

# Friends of Clean Air a #thaiRAIN Success Story



Two weeks after applying microbial solution, no burning needed.

Photo by Teerapong Laptwan for Winrock International

## Too hard to breathe

Air pollution has been at the top of Thailand's environmental challenges in the past decade. According to the State of Global Air Report, toxic haze was attributed to 32,200 deaths in 2019, higher than those caused by COVID-19. Thailand's 2023 average PM2.5 concentration was 4.7 times above the WHO air quality guideline.

Besides transportation, industry, and construction, agriculture is one of the causes of the air quality crisis. According to a 2022 study by Thailand Environmental Institute, rice cultivation is among the largest contributors to PM2.5, along with maize and sugar cane.

## Rice Farmers and Air Pollution

Rice farmers *do* burn agricultural residue, more so for irrigated fields. Rice cultivation, particularly in irrigated areas, has a 20-day window between each crop, which is too short for hard stubble to disintegrate.

Efforts from both public and private sectors have been made to discourage burning. Local authorities even impose sanctions on farmers who burn, but no viable alternative has been provided.

Whilst farmers have been on the receiving end of enormous pressure to adapt, it's important to find innovative solutions that address the reasons why they resort to burning.

## Earthbound Microbes

The microbial solution is one of the technologies sourced by the USDA Thailand Regional Agriculture Innovation Network (#thaiRAIN). The technology employs a mix of bacteria capable of accelerating the decomposition of agricultural residues, cutting the decomposition time in half.

Between 2023 and early 2024, #thaiRAIN actively sought producers of microbial solutions to pilot on real farms. The goal was to demonstrate that these solutions could effectively soften the stubble enough for farmers to plow

their land. Test results and testimonials would provide farmers with a solution that they could use to reduce, if not stop, their burning practice.

#thaiRAIN took microbial solution products to pilot in two provinces. Not only did the microbes actively decompose stubble, but farmers also noticed an improved soil quality. The return of frogs and earthworms further confirmed the restored ecology within the pilot farms.

### **The Business of Scaling**

The success of the test mentioned above initiated the next step to scale up this technology. #thaiRAIN defined a viable business model that connects this innovation with a much broader movement for the PM2.5 situation. The first step was to gather sufficient momentum to create strong interest from farmers and rice value chain stakeholders.

The team of #thaiRAIN began presenting this solution to various stakeholders, making them active supporters of microbial solutions as an alternative to burning in rice farms.

On October 1, 2024, #thaiRAIN led a panel discussion in the event titled *Reduction of Air Pollution through Avoidance of Burning in Agriculture*. This was a high-level event with invitation-only participants from rice, maize, and sugar cane value chains. From the feedback of more than 250 participants, #thaiRAIN's Rice session was frequently cited as "the most relevant and insightful [session], particularly for its focus on microbial solutions and practical applications for farmers."

#thaiRAIN is confident in this AgTech, which has the potential to increase the productivity of rice farmers. In addition, the microbial solution is attracting a wider audience of advocates and supporters who care about the environment. Therefore, longer-term campaigns are in development to raise awareness and stimulate

interest in behavioral change—from burning stubble to using this climate-smart innovation.

**Whether the campaign would be as successful as this introductory phase, the deciding factor depends not only on #thaiRAIN and the targeted rice farmers. It is this group, the friends of clean air, who will help drive the future for microbial solutions for Thailand.**

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### **FAST FACTS**

RAIN IS FUNDED BY THE U.S. DEPARTMENT OF AGRICULTURE FOOD FOR PROGRESS PROGRAM, WITH PERIOD OF PERFORMANCE FROM 2022 – 2027.

EXPECTED RESULTS OVER LIFE OF PROJECT INCLUDE:

- **\$25 MILLION** ANNUAL SALES OF FARMS AND FIRMS ASSISTED
- **30,000 FARMERS** APPLYING IMPROVED PRACTICES
- **45 FIRMS** PARTICIPATING IN PUBLIC-PRIVATE PARTNERSHIPS
- **24,000 HECTARES** UNDER IMPROVED MANAGEMENT PRACTICES