

Aligning JIVA with the **SUSTAINABLE DEVELOPMENT GOALS (SDGs)**

*To improve the livelihoods and resilience of
smallholder Indian farmers and their communities*



Program Overview

The Joint Initiative for Village Advancement (JIVA) is a holistic, demand-driven community development program co-created by the John Deere Foundation, PYXERA Global, and the communities they serve in Rajasthan, India. Since 2013, JIVA has grown from its pilot project area of three villages to 24 villages.

JIVA's mission is to improve the livelihoods and resilience of Indian smallholder farmers—by investing in the farmers of today and tomorrow. Its pillars—resilient agriculture, quality education, and leveraged talent from John Deere—are grounded in over seven years of partnership, collaboration, learning, and adaptation between the John Deere Foundation and PYXERA Global.

JIVA, which means “livelihood” or “life” in the local dialect, focuses on two key objectives:

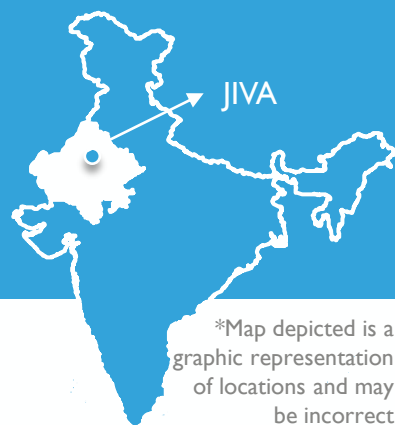
- Increase agricultural production, farmer income, and farmer resilience to market and climate shocks
- Cultivate the next generation of farmers by strengthening access to accountable, high-quality, and equitable education.

TABLE OF CONTENTS

03	EXECUTIVE SUMMARY
07	SUSTAINABLE DEVELOPMENT GOAL #2: ZERO HUNGER
10	SUSTAINABLE DEVELOPMENT GOAL #4: QUALITY EDUCATION
13	SUSTAINABLE DEVELOPMENT GOAL #5: GENDER EQUALITY
16	SUSTAINABLE DEVELOPMENT GOAL #8: DECENT WORK & ECONOMIC GROWTH
19	SUSTAINABLE DEVELOPMENT GOAL #13: CLIMATE ACTION
21	SUSTAINABLE DEVELOPMENT GOAL #17: PARTNERSHIPS FOR THE GOALS

Executive Summary

Embedding Resilience— Running Towards the Horizon



JIVA: Deeply Rooted in the Communities it Serves

JIVA aims to improve the systems that catalyze development in the communities of Indian smallholder farmers. The solutions JIVA co-creates with its stakeholders must be integrated and responsive to people's daily realities to be sustainable.

*JIVA views the SDGs as interwoven. **SDG 2**, **SDG 4**, and **SDG 8** align directly with JIVA's thematic intervention areas of resilient agriculture and accountable education. **SDG 5**, **SDG 13**, and **SDG 17** cut across all aspects of the project.*



In December 2019, John Deere, PYXERA Global, and the communities in the JIVA project area celebrated the second JIVA-John Deere Skills-Based Volunteerism project on agriprenuership. The leadership and performance progressively demonstrated by farmers, teachers, students, and parents signaled that the communities were increasingly equipped to sunset the program. In 2020, the most comprehensive shock in recent memory—the COVID-19 pandemic—changed the world.

Since the advent of the COVID-19 pandemic, institutions, markets, and daily life have been disrupted and reshaped. Globally, approximately 123 million more people will face acute food insecurity and up to 24 million students will drop out of school.

In India, research by Azim Premji University indicates that 37% of farmers in India were unable to harvest their crops and 77% of smallholder farmers consumed less food during the national lockdown. According to UNICEF, only 8.5% of students in India have access to the internet. In many parts of the country, when schools closed in March 2020, education services were not available for those without internet access for up to ten months.

Shocks tend to expose the cracks in the system—but they can also illuminate the light that shines through.

The inversion of the global and local systems have underscored the value of John Deere's investment in JIVA – which aims to embed resilience in farming communities. As JIVA embarked on its seminal year – adapting to adversity proved essential to maintaining food security, averting a "lost generation" of students, and ensuring a brighter and more prosperous tomorrow. The resilience of the communities and the adaptive ingenuity of the homegrown JIVA team persevered.

As JIVA continues to deliver value, the trust and relationships that enabled JIVA to scale its interventions to new communities in 2017 and 2019 and increase its return on investment continue to deepen and endure. The result is the set of achievements—as contextualized and articulated in relation to the Sustainable Development Goals (SDGs)—in this report.

Embedding Resilience—Adapting to Adversity

JIVA combines two interventions critical to farmers' immediate and long-term success: agricultural training to sustainably increase food security, farm productivity, and farm profitability and youth education to inspire opportunity and equity. Farmers with more education are more productive, profitable, adaptable, and resilient. By combining agricultural training and youth education, JIVA does something unique—it invests simultaneously in the farmers of today and tomorrow.

In 2020, the COVID-19 pandemic rapidly unfolded in Rajasthan, India. As farmers began to harvest their winter crops and prepare to plant their fields for the rainy season, lockdowns and travel restrictions burdened agricultural activities, disrupted supply chains, and negatively impacted farmers' incomes.

In response to the adversity presented by the COVID-19 pandemic, JIVA pivoted its resilient agriculture activities and applied a two-track approach to supporting farmers with different levels of access to technology. To safely transfer knowledge on good agricultural practices and farm management to individuals with low access to technology, JIVA provided tele-consultations – supplemented by in-person visits once lockdown restrictions were eased.

To cultivate a sustainable community of peer-to-peer learning, JIVA created and channeled videos, photos, and advice on good agricultural practices through its Farmer WhatsApp Group. In parallel, the JIVA team partnered with the local government to embed resilience into the initiative. **Together, the government agriculture supervisors and the JIVA team moderated the online farmer group – where leading farmers in the community alongside agriculture experts provided extension services and examples of good agricultural practices.**

Today, for 25% of farmers in the project area with access to a smartphone, the forum has become the central platform where farmers seek guidance and share their ideas and information. As JIVA sunsets, it is anticipated that the online forum – supported by the government and community-driven extension services – will continue to provide a valuable source of knowledge and wisdom for the increasing number of farmers who are transitioning online and engaging to support each other.

Each time the lockdowns have been eased or lifted, the JIVA team rebounds to support farmers through one-on-one farm visits, small-group trainings, and connecting farmers with critical market actors. Each method is complemented and supported by community-based Agriculture Volunteers, who are key resources for agriculture extension and will become part of the 120 Resource Farmers that will continue to provide guidance to farmers throughout the project area as JIVA sunsets its activities.



Farmers Participating in a Training on Nutrition Gardens and Vermicompost



*Badamibai Dhobi
of Malikgeda Village in Her Nutrition Garden*

Embedding Resilience—Adapting to Adversity

The value of JIVA’s holistic, community-based approach to resilient agriculture is most effectively demonstrated by farmers’ absorptive capacity and change in incomes – within the context of the community’s environment.

