the major share of weeding labour, and manual weeding involves prolonged bending, repetitive movements, and physical strain, leading to fatigue and health issues. Animal-drawn weeders, where available, cover limited areas and depend on animal availability. Although mechanised options exist in markets, access remains low due to high costs, lack of local service providers, and poor after-sales support.

Recognising weeding as a priority intervention, Innovation Guild adopted a systemic approach rather than introducing machines in isolation. Through its field-based technology gap assessment, Innovation Guild:

- Documented crop-wise and practice-wise weeding challenges
- Assessed terrain, plot size, and accessibility constraints
- Mapped interested local youth as potential Village Level Entrepreneurs (VLEs)
- Capacity Building on maintenance and service in collaboration with SRFMT&TI, Tractor Nagar

Based on this assessment, 11 VLEs across Andhra Pradesh and Odisha were supported through the Innovation Guild Fellowship to pilot weeding as a service models using context-appropriate equipment. Instead of a one-size-fits-all solution, VLEs were mapped with different types of weeding equipment based on crop type, soil condition, terrain, and energy access:

- Brush cutters and battery-operated cutters for inter-row weeding and small plots
- 7 HP power weeders for larger contiguous fields and vegetable cultivation
- Motorised and e-weeder combinations for regions with fuel constraints

S.No.	VLE Name	Region	Details of Machine
1	Pangi Jairam	Araku, A.P	Battery Brush Cutter (Exosolar)
2	Kondibi Kishore	Paderu, A.P	Brush Cutter
3	T Venkataramana	Chinnagottigallu, Chittoor, A.P	7 HP Gaja Power Weeder
4	Y Subramanyam	Cheruvumundrapalli, Chittoor, A.P	7 HP Gaja Power weeder and Brush Cutter with attachments
5	Bijaya Kumar Ghadei	Chandragiri, Gajapati, Odisha	7 HP Velmoc Weeder
6	Dukhiram Sabar	Suklimundi, Nuapada, Odisha	Suryanirbhar Motorised Weeder
7	Mekala Venkatesh	Pamidi, A.P	7 HP Maijo Weima Power Weeder
8	N Anand	Turakapalle, Gooty, A.P	
9	Lasu Tadingi	Uppergumandi, Narayanapatna, Odisha	
10	Rajiv Himerika	Kenduguda, Narayanapatna, Odisha	
11	Aparna Sudheer	Turakapalle, Gooty, A.P	E-weeder combo (Vikalp)

Early adopters such as Venkataramana, Subramanyam and Kondibi Kishore expressed strong interest in offering rental services. Fellowship support helped them move from intent to execution by reducing the risk associated with first-time investment.

ECONOMIC AND SOCIAL IMPACT

VLEs charged Rs. 650 to 1,400 per acre, depending on crop and terrain. Individual VLEs covered 70–75 acres per season, serving 10–15 farmers. Seasonal incomes ranged from Rs. 45,000 to Rs. 50,000 for active VLEs.


Lasu Tadingi


T Venkata Ramana

VLE Name	T Venkataramana	Y Subramanyam	Kondibi Kishore	Lasu Tadingi	Rajiv Himerika	N Anand	Mekala Venkatesh
Village Name	Diguvaguntati varipalli	Cheruvumun drapalli	Paderu	Upergumandi	Kenduguda	Ramrajupalli	Gooty
No. of Farmers Served	12	12	3	12	24	12	11
Charges per Acre	Rs. 650	Rs. 650	Rs. 1400	Rs.1000	Rs.1050	Rs.200	Rs.200
Total Acres Covered	76	74	3	12	22	9.5	11
Total Income	Rs. 49,400	Rs. 48,200	Rs. 4200	Rs.11900	Rs.23600	Rs.1900	Rs. 2200

CONCLUSION

Innovation Guild's approach combining field technology gap assessment with targeted VLE fellowship support shows that sustainable mechanisation is most effective when anchored in local enterprises. By mapping 11 VLEs with suitable weeding equipment, the intervention has reduced drudgery, improved timeliness, and created new rural livelihoods, offering a scalable pathway for inclusive mechanisation.

12

Addressing Irrigation Challenges through Solar EnergyCarts in Baliapal, Odisha

In collaboration with Yuva Vikas Foundation, Balasore

BACKGROUND

In collaboration with Yuva Vikas Foundation (YVF), Innovation Guild conducted field visits to Mayurbhanj and Balasore districts of Odisha on 9th and 10th March 2026. YVF has been actively working in these regions to promote sustainable livelihoods, including the establishment of over 20+ handloom enterprises and the promotion of organic farming practices. Despite these efforts, several technological and infrastructure gaps continue to limit productivity and income generation.

CONTEXT AND PROBLEM STATEMENT

Baliapal, a coastal region in Balasore district, lies across the Subarnarekha river and is primarily dependent on agriculture. Major crops cultivated in the region include groundnut, sesame, mustard, coconut, and vegetables. However, agriculture in this region is highly constrained by inadequate irrigation infrastructure.

Farmers largely depend on diesel-powered oil engines for irrigation, as there is no access to electrical lines for borewell operations. The cost of irrigation is significantly high, approximately Rs. 5,000 per season for renting oil engine pumps, typically used around 10–12 times within a three-month cropping cycle. This high input cost, combined with unreliable rainfall, leaves farmers vulnerable to crop failures and limits their willingness to adopt sustainable practices such as natural farming.

Additionally, the absence of a local repair and service ecosystem further exacerbates the problem, leading to delays and inefficiencies during critical irrigation periods.

Farmers navigating across the Subarnarekha river to reach agricultural lands in Baliapal

INTERVENTION: INTRODUCTION OF SOLAR ENERGYCARTS

To address this gap, the Innovation Guild partnered with Mr. Goutham, CEO of Nature FarmEasy, to introduce portable solar-powered irrigation solutions known as EnergyCarts. As part of the intervention, a 1 HP EnergyCart model was deployed in Baliapal for on-ground demonstrations and community trials.

COMMUNITY RESPONSE AND OBSERVATIONS

Rigorous demonstrations were being conducted in Mayurbanj and Baleswar districts to showcase the machine's performance. Around 50+ requests have come from Baleswar requesting support interms of Government subsidy and Bank loan to purchase the machine.

Absence of nearby power lines for borewell connections, leaving farmers highly vulnerable to crop failure and dependent on rainfall

Portable solar-powered EnergyCart being demonstrated to showcase its irrigation capabilities (Biram Soren, Tulasibani village, Khunta Block, Mayurbhanj)

WAY FORWARD

1. Establishing a Village Level Entrepreneur (VLE) - led rental system for EnergyCarts to ensure affordable access for small and marginal farmers.
2. Developing a network of trained VLEs for installation, repair, and maintenance of solar irrigation systems to ensure long-term sustainability.
3. Linking solar irrigation solutions with ongoing organic farming initiatives to reduce input costs and improve adoption.
4. Expanding demonstrations to nearby villages and building evidence on cost-benefit and impact to attract further investment and institutional support.

CONCLUSION

The introduction of Solar EnergyCarts presents a promising solution to the irrigation challenges in Baliapal. By reducing dependence on diesel, lowering operational costs, and enabling decentralized access to irrigation, the intervention has the potential to support sustainable agricultural transitions in the region.

114

Total Village Level Entrepreneurs (VLEs) supported

660+

Farmer family's reached

29

Women beneficiaries

150+

Villages covered

8+

States covered

90+

Technologies piloted

42+

Unique technologies deployed

10,00,000+

Total rural income generated

PARTNER ORGANISATIONS

Gramya

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WINS

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