



INNOVATION GUILD

Building Capacity for Last-Mile Innovation:
**STRENGTHENING VILLAGE LEVEL
ENTREPRENEURS (VLES)**





ABOUT INNOVATION GUILD

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

Since 2024, Innovation Guild (IG) 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 grassroots level.

Supported by



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BUILDING CAPACITY FOR LAST-MILE INNOVATION: STRENGTHENING VILLAGE LEVEL ENTREPRENEURS (VLES)

Village Level Entrepreneurs (VLEs) operate at the intersection of farmers and technology providers - demonstrating machines, providing repair and maintenance services, managing custom hiring, and adapting technologies to local conditions. However, most potential VLEs emerge from informal backgrounds, with little or no exposure to technical skills and enterprise planning. Without targeted capacity building, their ability to sustain and scale enterprises remains limited.

Capacity building is a foundational requirement for nurturing VLEs as reliable service providers and rural entrepreneurs. Innovation Guild recognises that access to machines alone does not translate into adoption, what matters is the availability of skilled local individuals who can install, operate, troubleshoot, modify, and economically manage these technologies over time.



INSTITUTIONAL COLLABORATIONS FOR SKILL DEVELOPMENT

Key Collaborations include

Southern Region Farm Machinery Training and Testing Institute (SRFMT&TI), Anantapur

Hands-on training in repair and maintenance of power weeders, brush cutters, oil engines, paddy reaper and small farm machinery.

Central Farm Machinery Training and Testing Institute (CFMT&TI), Budni

Hands-on training in repair and maintenance of processing machinery, power weeders, brush cutters and tractors

Local ITIs institutions

Basic safety, mechanical, electrical, and fabrication skills

Innovator-led training facilities and workshops

Enabling VLEs to directly interact with machine designers and manufacturers, understand design logic, and provide field feedback

Innovation Guild facilitated structured capacity-building programs for 50+ VLEs across multiple states.

This report documents the VLE capacity building efforts undertaken by Innovation Guild, highlighting the training approach, learnings, and outcomes that contribute to strengthening rural innovation ecosystems.

SOUTHERN REGIONAL FARM MACHINERY TRAINING & TESTING INSTITUTE (SRFMT&TI), TRACTOR NAGAR, ANANTAPUR

A 5-day training program has been conducted to Village Level Entrepreneurs (VLE's) from Seethampeta and Araku from **11 Nov 2024 to 15 November 2024** at Southern Region Farm Machinery Training and Testing Institute (SRFMT&TI), Tractor Nagar, Anantapur.

The training was focussed on complete **Repair and Maintenance of Power Weeder** to empower and equip village level entrepreneurs with the knowledge, skills, and tools necessary to strengthen their businesses.

9

No. of VLEs

1. Arika Nithin Kumar
2. Mutaka Prasad Rao
3. Pangi Jairam
4. Arika Seshan Rao
5. Biddika Ballandu
6. Kuda Venkatesh
7. Vuyika Prakash
8. Korra Gopal
9. Korra Narsingha Rao



DAY 1

Institute Orientation, and Hands-on Training on Power Weeder Operation

The five-day training program commenced with participant registration followed by an orientation session at the **Southern Regional Farm Machinery Training & Testing Institute (SRFMT&TI)**. The orientation was conducted in the presence of **Dr. B. M. Nandede** (Director), **Er. Vijay Badaya** (Senior Agricultural Engineer), and **Mr. Nitesh Kumar Verma** (Agricultural Engineer), who introduced the participants to the institute's mandate, facilities, and training approach.



The technical sessions on Day 1 focused on the **10 HP power weeder**, a machine widely used by small and marginal farmers. **Mr. Murthy garu**, a senior and experienced technical trainer, delivered detailed sessions covering the machine's specifications, working principles, safe operating practices, troubleshooting methods, and routine repair and maintenance procedures. Emphasis was placed on operator safety and preventive maintenance to ensure long-term machine performance.



DAY
2

Repair & Maintenance of 5 HP Kirloskar Engine

The second day of the training program focused on developing hands-on repair and maintenance skills, along with advanced field-level operation of power weeders.

A detailed demonstration on complete repair and maintenance of a 5 HP Kirloskar diesel engine was conducted for the VLEs. The session emphasized the importance of daily inspection and preventive checks prior to starting the engine, including fuel, lubrication, cooling systems, and fastener conditions. Trainers also introduced the various tools, equipment, and spare parts required for routine servicing and major repairs, along with key adjustments specific to power weeder operation.