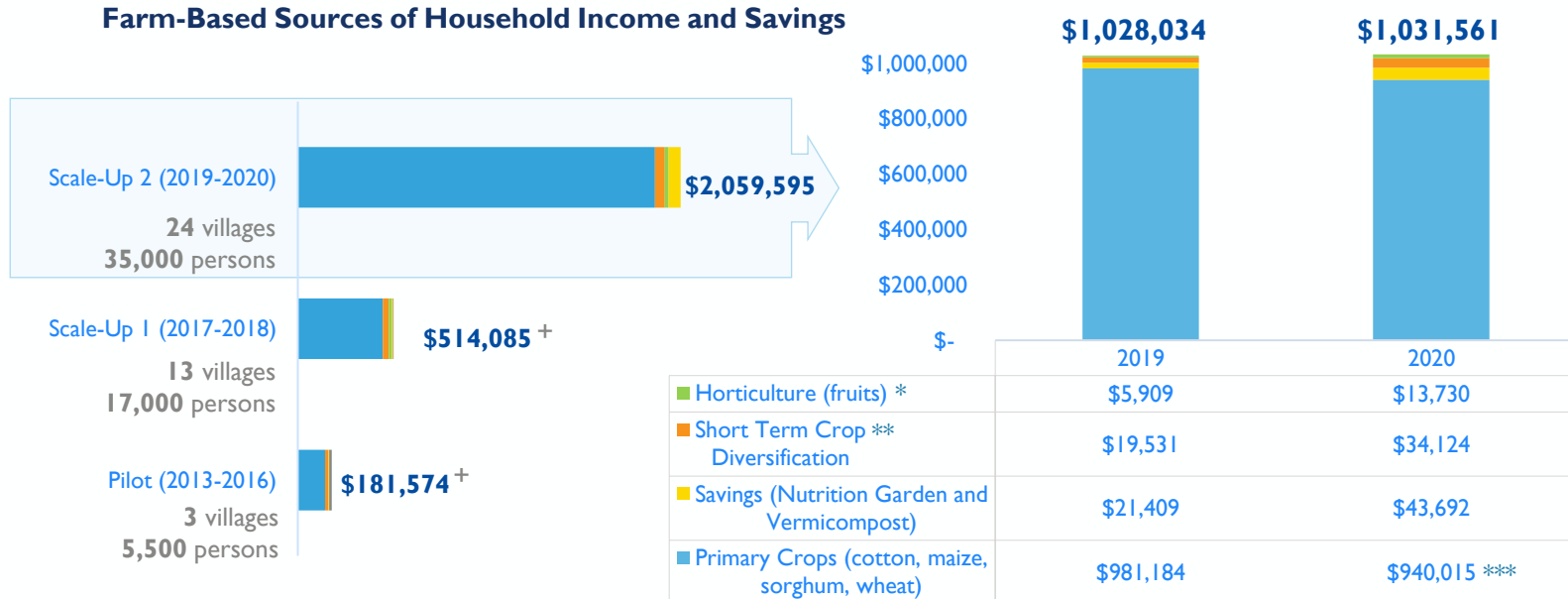
In 2020, the incomes of many farmers in India were negatively impacted. Research by Azim Premji University shows that 37% of farmers in India sold their harvest at reduced prices, while others were not able to harvest their crops due to the COVID-19 pandemic.

In the JIVA project area, farmers’ capacity to recognize the value, assimilate, and apply good agricultural practices and crop diversification leading up to the COVID-19 pandemic underpinned their and their community’s ability to absorb and mitigate shocks and position for recovery. For example, the lockdowns in the project area elevated food insecurity for many households. However, **the 82,122 kilograms of vegetables produced in nutrition gardens provided immediate food relief when markets were closed and have been donated by farmers to family members and neighbors in need and to support patients in COVID-19 quarantine centers.**

Similarly, the crops primarily grown in the project area (cotton, maize, sorghum, and wheat) endured market price volatility—which resulted in an estimated combined decline of 4% in income from these crops. However, farmers practicing crop diversification – to include commercial vegetable and fruit production – minimized the decline in income across the project area by half – to just 1.9%. Finally, when farm-based sources of income were combined with savings generated from cultivating nutrition gardens and vermicompost, **the trend in overall household income turned positive – and increased by approximately 0.34%.**

By embedding resilient agriculture in the JIVA project area, farmers, their families, and their communities were better equipped to weather the COVID-19 shock. In 2021, the JIVA team aims to work with farmers and other key stakeholders to solidify the systems that support and sustain resilient farming communities – both in times of abundance and devastating shocks.

Farm-Based Sources of Household Income and Savings



* Income from horticulture will accelerate as the fruit orchards mature (i.e. pomegranates planted in 2014 reached full maturity only in 2019)

** Includes commercial vegetables (2014-2020) and spices and medicinal plants (2015-2018)

*** 4% decrease in income from primary crops is largely due to crop substitution and market price fluctuations (reduction in area under cotton cultivation and lower maize prices). The 2020 income from wheat is an estimate. The collection of harvest data is delayed due to the second wave of COVID-19 in India.

+ Interventions in livestock management (2014 – 2018) yielded \$13,923 in the Pilot phase and \$2,765 in the Scale-Up 1 phase. Livestock management was discontinued after the government began a similar program.

Embedding Resilience – Averting a Lost Generation

The John Deere Foundation and PYXERA Global aim to reverse the tide of stagnating rural communities. Studies show that educated farmers more effectively navigate weather, market, and other shocks. While farmers are often born into farming families, there is no guarantee that the knowledge sown by a parent will be reaped by their children. Therefore, in addition to working with farmers to improve agricultural practices and ultimately profitability, savings, and reinvestment back into the farm, JIVA also strategically invests in the potential of the next generation of farmers by ensuring sustainable, quality education is available and accessible.

Prior to the COVID-19 pandemic, significant progress had been made in the quality of education available in the JIVA project area. The ratio of **students scoring above 80% in subject-wise tests increased from 22% to 35%** and the ratio of students scoring below 40% reduced from 32% to 17%. **Ten villages were declared drop-out free** by the government and the returns in increased lifetime earnings from reintegrating students who had or were at risk of dropping-out was \$1,536,483. The returns in increased household savings as a result of students transferring from costly private schools to improved government schools was \$59,247 – **making the estimated cumulative return on JIVA's accountable education initiative \$1,595,730.**

Since March 2020, the JIVA team has pivoted its accountable education initiative to navigate the protracted schools closures and mitigate the backslide in educational achievements made to date. When the government initiated its e-learning platform – but over 80% of students did not have access to online learning – JIVA developed, distributed, provided remote tutoring, and graded offline learning materials (OLMs) to help students follow their schools' curricula at home. In the absence of regular testing practices to monitor learning outcomes, the scoring of the OLMs revealed that **the ratio of students scoring above 80% in OLMs increased from 34% to 63%** and the ratio of students scoring below 40% reduced from 15% to 5%.

Despite the prevailing uncertainty, the ingenuity of those JIVA serves are embedding resilience into quality education in the project area. In October 2019, JIVA partnered with 16 government STEM teachers to form a group with the aim of co-creating and implementing innovative teaching methods that develop students' critical thinking skills. Over the last year, the group has proactively met monthly to develop new skills, learn from each other, generate innovative tools, and replace ineffective pedagogic approaches with engaging and effective methods that increase students' interest in STEM fields. **The membership of the STEM teachers group now includes all 23 STEM teachers in the JIVA project area** and the teachers are equipped to nurture and sustain their delivery of quality, effective teaching.

