spowdi®





Smart Farming

Impact Case

Jawad Hills, Tamil Nadu

Introduction

Jawad Hills, located in Tamil Nadu, south-eastern India, is a predominantly agricultural region where smallholder farmers mainly grow crops such as cotton, vegetables, rice, paddy, and millets. A vast majority of the farmers in the area depend on rainfed irrigation, hence, their agricultural output remains highly vulnerable to shifting weather patterns and the increasing unpredictability caused by climate change. The limited and irregular availability of water highlights an urgent need for more efficient irrigation and water management practices. At the same time, ineffective market structures continue to hinder smallholder farmers, restricting their income potential and reducing incentives to invest in sustainable, improved agricultural methods. Due to their limited financial capacity, they also require support to cover the full cost of new technologies, ideally through CSR initiatives or external financing models such as microloans.

Being part of a tribal region, the smallholder farmers in the area have had limited exposure to newer farming practices and innovative technologies. Previously, they primarily used flood irrigation through diesel pumps in their fields, which increased production costs and depleted their profits. As electricity access is unreliable or close to non-existent in many farms, using electricity-driven pumps is not a suitable option either.

However, having to rely on diesel pumps has multiple downsides for smallholder farmers. Not only does it release CO_2 emissions, but it also comes with a risk of the pump malfunctioning and polluting the water source, and in the worst-case scenario, making it entirely unusable. It also creates additional costs for the farmers, both in terms of buying the fuel and for having to travel to a market where they can purchase it. This, in turn, makes them heavily affected by fluctuations in market prices and availability.

Having access to innovative solutions is key for smallholder farmers in order for them to overcome and adapt to these challenges. After being introduced to Spowdi's Smart Farming system, they expressed that discovering solar-based drip irrigation was an incredible and eye-opening experience. By helping smallholder farmers to lessen their reliance on expensive or unreliable fuel, as well as making their irrigation more efficient, they can improve both their livelihoods and minimize their impact on the environment through lowered water use and CO_2 emissions.

The Smart Farming campaign

In September 2024, Spowdi installed Smart Farming systems together with Hand in Hand India in Jawad Hills, Tamil Nadu, India. During the installations and Smart Farming training, the farmers expressed great interest in the system, and many of their farms, ranging from 1 to 1.5 acres, were well-suited for implementation.

The training had a great turnout, with many farmers being interested in knowing more about the new technology and how it could help them in their daily work. Through a mix of classroom and on-the-ground training, the farmers learn how the Spowdi system works, how it is maintained, and how it is installed. It also teaches them how to do Smart Farming and

best practices in order for the system to work optimally, generating a bigger harvest using less water and labour.


Classroom training


On-the-ground training and installations

Phase 1 – “Seeing is believing”

Srinivasan Boochi
Crop: Tomato
Farm area: 1 acre
Water Source: Well
Previous method of irrigation: Diesel pump

Srinivasan Boochi has a one-acre farmland in his village in Jawad Hills, India, where he has previously grown paddy and various vegetables. Before installing the Spowdi Smart Farming system, he used to withdraw water from his well with a diesel pump in order to flood irrigate his land.

After starting to irrigate with Spowdi’s Smart Farming system, with a fertigation method, Srinivasan states that he experienced richer tomato crops, and his sample harvest still generated him an income of 4,000 INR despite the crops being impacted by unforeseen heavy rain and some being washed away. He also mentioned that he previously got about 4 to 5 tomatoes per branch, but with the new Spowdi Smart Farming technology, he now managed to get as many as 10 tomatoes on one branch.

¨I couldn’t even walk into the field, because the tomato plants had grown so huge and lush. I have never seen my tomato plants that huge and green.¨
- Srinivasan Boochi

He is now using the system to grow beans and aims to increase it to a second zone, and has purchased a Spowdi Extension Kit, which plugs directly into his existing system.

Naveen Kumar
Crop: Tomato and chili
Farm area: 1 acre
Water Source: Well
Previous method of irrigation: Diesel pump

During the rainy season, Naveen Kumar used to cultivate paddy in his one-acre field, and afterwards he grew vegetables such as tomatoes and beans. When irrigating his crops, Naveen used to withdraw water from his well with a diesel pump and then flood irrigate both his own and neighbouring family members' lands.