Under the supervision of technical staff, the VLEs successfully dismantled and reassembled the engine, gaining practical knowledge of components such as the cylinder head, piston, fuel injection system, lubrication system, and governor mechanism.



DAY 3

5 HP Power Weeder: Maintenance and Troubleshooting

This session focused on building practical competencies among VLEs in the **dismantling, assembling, maintenance, and troubleshooting of a 5 HP power weeder engine.**

The trainers explained the functions of **various power weeder components** and demonstrated methods to **identify common operational problems and repair requirements.**

A 5 HP Maijo Weima Power Weeder was provided to the VLEs for hands-on troubleshooting exercises. Under the guidance of technical staff, all VLEs actively participated in the complete dismantling of the engine, carefully observing and noting the name, position, and function of each component.



KEY TECHNICAL ASPECTS COVERED DURING THE SESSION INCLUDED

- Setting of piston timing in alignment with the crankshaft and cam gear.
- Importance and functioning of piston rings.
- Working principles of the fuel injection pump and injector system.



DAY 4 Operation of Paddy Reaper and Power Weeder Gearbox Troubleshooting

On the fourth day of training, the focus was on hands-on operation of the paddy reaper and troubleshooting and maintenance of the power weeder gearbox.

A paddy reaper was provided to the VLEs for practical field operation. Each VLE operated the machine to understand its working mechanism, field manoeuvrability, and turning at corners. Trainers emphasized the importance of proper alignment, optimal operating speed, and handling techniques to minimize crop loss during harvesting operations.



In addition, the trainers explained the key differences between petrol and diesel engines, with specific reference to their operational characteristics, maintenance requirements, and common failure points. VLEs were trained on conducting routine maintenance checks, identifying early signs of wear and tear, and timely replacement of consumable parts such as blades and belts to improve machine efficiency and extend service life. It was also noted that approximately four paddy reapers are currently available in the Seethampeta region, indicating a growing scope for repair and service-based enterprises.



VLE's were taken on a tour around the testing centre (engine performance test lab, rotary shaft performance test lab, control rooms) to understand the importance of testing and its certification before buying any machinery.

DAY 5

Brush Cutter Operation, Repair and Maintenance

The fifth and final day of the training program focused on repair and maintenance of brush cutters, followed by assessment of learning outcomes, certificate distribution, and collection of feedback from VLEs.

Trainers first demonstrated the safe operation of brush cutters, emphasizing the use of personal protective equipment (PPE). Subsequently, each VLE individually operated the brush cutter under supervision to gain hands-on experience. The brush cutter was then systematically dismantled, inspected, reassembled, and operated to verify proper functioning.

The program concluded with a certificate distribution ceremony, recognizing the successful participation and completion of training by the VLEs.



KEY TAKEAWAY'S FOR THE VLE'S

- Enhanced understanding of oil engine, power weeder and brush cutter repair and maintenance.
- Hands of experience on paddy reaper and learning about major complaints and its trouble shooting.
- Increased confidence to take up new agricultural machinery from the hands-on experience obtained from the institute.
- Improved engine servicing, piston timing and hauling skills.
- Capacitated formation of support network among villate entrepreneurs and in the community.

Acknowledgement:

We extend our heartfelt gratitude to Dr. B.M. Nandede, Dr. Maharani Din and staff of SRFMT&TI, Anantapur for their support in making this program possible.



I have learned about repair and maintenance of power weeder, regular repair works of paddy reaper, oil engine and brush cutter repair. The learnings from this training are very useful to me and my surrounding fellow farmers. Now I am confident to give service to the existing machinery.

I have operated paddy reaper for the first time and learned about its repair. About 4 reapers are available in my area which i am confident to provide service. I operated Power weeder learned about its repair. I learned how to do regular inspection like air filter, fuel filter cleaning, piston timing etc.,



Power weeders are largely available in my area which are not being serviced regularly because of lack of expertise. From the hands on training, I learned how to do servicing to power weeder engine and piston timing setting. I learned about different machineries available in the institute.

I have learned repair and maintenance of oil engine, power weeder and brush cutter. Operated the paddy reaper in the field. Noted the names of different spare parts. The certification from this national institute is very useful for me in setting up my enterprise.



I have noted how to do regular inspection of power weeder before operating. I have dismantled and assembled the oil engine, power weeder and brush cutter, learned the names of all parts. I operated the paddy reaper and learned about its operation.

I learned the importance of following time and how everything is happening on schedule in the institute. I learned about various machinery and repair and maintenance of weeder engine. I learned the importance of field testing before purchasing the machine. I noted the types of complaints that occur in engines.