By embedding resilient and accountable education in the JIVA project area, teachers, students, parents, and School Management Committees came together and navigated the COVID-19 shock. As it prepares to sunset in 2021, JIVA aims to work with the education stakeholders to root the accountability mechanisms that help ensure the system of quality education endures and continues to blossom.



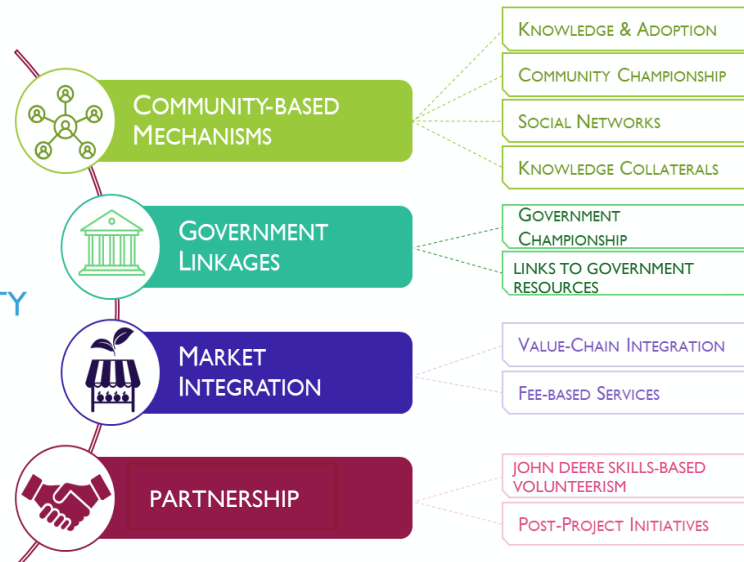
Child Parliament Members Meeting in Pemakheda Upper Primary School to Discuss OLM Distribution in the Communities



STEM Group Meeting in Badalia Upper Primary School to Design Hands-On Teaching Materials

The multigenerational and integrated nature of JIVA, combined with its authentic commitment to partnering with farming communities and leveraging John Deere's extraordinary global talent to enhance the initiative, elevates the vision and results of JIVA into a class of its own. The central factor that has enabled and will continue to ensure the value of JIVA endures beyond its lifetime is the integration of project sustainability mechanisms from its inception that embed resilience into the community.

JIVA SUSTAINABILITY PILLARS



The JIVA team and the communities in the project area enter the final grant year with their feet on the ground and their eyes on the horizon. The COVID-19 pandemic tested the strength of the systems that support the current and next generation of farmers. In the face of adversity, the JIVA team and the communities applied their ingenuity to adeptly navigate income shocks, food insecurity, and school closures. While some work remains, it is clear that community members are increasingly equipped with the knowledge and tools to sustain their collective journey towards prosperity. As JIVA prepares to sunset, the leadership increasingly demonstrated by farmers, teachers, students, School Management Committees, Child Parliaments, parents, and the local government instills confidence that the community is cultivating a future of sustained growth – from a foundation of resilience.

Looking toward the horizon, the JIVA team's primary objective for 2021 is to work with the key stakeholders in the project area to solidify the systems and tools that support and sustain resilient farming communities. Continuing to strengthen participation in the Farmer WhatsApp Group – through trainings and its partnership with the local government – is essential to ensuring that the opportunity and value of farmers learning from each other remains accessible, especially as an increasing number of farmers transition online. In 2021, JIVA will also prioritize building the capacity of and transferring knowledge to the 120 Resource Farmers who embody the spirit of JIVA and will continue to light the way in good agricultural practices, crop diversification, nutrition garden, and vermicomposting.

Given the positive relationship between farm productivity and education levels – it is unclear how the impacts of the COVID-19 pandemic on the education of youth will effect the future generation of farmers. However, JIVA is encouraged by the beacons of light shining from the students, School Management Committees, Child Parliaments, and teachers in the project area.

Pushkar Lal Kumawat, an ERC teacher, recently started two tutoring centers that offer education services to students for a small fee. By utilizing the lessons learned through JIVA's training and the relationships he built with parents and students, he has embarked on a social enterprise that aims to ensure quality education remains accessible to students in the project area. Over the coming years, he plans to scale the tutoring centers to additional villages and recruit and train new teachers in the innovative teaching methods he learned through JIVA.

Equally inspiring is the initiative recently taken by 40 government teachers. After witnessing the value generated by the STEM teachers group over the last year, they formed their own groups for languages and social sciences – with the aim of enhancing their knowledge and teaching methods and improving the learning outcomes of students in the project area.

Further illuminating the horizon are the sustained sources of income that will be generated for the schools through the surplus energy supplied by their solar panels and for the community through their communal orchards – which will be used to chart their own course.

Sustainable Development Goal #2



ZERO HUNGER

End hunger, achieve food security, improve nutrition, and promote sustainable agriculture.



Kailashi Devi & Naru Kumawat

India ranks **80th** out of 104 countries on the Global Hunger Index, comprising a **quarter** of the world's undernourished population. **248 million** people in India face insufficient food supply.

In Rajasthan, **11.6 million** people—**14.5%** of the state's population—are food insecure.

Approximately **23 million** Indians have migrated away from their rural homes to urban areas in search of employment and better living conditions.

“The JIVA trainings helped us increase our income from agriculture and reduce the need for my husband to leave and find a job in the city. We plan to increase our cattle to earn additional income. I am also very thankful for JIVA's guidance on our nutrition garden, which has become a much-valued source of nutritious vegetables, especially during the COVID-19 pandemic.”

– KAILASHI DEVI KUMAWAT

Kailashi Devi Kumawat, 36, is a smallholder farmer and lives in Mau village with her husband Naru and two children. When JIVA scaled its resilient agriculture initiative to her village in 2019, she sought guidance from the JIVA team on how to improve the productivity of their 1.78 bigha (0.28 ha) farm so that her husband would no longer need to migrate to put food on their table.

Through JIVA's trainings on good agricultural practices, Kailashi learned about eco-friendly methods that would improve the soil fertility of her farm, which had declined due to years of using chemical fertilizer. This year, she produced and used 900 kg of vermicompost – which reduced the use and cost of applying chemical fertilizers on her farm by half. Kailashi also started using improved seed varieties, applying timely pest management techniques, and irrigating her farm from a shared well using methods that reduce groundwater use. **The result is an increase in the productivity of her cotton crop by 50%, maize crop by 40%, and wheat crop by 16%.** Compared to 2019, and despite the market shocks driven by the COVID-19 pandemic, **the income generated from Kailashi and Naru's farm increased by 84%. Naru no longer migrates and now Naru and Kailashi work the farm together.**

Kailashi has also established a nutrition garden and planted lemon, guava, and gooseberry around her small farm's border. During the COVID-19 pandemic, when it was unsafe to travel to the market, the 80 kg of fresh and nutritious vegetables produced from Kailashi's farm helped ensure that she and her family had easy and safe access to a nutritious diet.



