

# REIMAGINE A PUMP AS A BATTERY EMPOWERED FARMER

An NXplorers student in Karnataka, India, has developed an innovative automatic Agri Sprayer to improve the health and safety of local farmers, as well as improving efficiency of the agrochemical spray.



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The farmers at Dakshina Kannada district in Karnataka, India are constantly facing skin, eye and other health related issues while spraying Bordeaux mixture on their betel nut crops. This mixture has been used by farmers for the removal of fungi and to prevent crops from rotting during the rainy season.

Neha Bhat – a 15-year-old tenth grade student from the same community – realised that as well as causing health issues, the job was costly and tiresome. Neha took up the challenge to create a solution, applying learnings from the NXplorers programme she had attended.

## RECONSIDER TRADITIONAL METHODS

Neha started by gathering information about the traditional methods used for spraying, which commonly included using Gator pumps. When she analysed and evaluated her findings, she concluded that Gator pumps could not control pressure and output properly. Moreover, these methods consumed a significant amount of time, labour and fuel. Reverting to a traditional method would therefore make spraying crops more difficult and time consuming for farmers.

## REDESIGN SOMETHING NEW

With the help of her school teachers and NXplorers mentors, Neha applied the NXplorers Scenario Planning tools to consider the positive and negative features of different scenarios to help identify a preferred future.



After extensive research and experimenting, she developed an automatic Agri Sprayer to maximise effectiveness and minimise manual effort from the farmer. The various mechanical components of the sprayer meant that the crop treatment could be more targeted and easily distributed, which reduced both health risks and labour costs. As well as being easy to use, it also consumed less fuel and produced less noise.

### RETHINK PESTICIDE PRACTICES

Since development, Neha has continued to test the idea by using a working prototype in her family owned farms. The new sprayer has proved to be more effective than existing sprayers and has maximised the crop yield. Importantly, it has saved time for farmers and protected their health, improving the wellbeing of the local farming community overall.

Looking to the future, Neha intends to make the sprayer widely available to betel nut farmers across India.

### CONCLUSION

Neha's problem-solving innovation is not only creating sustainable agricultural practices, but also promoting good health and wellbeing and building resilience for her local farming community. The innovation therefore contributes to several UN SDGs, including 3 and 9.



“ We are proud to say that Neha's “Agri Sprayer” was recently recognised by the Council of Scientific and Industrial Research, India and won a cash prize of INR 30,000. She also received recognition from the Speaker of the Lok Sabha, the lower house of the Parliament of India. ”

### HOW THIS PROJECT CONTRIBUTES TO THE UN SDGS

- 3. Good health and wellbeing**  
Ensure healthy lives and promote wellbeing for all at all ages
- 9. Industry innovation and infrastructure**  
Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation

