Climate Change Story

Climate-smart tech solutions emerging in agriculture

Sri Lanka is home to a diverse, long-established agricultural ecosystem that has been fed by a unique water system for centuries. However, this rainfed water system is currently under threat due to changes in seasonal monsoon weather patterns resulting from climate change. Sri Lanka is expected to experience severe shifts in temperature and precipitation, directly threatening water availability. For a nation that relies heavily on traditional methods of seasonal farm management, unpredictable rainfall can often mean lower crop yields, with knock-on effects on farmers and food availability.

Adopting climate-smart agritech solutions can help farmers adjust their farming methods and use only the necessary inputs and water, saving scarce resources and preserving soil health. This change enables farmers to manage inconsistent rainfall and other impacts of climate change better. Agritech sensors can provide accurate information on a range of parameters, including soil health, humidity, temperature and water availability, enabling farmers to optimise the use of inputs such as water and fertiliser and reduce the uncertainty associated with climate change.

Sri Lanka's dry zone covers **over 70%** of the country and is likely to be more vulnerable to longer and more frequent droughts due to shifting climate patterns.

The global agriculture sector is increasingly turning to agritech solutions to increase productivity and adapt to the impacts of climate change. While Sri Lanka's turbulent economic environment has limited the adoption of such solutions, pockets of innovation are emerging among leading agribusinesses. These businesses have invested in (technologically) simple solutions such as drip irrigation and polytunnels that better use scarce water resources and ensure ideal climactic conditions for growing crops despite the impacts of climate change. Clear demonstrations of the uses and benefits of these agritech solutions have seen renewed interest in more advanced solutions such as Internet of Things (IoT) sensors.

Partnering with the right solution

MDF partner SenzAgro is a climate-smart, precision agriculture solution provider that supplies technology to facilitate real-time agronomic solutions to growers using sensor devices placed on-farm. SenzAgro's IoT tools provide agribusiness clients with insights into the optimal use of inputs for specific crops. The agribusinesses also gain access to actionable recommendations on irrigation and cultivation—enabling more informed, climate-smart decisions.

As part of its work in agritech, MDF partnered with SenzAgro to improve awareness and adoption of IoT tools among agribusinesses with commercial farmer networks—and to demonstrate positive productivity and climate resilience outcomes. MDF supported the partner with a 100-day trial program promoted among agribusinesses, with a focus on those with commercial outgrower networks. The pilot spanned multiple crop varieties across the various agroecological zones in Sri Lanka. The agribusinesses that signed up for the pilot could use SenzAgro's smart farming tech on their farms for 100 days, free of charge. If a set of pre-agreed targets were achieved at the end of the timeframe, the pilot would convert to a commercial contract and be implemented on a larger scale. Of the eight businesses selected for the program, four had converted to commercial contracts at the time of writing.

Fewer chemicals, less water—but higher yields?

Mangifera Agro, a mango producer and exporter, subscribed to SenzAgro's solar-powered open field environment solution after a positive pilot. For Mangifera, SenzAgro conducted the trial for three mango varieties—Karthacolomban, Villard and TJC—in Anuradhapura, in the heart of Sri Lanka's dry zone. The TJC variety showed a 12 per cent improvement in yield through effective water stress management, i.e. by ensuring optimal water usage. The agribusiness also recorded saving approximately 30 per cent of its inputs used (fertiliser and agrochemicals), alongside using water 90 per cent more efficiently.

Elpitiya Plantations is one of Sri Lanka's leading agriculture and plantation management companies, with over 8,800 hectares under management. Elpitiya trialled SenzAgro's solutions for its 'BerryMuch' line of fresh berries. SenzAgro's agritech solution enabled Elpitiya to optimise water use through the automation of irrigation and the use of 'misters' to respond efficiently to changes in temperature, humidity, soil moisture and electrical conductivity. The extension team at Elpitiya Plantations was also able to use the solution to identify pest and disease incidents. In addition, the system provided Elpitiya with crop reports and insights for better farm management.

In both cases, the agritech solution deployed allowed for sustained or higher yields but with more efficient use of inputs such as water—which is expected to become scarcer because of climate change. These improvements, in turn, contribute to better long-term soil health, further improving crop resilience to weather events such as droughts.

Solutions for a more climate-smart future

The Sri Lankan agriculture sector is on a slow path to recovery. Input and labour availability are improving, even though prices remain comparatively high. For growers to turn a profit and their produce to be competitive in export markets, it is imperative that efficiencies are improved and yields are protected from a changing climate.

For Sri Lanka's agribusinesses and commercial farmers grappling with the challenges posed by climate change, agritech solutions provide a promising solution, helping farmers make the right decisions and contributing towards building a farmer base that is increasingly more resilient to the unavoidable negative effects of climate change. MDF continues to see the potential for adoption and scale of these solutions, showing promise for a more climate-smart agriculture sector in the future.

Long-term overuse of chemicals can reduce soil health and adversely affect plant growth. Supporting farmers to use only absolutely necessary levels of fertiliser ensures that soils remain healthy. Healthy soils provide important resilience benefits, including improved water retention and higher nutrient content, which in turn improve the ability of crops to withstand climate change disruption.