PROJECT STRATEGY & IMPACT

Freedom from hunger is a human right. JIVA targets the food security of smallholder farmers and their families by transferring knowledge that sustainably enhances the productivity of staple crops, increases the household's supply of nutritious fruits and vegetables, and improves the resiliency of farm productivity and farm-based incomes against shocks.

Key objectives to improve food security and nutrition include:

- Increase agricultural productivity and profitability
- Diversify cropping systems to improve farm income resiliency
- Improve the production and consumption of nutritious fruits and vegetables
- Encourage the adoption of practices that build resiliency against climate shocks and are good for health and the environment

The average farm size in the JIVA project area is 1.2 ha and half of the area under cultivation is irrigated. The majority of farmers cultivate maize (93%), sorghum (17%), and wheat (91%) during two growing seasons, using intercropping and mixed cropping methods. 31% of farmers also cultivate cotton as an important source of income. Farm productivity is hindered by water stress, poor soil health due to the prolonged and inappropriate use of chemical fertilizers, highly variable rainfall, and severe temperature fluctuations.

JIVA works with 4,921 farming households in 24 villages to enhance good agricultural practices (GAPs) and promote crop diverse cropping systems. In 2020, 100% of cotton farmers, 97% of maize farmers, 94% of sorghum farmers, and 100% of wheat farmers* practiced some or all GAPs.

	2019		2020		
	Farmers Practicing Some GAPs	Farmers Practicing All GAPs	Farmers Practicing Some GAPs	Farmers Practicing All GAPs	Change in Crop Productivity When Farmers Practice All GAPs
Cotton	43%	57%	38%	62%	111%
Maize	27%	68%	29%	68%	133%
Sorghum	31%	64%	33%	61%	144%
Wheat	82%	18%	Data collection delayed due to the second wave of COVID-19 in India		111%*

*The change in crop productivity for wheat is based on data collected in 2019 – due to delays in data collection caused by the COVID-19 pandemic.

SDG TARGETS



End hunger and ensure consistent access to safe, nutritious, and sufficient food supplies for all



Double smallholder farmers' agricultural productivity and incomes through land access, inputs, knowledge, financial services, markets, value-addition, and non-farm employment opportunities



Ensure sustainable food production and implement good agricultural practices that increase productivity, boost production, maintain ecosystems, strengthen climate change resiliency, and improve land quality



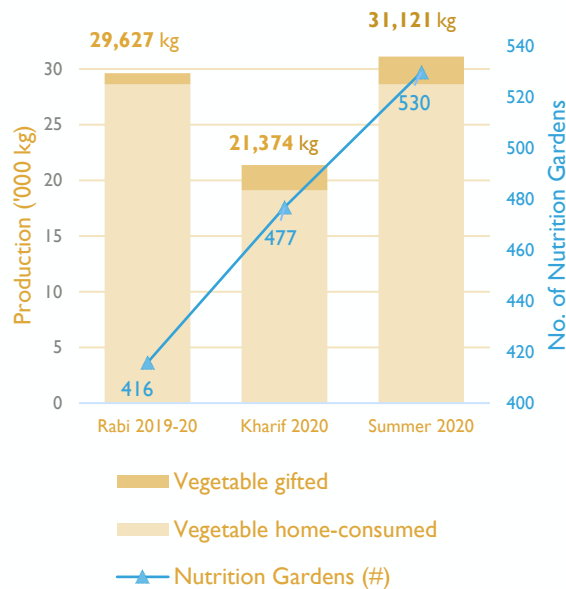
Leverage partnerships to increase investment in agriculture infrastructure, research, extension, and technology



PROJECT STRATEGY & IMPACT

The shocks driven by the COVID-19 pandemic brought into sharp relief the value of cultivating diverse cropping systems and applying eco-friendly farming practices, such as vermicompost. The cultivation of horticulture (fruits) and/or vegetables for commercial purposes and home consumption – in addition to the production of maize, sorghum, wheat, and cotton – better equipped farming families to meet their food and nutrition needs, sustainability maximize the utility of their land, and mitigate the shocks.

Vegetable Production in Nutrition Gardens



In 2020:

- **25% of farmers (1227) practiced horticulture**—up from 18% in 2019
- **11% of households (530) cultivated nutrition gardens** (89% are owned by women) and **produced 82,122 kg in nutritious fruits and vegetables for home consumption**—up from 44,917 kg in 2019
- **10% of the vegetables produced in the project area were shared with neighbors** who could not get buy their food from the market during the lockdown
- **13% of farmers (640) produced vermicompost** – which is used on their farm and sold to other farmers. The use vermicompost improved soil health and reduced the use of chemical fertilizers by 10% —**saving farmers \$4,799.**



Mangi Lal and his daughter Devu (from Morra Village) celebrating their maize harvest

Sustainable Development Goal #4



QUALITY EDUCATION

Ensure inclusive, equitable, and high-quality education and promote lifelong learning opportunities for all.



Sunita Prajapat

Only **53%** of women and girls in Rajasthan are literate—the lowest rate in the country—while 79% of males are literate.

In 2020, **7.4%** of children (ages 6-16) in Rajasthan were not enrolled in school, up from 5.2% in 2018. The reduction in students enrolling in school is likely caused by the COVID-19 pandemic.

49% of children enrolled in schools in Rajasthan reported that they have not been engaged in any learning activities during the COVID-19 pandemic.

"I used to hesitate in expressing myself, but the activities conducted at the ERC have made me confident. Now I come forward to participate in school activities. As the Horticulture Minister of my school's Child Parliament, I appealed to the students to plant trees and they have done so. With the support of the ERC teachers, I scored first in my school's class 10 exams and now I am studying Geography in class 11 because I want to become a geography teacher."

– SUNITA PRAJAPAT

Sunita, an 11th grader, studies at Junda Senior Secondary School. When she was six years old, her father passed away and she has since lived with her maternal grandfather. When she first participated in after-school tutoring in 2017 at her local education resource center (ERC) run by JIVA, she could only perform simple addition and multiplication exercises and her language skills were poor. However, her hard work and aptitude for learning enabled her to excel academically. For instance, when schools were closed during the COVID-19 pandemic and her 2020 Board Exams were approaching, she formed a study group with her four friends and requested JIVA to provide additional academic support.

Inspired by Sunita's leadership, initiative, and unrelenting passion for learning, JIVA assigned her tutors—who offered guidance while complying with all health and safety guidelines. **As a result, Sunita obtained the highest score in her class (83%) and was also awarded the prestigious Gargi Award from the State Government of Rajasthan for her academic excellence.**



PROJECT STRATEGY & IMPACT

The education of the next generation of farmers is guided by the positive relationship between education and agricultural productivity and the belief that schools belong to their communities. JIVA works with the stakeholders of the local school system to ensure high-quality education is accessible and remains accessible beyond the lifetime of the project.