Most complaints in my area are on weeder engine trouble. I don't know piston timing setting and rings arrangement, which i learned 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.

In the training, i learned the servicing of power weeder, regular complaints in engine and names of spare parts. Noted how to conduct daily inspection and conduct piston timing setting. As an auto mechanic, this training is very useful to me in repairing the engines.





CENTRAL FARM MACHINERY TRAINING AND TESTING INSTITUTE (CFMT&TI), BUDNI

A 5 days training program on repair and maintenance of power weeder, brush cutter, reaper, processing machinery and paddy transplanter were conducted for VLEs from Lulka, Magarda, Bineka and Nayapura villages from **08 December 2025** to **12 December 2025** at Central Farm Machinery Training and Testing Institute, Budni in collaboration with Gramya Ventures.

7 No. of VLEs

1. Charan Lal
2. Nitesh Nandawanshi
3. Ashutosh Nandawanshi
4. Devendra
5. Sohil Uikey
6. Sanjay
7. Kailash sen

DAY 1

Orientation and Interaction with Institute Leadership

The five-day training program commenced with registration and an introductory interaction with the Director of the Institute.

Followed by an orientation session conducted by Mr. Pritam Yadav, who familiarized participants with the mandate of the Central Farm Machinery Training and Testing Institute (CFMT&TI), its training methodology, and the range of facilities available at the institute. The orientation helped set the context for the technical sessions planned over the subsequent days.

The VLEs visited multiple departments and laboratories within the institute, where they were exposed to a wide range of agricultural machinery and equipment.



DAY 2

Exposure to Processing Machinery, Hands-on Operation of Rice Mills and Food-Processing Equipment, and Practical Understanding of Tractor Systems

On the second day, VLEs visited the processing machinery laboratory and gained hands-on experience with various agricultural and food-processing equipment, including groundnut decorticators, chips-making machines, dal mills, soybean processors, blowers, mini rice mills, and millet processing machinery.

In the afternoon, VLEs explored cut-section models of tractors from leading manufacturers and learned about engine power generation, transmission systems, electrical and hydraulic systems, and key components. This session enhanced their practical understanding of tractor operation, diagnostics, and basic maintenance, enabling them to provide better local service support.





DAY 3

Field Operation of Power Weeder, Reaper and Brush Cutter

On the third day, Mr. Pritam Yadav and Mr. Govind Vishwavarma conducted detailed technical sessions on the operation of power weeders, reapers, brush cutters, and paddy transplanters. Prior to commencing field operations, the trainers emphasized machine safety protocols, highlighting the importance of personal protective equipment and safe handling practices to prevent accidents and injuries.

The VLEs were then provided individual hands-on opportunities to operate 7 HP power weeders in the institute’s demo plots, where they performed actual weeding operations. Similarly, each participant operated reapers and brush cutters to harvest paddy crops, enabling them to understand machine handling, field maneuverability, and operational efficiency under real field conditions.





DAY 4 Repair & Maintenance of Brush Cutter, Power Weeder and Reaper

On the fourth day, the morning session focused on the repair and maintenance of brush cutters. All the VLEs collectively dismantled and assembled the brush cutter engine. Upon successful assembly, the engine was started and operated in the field, enabling participants to validate their work and gain confidence in complete engine reassembly and functionality checks.

Following this, Mr. Pritam Yadav and Mr. Govind Vishwavarma conducted a detailed session on critical safety measures to be followed during the operation of power weeders and reapers. During the afternoon session, the VLEs received hands-on training in routine servicing activities, including engine oil and gear oil replacement, air filter cleaning and replacement, and undertaking minor repairs on power weeders and reapers.



DAY 5 Exposure to Advanced Farm Technologies and Live Drone Spraying Demonstration

On the final day of the training program, Mr. Pritam Yadav introduced the VLEs to emerging and advanced technologies in farm operations. As part of this session, the participants gained practical exposure to the use of drones in agriculture, including a live demonstration of drone-based spraying conducted by the institute's technical staff. This session enabled the VLEs to understand the growing role of precision agriculture technologies and their potential applications in improving efficiency and service delivery in modern farming systems.



During the certificate distribution ceremony, the Director of the Institute, Dr. B. M. Nandede, interacted individually with each VLE. The Director also sought feedback from the VLEs on the training methodology, relevance, and usefulness of the program in supporting their entrepreneurial aspirations.

