

J-WAFS at MIT develops technologies that provide low cost clean drinking water and reduce pesticide use for agriculture by 50%

- *Five new technologies are being developed this year by the J-WAFS Solutions Program, which aims to commercialize breakthrough food and water technologies*
- *Projects include innovative technologies for improving food and water safety monitoring, water filtration, irrigation, and reducing pesticide use*

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New research into using wood to provide low cost clean drinking water and reducing the amount of pesticides needed for crop production are among several new projects being developed by the Abdul Latif Jameel World Water and Food Security Lab (J-WAFS) at the Massachusetts Institute of Technology (MIT).

Co-founded in 2014 by Community Jameel and MIT, J-WAFS promotes the development and deployment of technologies, policies, and programs that target diverse challenges related to the world's water and food systems.

The technologies being developed this year include:

- **Developing a low cost water filter using wood.** Using the natural filtration capabilities of xylem tissue in wood to provide low-income households with safe and affordable access to clean water.
- **Using electrically charged polymers to reduce the amount of pesticides sprayed on crops.** Overspraying in agricultural settings is common throughout the world because of the natural capacity of plants to repel water. This solution aims to greatly increase pesticides' retention on plants through electrostatic force, and has the potential to reduce the use of pesticides by more than 50% - greatly improving the environmental impact of agricultural sprays.
- **Using smartphone technology to detect harmful bacteria in food.** Developing a new and simple test that uses specialized droplets that bind together in a specific way and indicate if harmful bacteria is present. The result can be detected by a smartphone, offering a faster and cheaper food safety testing tool that can be used in realtime and on-site to prevent widespread foodborne illnesses.
- **A handheld device to easily test milk quality.** Developing a handheld technology that rapidly measures milkfat and protein to indicate milk quality. From farmers, to collection centers, to processing plants, this technology could ensure the quality and safety of milk production and consumption as well as address concerns about malicious tampering which have risen due to the complexity of dairy supply chains in some regions across the globe.
- **Increasing the efficiency of irrigation waters to meet crop nutrient requirements.** Developing a selective process that enables farmers to reduce irrigation water salinity and tailor ion content to meet crop nutrient needs. Salinity in water leads to losses of crop yields. This new process selectively removes the ions that are harmful for crops and retains those that are beneficial, thus reducing energy and fertilizer costs, requiring less water, and increasing crop yields.

The demands for access to clean water and food have never been as pressing as they are today. According to a report released by the World Health Organization last month, three in ten people worldwide (approximately 2.1 billion overall) lack access to safe, readily available water. The United Nations also estimates that globally almost one in ten people fall ill every year from eating contaminated food, and 420,000 die as a result. These technologies propose solutions to these and other global water and food supply challenges.

Fady Mohammed Jameel, President of Community Jameel International, said: “From using wood to provide clean drinking water, being able to easily test the quality of milk in rural communities, and reducing the amount of pesticides being sprayed on crops, the research we are supporting at MIT has the potential to make a real difference to some of the most vulnerable people in the world. With rising populations, climate change and urbanization, we need to start taking action now to meet the world’s future needs for food and water.

“Community Jameel is proud to be a key partner of MIT in tackling some of the most pressing issues related to food and water safety and security in the Middle East and around the world.”

John Lienhard, the Abdul Latif Jameel Professor of Water and Food at MIT, said: “MIT was created to move innovative research into the real world, including a distinguished legacy of solutions for critical needs in the water and food sectors. Today, with the effects of climate change, urbanization, and rising population, water and food security is of even greater global importance. This program serves as a catalyst for entrepreneurial faculty and students to develop and commercialize technologies that can have a positive impact on the world.”

For images of the J-WAFS Solutions projects click [here](#)

Notes to Editors

Full descriptions of the J-WAFs research can be found at the [Abdul Latif Jameel World Water and Food Security Lab Solutions program](#)

More information on the WHO research can be found at:

- [2.1 billion people lack safe drinking water at home](#)
- [Global estimates of foodborne diseases](#)

About Community Jameel

Community Jameel is a social enterprise organisation that helps communities transform themselves through a wide range of initiatives.

It works to create job opportunities, tackle unemployment, promote arts and culture in the Middle East and around the world, enable research for poverty alleviation and food and water security, and provide education and training opportunities.

Community Jameel was formally established in 2003 to continue the Jameel family's tradition of supporting the community, a tradition started in the 1940s by the late Abdul Latif Jameel, founder of the Abdul Latif Jameel business, who throughout his life helped tens of thousands of disadvantaged people improve their lives.