Key objectives to enhance human capital are:

- Elevate the literacy and numeracy levels of all children to their assigned class level—including drop-outs
- Strategically remove barriers to attending school and learning
- Increase the capacity and capability of community-based educators
- Strengthen the capacity and engagement of local governments, parents, teachers, and students to manage their schools effectively
- Support the holistic development of students—especially in critical thinking and through STEAM

JIVA partners with 32 government schools—serving 24 villages and 3,850 students — 49% of whom are girls. Insufficient teaching, learning materials, and school infrastructure deters students – often girls – from attending school and hinders learning outcomes. Students also drop out or miss school to support their family’s economic activities.

In February 2020, prior to schools closing due to the COVID-19 pandemic, 337 students had been reintegrated into school. Two panchayats (10 villages) had been declared drop-out free by the government. The returns in increased lifetime earnings from reintegrating students who had or were at risk of dropping-out was an estimated \$1,536,483.

Additional key milestones achieved during the 2019-20 academic year, prior to the closure of schools, were:

- **Students scoring above 80% in subject-based tests increased from 22% to 35%. Students scoring below 40% decreased from 32% to 17%.**
- Students transferring from private schools to free government schools in the JIVA project area has **generated \$59,247 in household savings.**

SDG TARGETS



Ensure that all girls and boys complete free, equitable, and quality primary and secondary education leading to relevant and effective learning outcomes



Upgrade education facilities to provide effective learning environments for all



Students participating in after-school learning in Lapsiya Village

PROJECT STRATEGY & IMPACT

Since March 2020, students across all grade levels in the JIVA project area have only been able to return to school for one to two months. Approximately 18% of students have access to a smartphone through their parents – prohibiting the majority of students from online learning opportunities provided by the government.

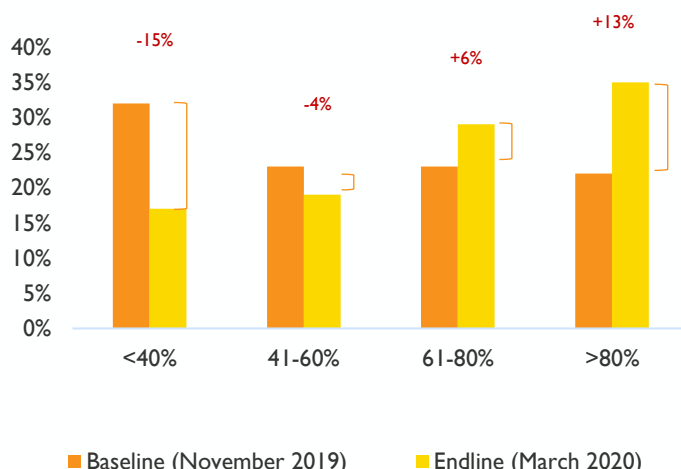
To complement the government's e-learning efforts, JIVA supported students by developing and delivering 38,222 offline learning materials (OLMs) and remote tutoring to 78% of students (51% girls) participating in JIVA's after school tutoring program.

In addition to working with parents to create a positive home-learning environment for their children, the JIVA team also developed 215 teaching and learning materials to build critical thinking skills in topics such as math, sciences, and geography.

As a result, while conducting standardized tests for most students was not possible during the 2020-21 academic year:

- **Students scoring above 80% on their OLMs increased from 34% to 63%.**
- **Students scoring below 40% on their OLMs reduced from 15% to 5%.**

Improvements in Test Scores (2019)



To sustainably cultivate the next generation of problem-solvers and innovators, JIVA works with the government schools to increase the quality of instruction by applying more practical and engaging teaching methods.

- 23 teachers formed a STEM teachers' group – which continued to meet regularly during lockdowns – to co-create and implement innovative teaching methods that develop students' critical thinking skills.
- 22 schools were equipped with science kits and books and the science labs in Gogathala and Lapsiya Senior Secondary Schools were equipped with the necessary tools for students to practice and effectively learn STEM subjects.

In 2020, to ensure the learning environment is effective and deterrents to school attendance are mitigated:

- Toilets in 7 schools were built. **81% of schools** now have functional toilets for boys and girls.
- On-grid solar panels in 16 schools were installed. **91% of schools** now have uninterrupted electricity and an average annual income of \$200-\$350 for each school to use on ensuring quality education.
- 168 classrooms were equipped with chalkboards and furniture. **100% of schools** now have more effective learning environments.



Child Parliament members presenting school improvement plans in Junda Village



Sustainable Development Goal #5

GENDER EQUALITY

*Achieve gender equality and
empower all women and girls.*

In 2017, India ranked **127th** out of 189 in UNDP's Gender Inequality Index. Women represent **42%** of India's agricultural labor force but own less than **2%** of its land.

More women work in Rajasthan compared to other states, but female labor force participation has sharply and steadily declined from **63%** in 2005 to **50%** in 2012.

"Before I was not able to speak to people, but now I can speak even in front of government officers. The government agriculture supervisor now contacts me and asks for my help in working in our village. I am also told by villagers that the information that I provide is thoughtful and convincing."

– SITA DEVI KUMAWAT

Sita Devi Kumawat



Sita and her husband Behru returned to their community in Morra Village in 2009 after trying to earn a living as migrant workers for nine years. They have two sons and had struggled to improve the productivity and profitability from **their 11 bighas (1.76 ha)** of land, which had degraded while they were working in the city.

In 2013, when JIVA began as a pilot project, Sita offered to be a bridge between JIVA and her community as an Agriculture Volunteer. She actively participated in JIVA's farmer trainings and the activities aimed to equip Agriculture Volunteers to better serve the community. Her aptitude for learning how to farm effectively and her application of good agricultural practices has **grown her income from cultivating crops by 388%—from \$850 in 2013 to \$4,149 in 2020.**

Sita also actively participated in and applied the lessons learned from the financial literacy and agripreneurship trainings conducted by John Deere employee volunteers. By reinvesting their earnings into livestock and starting a retail shop, **in 2020 the couple's total household income was \$6,927—more than eight times higher than what they earned in 2013.**

As an Agriculture Volunteer, Sita has built trust and robust relationships with her fellow farmers and become a role model and trusted resource for both women and men. Even within her own household, her husband and father-in-law actively seek her advice in making farming decisions. While JIVA sunsets, Sita's leadership will continue to grow. As a Resource Farmer, Sita will continue to be a beacon of information and knowledge for farmers throughout the community about effective farming practices.

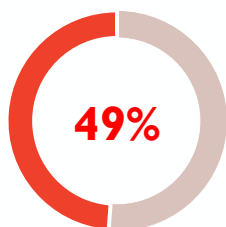
PROJECT STRATEGY & IMPACT

Integral to improving agricultural resiliency and accountable education systems is the full and equitable participation of women. JIVA works with all stakeholders in the project area to identify and implement locally appropriate solutions that ensure men and women have equal access to opportunity.

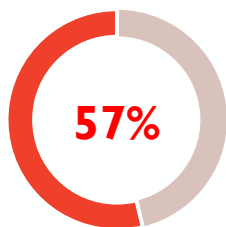
JIVA's gender equality strategy is founded on three key principles. Our team endeavors to:

- Understand the different knowledge levels, needs, priorities, challenges, and opportunities of various stakeholders
- Consistently employ a participatory and iterative approach to address the root causes of relevant gender-related disparities
- Staff the project appropriately to ensure the project is equipped to integrate gender inclusive practices

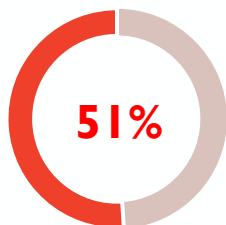
Gender inequality leads to economic disadvantages for many women. JIVA aims to narrow the gender gap by consciously targeting and customizing project activities that enable full and effective participation and produce equitable impact.