As part of the training closure, each VLE was provided with a basic tool kit supported by Innovation Guild to facilitate the initiation of post-training service activities. The tool kit included a spanner set, cutting pliers, circlip pliers, hammer, axe blade, adjustable wrench (French key), and screwdrivers, enabling the VLEs to undertake minor repairs and maintenance work at the village level and immediately apply their newly acquired skills.



KEY TAKEAWAYS FROM TRAINING

- VLEs gained practical, field-level knowledge on the operation of key agricultural machinery, enabling them to handle equipment confidently under real farming conditions.
- Participants acquired hands-on experience in repair and maintenance of critical farm machines, including brush cutters, power weeders, reapers, and paddy transplanters, strengthening their technical competence for service delivery.
- VLEs who already own or operate tractors enhanced their understanding of basic tractor systems, enabling them to independently carry out minor repairs and routine maintenance, thereby reducing downtime and external service dependency.

SRI SAI VENKATESWARA ITI (SSV ITI), ANANTAPUR

7

No. of VLEs

1. Some Ganesh
2. K Mallikarjuna
3. Panjani Vishnu Vardhan
4. Nagendra
5. M Ganesh
6. Gundluru Yeswanth
7. P Narendra

A four-day basic workshop training programme was conducted in collaboration with Sri Sai Venkateswara Industrial Training Institute (SSV ITI), Anantapur on December 11-13, 2024.

The programme focused on equipping VillageLevel Entrepreneurs (VLEs) with foundational skills in workshop operations, welding, and basic electrical systems, with a strong emphasis on safety and hands-on practice.

The training commenced with an orientation on the Innovation Guild’s mission and the strategic role of VEs in grassroots innovation. This was followed by comprehensive safety training covering personal safety, general workshop safety, machine safety, and safety signage. Participants were introduced to Personal Protective Equipment (PPE) including eye, head, hand, foot, and body protection, emphasizing safety as a non-negotiable component of workshop operations.



Introduction to Tools and Workshop Operations

Participants were familiarized with commonly used workshop tools and equipment, including measuring instruments, marking tools, cutting tools, striking tools, and precision instruments. Core workshop operations such as filing, marking, punching, chipping, tapping, reaming, sheet metal cutting, drilling, and grinding were demonstrated and practiced.



Welding and Fabrication Skills

Participants were familiarized with commonly used workshop tools and equipment, including measuring instruments, marking tools, cutting tools, striking tools, and precision instruments. Core workshop operations such as filing, marking, punching, chipping, tapping, reaming, sheet metal cutting, drilling, and grinding were demonstrated and practiced.



Basic Electrical Concepts

The final phase of the training covered basic electrical concepts such as voltage, current, resistance, and Ohm's Law. Participants learned about series and parallel connections, electrical tools, wiring selection, and measurement using voltmeters and ammeters. Tool identification using an electrical board system further strengthened applied learning.



BASAVESWARA ITI, RAICHUR, KARNATAKA

Innovation Guild in partnership with Prarambha and WELL Labs conducted a Basic Skill Training for VLE's at Basaveswara ITI training institute, Raichur, Karnataka from 09-05-2025 to 11-05-2025.

This covered basic technical training of 6 Village Level Entrepreneurs aspiring to bring new technologies in their villages for various operations. Over the 3-days training, the VLEs were trained on:

- Workshop Safety & Tool Handling.
- Welding & Fabrication Techniques.
- Electrical Wiring & Circuitry.
- Quality Control & Field Assessments.

Drudgery and labor shortage are the major reasons for requesting these machines. Even though there are some suppliers available for these technologies, VLEs have faced issues in getting them repaired and therefore, have shown keen interest in building their skills with Innovation Guild.

We are thankful to the trainers and the facilitating organizations for making this a successful start for the participating VLEs.

After this basic training, Innovation Guild has extended its support to interested VLEs in accessing right technologies for their problem statements, access to demos as required, building advanced skills for the maintenance and servicing of those technologies, and other support required in building their business models to ensure the technology adoption for livelihoods in these areas.

7

No. of VLEs

1. **Alavaleppa**
2. **Hanumanth Basappa**
3. **Basanagouda Basareddi**
4. **Basavaraj Kodekal**
5. **Shivaraj Amaresh**
6. **Anjeneya**



NEED-BASED CAPACITY BUILDING FOR VLES: BATTERY-OPERATED WEEDER TRAINING AT SEETHAMPETA

As Innovation Guild continues to expand its Village Level Entrepreneur (VLE) network, there is a growing demand from the field for customized, need-based capacity-building programs that respond directly to local mechanization and service requirements.