Similar to Srinivasan, Naveen showed his gratitude towards the technology and thanked the Hand in Hand and Spowdi team for helping him access it. He was also very happy that the technology reduces both the need for his mother to help in the field and the time needed for irrigation. Because of his satisfaction with the technology, he decided to try the system with tomatoes, as he witnessed how it increased productivity and helped the crops grow tall.

Happy with the results of using the Spowdi Smart Farming system to irrigate, Naveen is now aiming to extend his system with a Spowdi Extension Kit, in order to irrigate his gherkin crops as well.

Seetharaman
Crop: Beans
Farm area: 1.5 acre
Water Source: Farm pond, rivulet and water tank
Previous method of irrigation: Diesel pump

Seetharaman had not practiced farming for long when installing the Smart Farming system, mostly due to the lack of proper water storage. With the help of the Hand in Hand India team, he later built a farm pond and tank system, however, he still lacked awareness of how much water the crops needed. When Seetharaman eventually started to grow crops, he relied on a diesel pump to flood the land—an inefficient method that wasted a lot of water. He also explained that he ended up spending a lot of money on diesel, which also makes him vulnerable to shifting market prices and availability. Furthermore, since electricity is not available in the area, using an electric pump was not an alternative.

During the latest harvest season, using the Spowdi Smart Farming pump, Seetharaman had grown marigolds. He expressed his gratitude toward the new technology and shared that he saw up to **three times higher profits** and significantly improved crop productivity, including better vegetative growth and flowering, while also significantly decreasing his water use with the help of the system.

This season, he is using the Spowdi Smart Farming technology to grow cotton. He is also comparing the growth and water usage by flood irrigating another zone with a diesel pump.

Contract Farming: Hand in Hand Farmers

These three farmers have also, just like the majority of the smallholder farmers from Hand in Hand India in the region, entered into contract farming agreements with offtakers who supply high-yielding seeds, fertilizers, and pesticides. Under these contracts, the farmers are required to cultivate crops adhering to strict quality and quantity standards set by the offtakers. In return, the offtakers guarantee that they will purchase all of the produce that meets these requirements, as well as provide technical guidance and production support, such as land preparation and harvesting. This arrangement ensures the farmers have access to quality inputs, a reliable market, and fixed prices, while the offtakers deduct input costs from the final payment. This is one example of how smallholder farmers can increase their profits more reliably, and could be a viable model for other regions.

Phase 2 – Scaling Up to 500 Farmers

During the beginning of April 2025, the Spowdi and Hand in Hand team revisited the farmer community of Jawad Hills to see how the systems had benefited the farmers during the

latest harvest seasons and spread awareness to the rest of the farmers about the Spowdi technology and Smart farming. Many of the smallholder farms in the region are highly suitable for the Spowdi system, both in terms of land, water source, and crops cultivated. During additional meetings with farmers, where they got to learn more about Smart Farming, it also became clear that they were interested in investing in the new technology; however, their limited financial capacity means they require support to cover the full cost. This support should ideally come through CSR initiatives or an external financing model (e.g. micro loans, etc.).

The insights from the Jawad Hills visit are of great importance, as Spowdi and Hand in Hand India now aim to scale the initiative, transforming 500 smallholder farms in the area during Phase 2. Through comprehensive training, continuous technical support, external financial support, and 'Seeing is Believing' cases, the Smart Farming initiative has the potential to impact many of the villages in the region and significantly improve the lives and climate resilience of hundreds of its smallholder farmers.


Left: one of the successful installations in Jawad Hills. Right: meeting with farmers in the region.

Conclusion

For farmers in tribal or rural areas, where electricity is scarce and smallholder farmers have long depended on costly diesel pumps and irregular rainfall, Spowdi's solar-powered drip irrigation solution can have a big impact on both their farming and their livelihoods.

Through hands-on training, community engagement, and collaboration with local organizations, farmers are not only learning to install and maintain the system but also gaining essential knowledge about water-efficient practices and crop needs. As a result, they are beginning to see higher yields, reduced input costs, and improved resilience to climate variability.

These kinds of field visits are instrumental in gathering a thorough understanding of local contexts and identifying areas of intervention. The insights from the Jawad Hills visit will serve as an important foundation for Spowdi's and Hand in Hand India's continued partnership and the development of initiatives that are tailored to the needs and aspirations of the Jawad Hills farming communities.