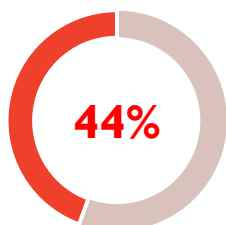
of the 1,927 farmers participating in Farmer Fairs in 2020 were women. These annual events are a platform for women and men farmers to share their farming experiences and achievements – equally – with the entire community.



of the 150 participants in the Youth Agripreneurship Training delivered by John Deere employee volunteers were women. The trainings were conducted separately for men and women to encourage full and effective participation in the discussions and game-based learning.



of the 453 Child Parliament members are girls honing their leadership and problem-solving skills. 18 of the 29 Child Parliaments are led by girl Prime Ministers.



of the 590 School Management Committee members are women working to address the challenges in their children's schools and implement reforms to improve the quality of education for the next generation.

SDG TARGETS



Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women



Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision making in political, economic, and public life



PROJECT STRATEGY & IMPACT

The COVID-19 pandemic demonstrated the value of women's leadership in farming. By cultivating nutrition gardens and using environmentally-friendly practices, such as generating and applying vermicompost, farming families were better equipped to meet their food and nutrition needs, sustainability maximize the utility of their land, and mitigate the shocks of the pandemic.

- **89% of nutrition gardens** are owned and managed by women.
- **\$38,893 in household savings was generated by nutrition gardens** – which eliminates the need to buy vegetables from the market. **Household savings from nutrition gardens increased by 144%** - up from \$15,884 in 2019.
- **5,789 kg** of vegetables produced in nutrition gardens was shared with neighbors and COVID-19 isolation centers when markets were closed or unsafe to visit.

Equal access to quality education and parity in the educational outcomes of girls and boys is essential to achieving JIVA's mission. During the COVID-19 pandemic, 82% of students did not have access to the e-learning provided by the government and most standardized tests were suspended. To support and monitor students' learning, JIVA developed and delivered offline learning materials (OLMs) and remote tutoring to the 25% of students in the JIVA project area who participate in its Education Resource Centers.

Stemming the tide of losses in learning felt throughout the world, during the 2020-21 academic year:

- **64% (227) of girls scored above 80% on their OLMs – up from 36%**
- **62% (238) of boys scored above 80% on their OLMs – up from 32%**
- **Girls scoring below 40% on their OLMs decreased from 13% to 2%.** The ratio of boys scoring below 40% on their OLMs reduced from **17% to 8%.**



Farmers sharing their experience during the Farmers Fair in Gogathala Village

Sustainable Development Goal #8



DECENT WORK & ECONOMIC GROWTH

Promote sustained, inclusive, and sustainable economic growth; full and productive employment; and decent work for all.

50% of the Indian workforce is employed in agriculture and **70%** of rural households depend on agriculture for their livelihood. **82%** of farmers are classified as smallholder or marginal farmers.

In Rajasthan, **20 million** people between the ages of 21 and 35 are unemployed.

Most youth in the JIVA communities migrate to cities and towns for work—**78%** for long-term employment and **22%** for seasonal employment—to supplement their farm-based incomes.

“There is so much hard work but low income in traditional farming. I have stopped cultivating part of my rainfed land and am focusing more on fruits, fodder, and dairy. I have purchased an auto(mobile) and taught my wife how to drive so that she can easily bring fodder from the field.”

– JAGDISH JAT

Manju & Jagdish Jat



Manju and Jagdish are a young agripreneurial couple who live in Lapsiya village with their two sons and their parents. They own 45 bighas (7.2 ha) of land. Unlike many young people who forgo agriculture and migrate to cities in search of full and productive employment, Manju and Jagdish view agriculture as a sustainable business model. Since JIVA began working in their village in 2017, both Manju and Jagdish have actively participated in the trainings and programs offered—and have adopted many of the good agricultural practices demonstrated. They have diversified their traditional cropping system with pomegranates, gooseberries, and papayas and have started selling fruits through their shop. They are also applying the lessons they learned through the agripreneurship training conducted by John Deere employee volunteers to expand their livestock and dairy operations—recently adding five buffalo to their farm.

Through their hard work, smart investments, and equal partnership in various agricultural enterprise activities, Manju and Jagdish doubled their 2017 income to \$13,122 in 2020—and have created new opportunities for self-employment and economic growth within their community.

PROJECT STRATEGY & IMPACT

Increasing the profitability, resilience, and efficiency of smallholder farmers is essential to achieving an economically stable, food secure, inclusive, and prosperous India. JIVA aims to build the capacity of farmers – to improve farming methods, increase the yields of their farms, and enhance the resilience of their farms to weather, biological, economic, and other external shocks.

JIVA's key objectives to ensuring farming is a pathway to prosperity are:

- Strengthen current sources of agricultural income, reduce income volatility and its vulnerability to shocks, and maximize the productivity of agriculture-based income through enhanced cultivation of irrigated and rainfed crops, crop diversification, and strategic integration of resilient and high-value crops.
- Integrate cross-cutting themes of financial management, market linkages to inputs and agricultural technologies, environment and climate, and collaboration with government.

Historically, the source of income and employment for 78% of the population in the project area has been from cultivating cotton, maize, sorghum, and wheat. Due to low productivity and profitability—over two-thirds of youth migrate to cities in search of better economic opportunities. Recent shocks, such as erratic rainfall and frost, are additional drivers of farm-based income insecurity.

Since 2013, JIVA has grown from a pilot project in three villages to working with 4,921 farming households in 24 villages to enhance good agricultural practices (GAPs) and promote resilient cropping systems that generate decent work and economic growth.

Amidst market volatility and shocks driven by the COVID-19 pandemic, farmers generated \$940,015 of net additional income from cotton, maize, sorghum and wheat – a 4% reduction from 2019.

Net Additional Income Earned from Cotton, Maize, Sorghum, and Wheat



*4% decrease in income is largely due to crop substitution and market price fluctuations (reduction in area under cotton cultivation and lower maize prices). The 2020 income from wheat is an estimate. The collection of harvest data is delayed due to the second wave of COVID-19 in India. Income from wheat is a projection based on 2019 data.

**In 2017, JIVA scaled its program activities from Sakrawas Panchayat (3 villages) to Junda and Lapsiya Panchayats. In 2019, JIVA scaled its program activities again, to a total of six panchayats (24 villages).