In response to these ground-level requests, Innovation Guild actively collaborates with relevant innovators and technical partners to design and deliver context-specific training programs. One such initiative was facilitated in partnership with Suryanirbhar Agritech Private Limited, an Innovation Guild-associated innovator.

A two-day on-field training program was organized at Seethampeta, Parvathipuram Manyam district, focusing on the repair, maintenance, and operation of battery-operated weeder machines developed by Suryanirbhar Agritech. The training was conducted for VLEs operating in the region to strengthen their technical capability and service readiness.

Mr. Uday, Technician from Suryanirbhar Agritech, visited Seethampeta and conducted a comprehensive operational and technical training session. The program covered machine usage, complete electrical wiring, assembly and disassembly, routine maintenance, servicing, and breakdown handling. Emphasis was placed on practical, hands-on learning to ensure that VLEs could independently operate and service the machines in field conditions.

Through such exposure and hands-on training, VLEs are now better equipped to conduct demonstrations, promote these technologies, and offer weeding services as part of their local enterprise activities. This directly strengthens last-mile technology adoption while creating new livelihood opportunities for rural youth.



HANDS ON TRAINING FOR VLES ON MILK QUALITY TESTING EQUIPMENT REPAIR AND MAINTENANCE, KHURJA

During the field visits in collaboration with TRIF on 23rd December 2025, repair and maintenance of existing milk quality testing equipment was a major challenge highlighted by the community. Tappal and the surrounding villages have high levels of milk production, supported by village-level milk quality testing centers. However, even for minor repairs, the milk testing equipment must be taken to nearby towns, leading to delays, additional costs, and service disruptions.

Major repairs noted are:

- PCB (sensor) in lactoscan milk analyzer and sensor in milk lacto scanner (lacto machine) gets damaged/faults circuit due to milk leakage/droplets in machine.
- The frequency of damage is high and cost beared on replacement of PCB is also high (10k-12k).

As part of need based capacity building for VLE's, a one day training program on repair and maintenance of existing MilkQuality Testing equipment was conducted for 4 VLEs from Tappal at Shri Krishna Enterprises, Khurja.

The Training was facilitated by Mr. Jitu, expert in dairy systems repairing. The training covered various kinds of machinery useful for multiple operations in dairy systems and multiple models of milk testing machinery available in the market. Mr. Jitu dismantled all the major parts of the milk testing machine and practically trained VLEs how to do repairs for individual parts. VLEs underwent hands-on experience of doing repairs for the minor parts of the machine.

The following things were covered by a trainer during training.

1. How to change pipe, plunger, syringe.
2. How to change the keyboard or key.
3. Motor PCB replacement.
4. Cleaning of PCB Controller.
5. How to do repairs for angle pipes.
6. How to check and calculate the fat and SNF in milk.
7. Sticking of machines.
8. Calibration of weighing balance.

Explained about AC and DC power supply connections to the machine.

4

No. of VLEs

1. Sonvir Singh
2. Vishal Gaur
3. Khosindar Kumar
4. Premraj Singh

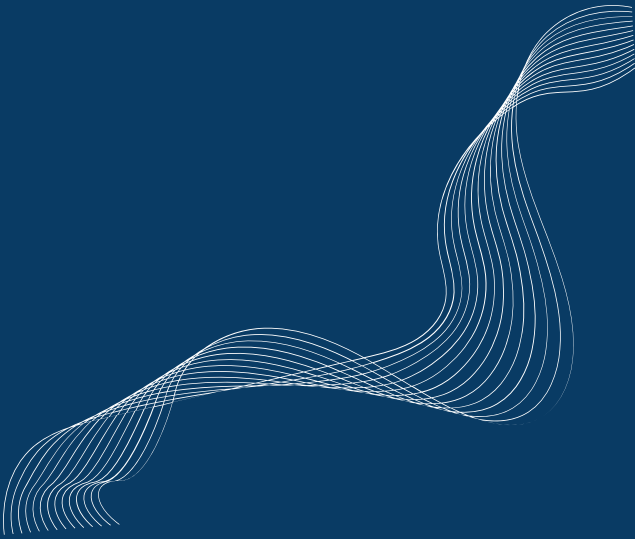


KEY TAKEAWAYS FROM TRAINING

- The VLEs are confident in doing small repairs for milk testing machinery, instead of going to towns for every small repair.
- Earlier PCB replacements and stickering were done by certified technicians only, now VLEs are able to do these repairs easily.







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