SDG TARGETS



Achieve higher levels of economic productivity through diversification, technological upgrading, and innovation



Achieve full and productive employment and decent work for all women and men and substantially reduce the proportion of youth not in employment, education, or training



PROJECT STRATEGY & IMPACT

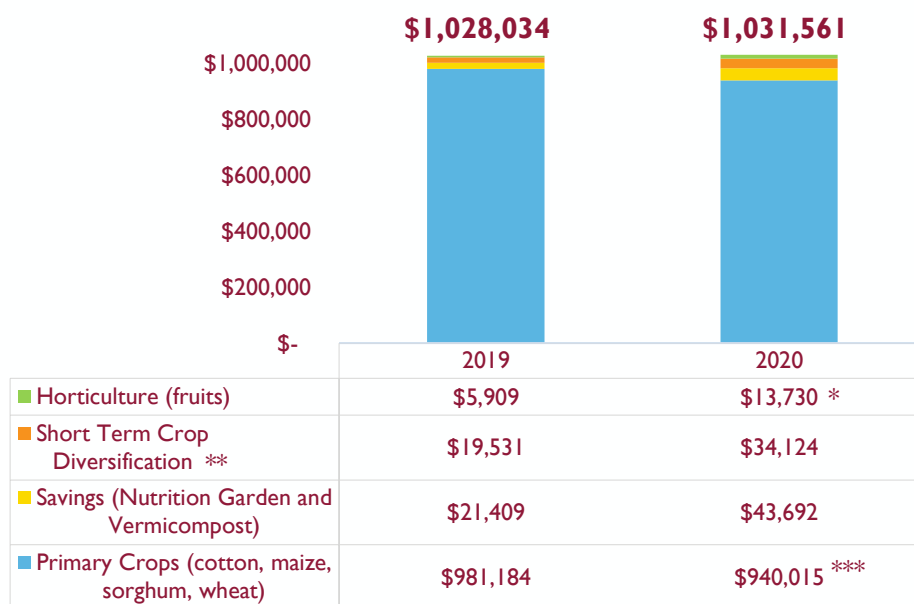
The COVID-19 pandemic demonstrated the value of cultivating diverse and resilient cropping systems – which equipped farming families to better absorb the economic shocks driven by the pandemic and market volatility.

The commercial production of high-value fruits and vegetables – in addition to the cultivation of maize, sorghum, wheat, and cotton – helped stabilize agricultural income across the project area and mitigate the losses in net additional income earned by farmers. In 2020:

- One-third (443) of the 1,227 horticulture farmers operated commercial fruit orchards. **Forty-six farmers had mature orchards and earned \$13,656 from their harvest** – up from \$5,909 (129%) in 2019.
- **139 commercial vegetable farmers sold 154,130 kg of produce and earned \$34,124** – up from 53 commercial vegetable farmers selling 82,438 kg of produce in 2019 and earning \$19,531.
- The net additional income for cotton, maize, sorghum, and wheat declined by 4%. However, **the integration of commercial fruit and vegetable production mitigated the total decrease in net additional income earned by farmers in the JIVA project area by half – to 1.9%.**

Farm-Based Sources of Income and Savings

* Income from horticulture will accelerate as the orchards mature (i.e. pomegranates planted in 2014 reached full maturity in 2019)
 ** Includes commercial vegetables (2014-2020)
 *** 4% decrease in income from primary crops is largely due to crop substitution and market price fluctuations (reduction in area under cotton cultivation and lower maize prices). The 2020 income from wheat is an estimate using 2019 data. The collection of data on the wheat harvest is delayed due to the second wave of COVID-19 in India.



The Youth Agripreneurship Training delivered in December 2019, trained over 150 youth (57% women) to better navigate economic opportunities, develop entrepreneurial skillsets, and enhance the productivity of current agricultural enterprises. Throughout 2020, farmers have been drawing on the concepts designed and implemented in partnership with John Deere employee volunteers to commercialize their farm and mitigate the economic drivers of rural-urban migration.

Manju and Jagdish reinvested their increased income into an auto-rickshaw, which Manju also uses to bring fodder from the farm to their cattle shed





Sustainable Development Goal #13

CLIMATE ACTION

Take urgent action to combat climate change and its impacts.

85% of land holdings in India are under **2** ha and smallholder farmers are acutely vulnerable to climate variability.

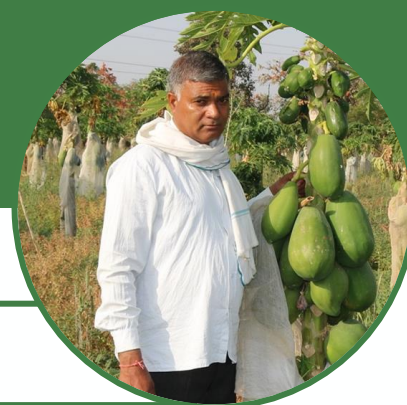
By 2030, India's water supply is expected to fall to **50%** below projected demand. Multiple regions—including Rajasthan—are on the verge of a water crisis.

Agriculture consumes **83%** of Rajasthan's available water resources. Rajasthan ranks among the most climate-sensitive states in India, with the lowest adaptive capability.

"The training and guidance delivered by JIVA helps farmers successfully make the journey from traditional farming, which are susceptible to climate shocks, to diversifying cropping systems and adapting practices that build resiliency and also help preserve the environment."

– JAMNALAL KUMAWAT

Jamnadal Kumawat



Jamnadal, 45, lives in Junda village with his wife and two sons. Before 2016, he farmed only during the rainy season on his 18 bighas (2.9 ha) of land. With training and guidance from JIVA on good agricultural practices, water resource management, and the integration of technologies such as drip irrigation, he has optimized the use of the ecological resources that are available. To build his resiliency against extreme weather, market, and bio-ecological shocks, Jamnadal has diversified his crops by integrating horticulture – such as gooseberry, jujube, sapota, and papaya – into his farm. He also intercropped watermelon, muskmelon, and bottle gourd in his orchard.

In 2020, Jamnadal harvested 2,960 kg of papaya and 2,000 kg of jujube—earning \$1,206. As his other fruit saplings mature, the productivity of Jamnadal's farm will continue to sustainably increase – without compromising the local groundwater supply or diminishing the quality of the soil.



PROJECT STRATEGY & IMPACT

The next generation of farmers will inherit dramatically different resources and conditions from their parents. JIVA integrates climate-smart agricultural practices into its trainings to ensure smallholder farmers are equipped to mitigate and adapt to climate change while sustainably increasing farm yields and profitability. JIVA also supports local stakeholders to access solar solutions and utilize horticulture to restore marginal public lands.

Key objectives to safeguard current and future generations of farmers are:

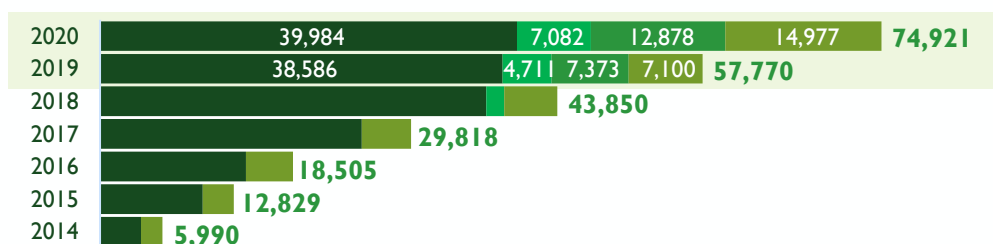
- Increase the adoption of climate-sensitive good agricultural practices, such as water and soil management, integrated pest management, efficient land use, intercropping, diversifying cropping systems to include short- and long-term high-value and resilient crops.
- Cultivate greater environmental awareness by integrating environmental science into school curricula and through community events, such as Environment Day.
- Encourage the adoption and institutionalization of renewable energy in schools and for irrigation on farms by leveraging existing government subsidy schemes.

Water stress is endemic in the JIVA project area, due to highly variable rainfall and weather fluctuations. The prolonged overuse of chemical fertilizers, floods, and droughts has also degraded the quality of the soil. JIVA demonstrates and trains farmers on climate resilient agriculture practices that help farmers navigate and absorb weather and economic shocks – as well as help restore degraded soil and increase green coverage.

The 74,921 fruit trees planted by horticulture farmers in the JIVA project area will sequester an estimated 11,000 metric tons of carbon over the next 10 years and generate \$3 million in income during their lifetime.

Cumulative Number of Fruit Trees Planted Since 2014

■ Pomegranate ■ Ber ■ Gooseberry ■ Other Fruits



The local government is working with JIVA to transform community land that is barren or unproductive into fruit orchards—which will increase green coverage, reduce land degradation, and, as the orchards mature, provide a source of income for the community to utilize for its own development. **In 2020, 3.68 ha of marginal community land was transformed into fruit orchards. In 2021, another 12.8 ha of land will be converted into orchards.**

Electricity supplied through the grid is unreliable and negatively impacts the environment – hampering the performance of students in schools and irrigation on farms and jeopardizing the next generation of rural communities.

JIVA has worked with 29 schools to stabilize their electricity. Today, 91% of schools in the project area have successfully accessed government solar schemes, installed solar systems, and are working with JIVA on methods to manage the annual income generated by supplying power back into the grid. **Annually, the schools will generate 111,454 kwh in solar power. Surplus energy will yield an average annual income of \$200 to \$350 per school—totaling \$5,800 to \$10,150 across the project area** – which the stakeholders of the school will utilize to ensure quality education and maintain a positive learning environment.



SDG TARGETS



Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters



Improve education and awareness-raising on climate change mitigation, adaptation, impact reduction, and early warning



Combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world



Sustainable Development Goal #17

PARTNERSHIPS FOR THE GOALS

Strengthen the means of implementation and revitalize global partnerships for sustainable development.



TRANSLATING PURPOSE INTO PRACTICE

At no other time have partnerships that holistically invest in improving the livelihoods and resilience of smallholder farmers and the communities in which they live been more critical.

Together, the John Deere Foundation and PYXERA Global work with the communities and the government to invest in the current and next generation of farmers and channel the energy, intellect, and resources of John Deere employees to catalyze positive change.

Essential to JIVA's success is its commitment to innovation, co-creation with communities, leveraged talent, and scaling up proven methods to maximize its returns-on-investment.

JIVA-John Deere Skills-Based Volunteerism

Building on the inception of JIVA as a volunteer effort, John Deere and PYXERA Global piloted the JIVA-John Deere Skills-Based Volunteerism Program in 2018. Based on the success and positive feedback from the John Deere volunteers, the JIVA team, and the community members who participated in trainings on farmer financial literacy, a second project was launched. In December 2019, six John Deere employees worked side-by-side with the JIVA team to design and deliver trainings on youth agripreneurship to 150 youth (57% women).

“As one John Deere and JIVA team, we packaged the concepts of entrepreneurship in a very simple but practical and fun medium of games. I enjoyed working closely with my colleagues and developed friendships that I will cherish forever.”

– MANGAL GUNJAL

Lakshya Employee Resource Group, John Deere India

“John Deere has always stayed true to its higher purpose and embodies the expression ‘feet on the ground, eyes on the horizon.’ JIVA is a project that strives on this thought process. It provides a unique opportunity to truly give back to society. In many ways it also enhances our own skills and self beliefs and makes us feel very proud to be associated with an organization like John Deere.”

– SHASHIKARAN HK

Disha Employee Resource Group, John Deere India



PROJECT STRATEGY & IMPACT

Distinct from many philanthropic or development initiatives, JIVA embodies equitable and inclusive collaboration between the John Deere Foundation, PYXERA Global, the communities, and other strategic partners that strengthen the enabling environment. By consciously weaving together these robust partnerships, JIVA has grown from three villages to 24 villages and nine hamlets—and is being strategically adapted and piloted-to-scale in agrarian communities in northern Nigeria.



SDG TARGETS



Encourage and promote effective public, public-private, and civil society partnerships, building on the experience and resourcing strategies of cross-sector and multi-stakeholder partnerships to mobilize and share knowledge, expertise, technology, and financial resources



Respect each community's policy space and leadership to establish a direction and implement policies and programs for poverty eradication and sustainable development

Translating Purpose Into Practice

The JIVA-John Deere Skills-Based Volunteerism Program exemplifies the value of strategic collaboration between corporate volunteers and development experts to create social impact.

- In 2018, a cohort of six John Deere India employees from the Lakshya employee resource group worked with JIVA's agriculture experts to develop and pilot the Farmer Financial Literacy project with 197 farmers.
- In 2019, a second cohort of six John Deere volunteers co-created and implemented **the Youth Agripreneurship Development (YAD) Project, which trained over 150 male and female farmers aged 18 through 30.**
- The community members who participated in the trainings have started integrating the knowledge gained during the trainings to improve their farms and businesses.



Youth in Junda village learning about entrepreneurship through an interactive, game-based training conducted jointly by John Deere India employees and the JIVA team



PROJECT STRATEGY & IMPACT

To advance and sustain its resilient agriculture and accountable education programming and to promote and maintain community partnership, trust, and ownership, JIVA invests in community-sourced human capital and leverages deep, personal relationships with community members to inform how its programming evolves and its team innovates ways to continue to work safely.

When the COVID-19 pandemic resulted in lockdowns, the JIVA team pivoted and maintained its relationships and commitments to the communities in the project area – safely. The JIVA team also worked more closely with the local government on activities to embed resilience into its initiatives.

Key Achievements in Partnership: 2019-2020 Grant Year

- Established a farmer WhatsApp group – where farmers with access to a smartphone are actively seeking guidance and supplying peer-to-peer learning. Today, approximately 25% of farmers use the digital platform, with farmers throughout the community joining the group as they transition online.
- Partnered with the local government and 120 leading farmers in the community (i.e. Resource Farmers) to embed resilience into JIVA's agriculture initiatives – starting with cultivating a sustainable community of peer-to-peer learning. Together, the government agriculture supervisors and the JIVA team registered farmers into the farmer WhatsApp group and moderated the online forum. Alongside the agriculture experts within the local government and JIVA, Resource Farmers and the broader farming community provided extension services and examples of good agricultural practices to support each others success.
- Partnered with government teachers to enroll students in the government's e-learning program and support their participation through tutoring and engaging 2,691 parents on methods for cultivating a positive learning environment at home.
- Developed delivered 38,222 offline learning materials (OLM) to students at home. Since almost two-thirds of students lacked reliable access to such platforms, the team
- Partnered with government STEM teachers to form a working group that actively co-creates and implements innovative teaching methods that develop students' critical thinking skills. Inspired by the success of the STEM teachers, government teachers teaching social sciences and languages have formed similar groups.

