

Industry partnership case study — VG16070 Research and operations to trial innovation glass and photovoltaic technologies in protected cropping

Stakeholder	Alex Soeriyadi – Co Founder at Luminescent-Light Emitting Agricultural Films (LLEAF)
Location	Eveleigh, NSW
Founded	2016

What was the research about

Between June 2017 to May 2020, VG16070 Research and operations to trial innovation glass and photovoltaic technologies in protected cropping (delivered by Western Sydney University (WSU)) worked to assess the effect of smart glass on plant growth, physiology, crop yield and quality in a controlled glasshouse environment. The trials were completed at the state-of-the-art National Vegetable Protected Cropping Centre at WSU’s Hawksbury campus for eggplant, capsicum and lettuce crops. The project identified the potential for smart glass to reduce energy requirements for cooling, water and nutrient use through blocking UV light and other higher light wavelengths which contribute to heat generation.

While additional trials seeking to refine the composition of smart glass remain underway, VG16070 sparked a collaboration with a start-up company LLEAF who specialise in the production of smart films which can passively shift the spectrum of sunlight to better meet the needs of plants and the goals of growers.

Alex Soeriyadi, co founder at [LLEAF](#) talks about how project VG16070 has enabled a valuable industry partnership which has accelerated the development of smart film with release of the technology expected shortly.



How did you become involved in the Smart Glass project?

“We started LLEAF in 2016 and had been working through our product development when we were introduced to the VG16070 Smart Glass research team at an event funded through the Future Food Systems CRC. We quickly learnt how smart film can serve as an extension or complimentary material to smart glass. At the time we were doing our own small trials, and it became clear that we could really benefit from accessing the same experimental design as the Smart Glass project through WSU.

The WSU research team were very happy to initiate a collaboration based on our complimentary products and research requirements. We started testing our smart film alongside the existing VG16070 smart glass trials in 2018.”

What were the impacts and benefits of your involvement in VG16070?

“The most significant benefit was the ability to access third party validation to demonstrate the potential for our materials and technologies in greenhouses and glasshouses. Having a demonstration site as a ‘showcase’ alongside the smart glass technologies has allowed us to accelerate our development. Without the support offered to us through the research team at WSU, we wouldn’t be where we are today, where we are planning on launching our commercial production in early 2023.”

How did the findings from VG16070 influence your direction as a business?

“Through VG16070 we were able to learn more about the design attributes of smart glass and the differences and similarities with smart film that we produce at LLEAF. Leveraging the research team’s expertise on plant physiology, and combining that with our knowledge about light emission has been a really great cross over of skills that otherwise wouldn’t have occurred.

The research team were highly connected to a range of stakeholders that we’ve been able to engage with throughout our development as well, which has helped give us the confidence that we were heading in the right direction with our products. It’s been especially valuable to know that there is ultimately a demand for products that can manipulate the light spectrum to support plant growth and mitigate the reliance on inputs.”

What are you currently working towards, and how has VG16070 supported these efforts?

“We have got our product to the point where we have started making a small level of sales and are planning a more formal launch early next year. We are still learning about how we can achieve a greater control over product temperature and how different spectrum colours can influence harvest timing and even nutrition. Our collaboration with the research efforts through VG16070 have really helped sharpen our approach to these questions and learn from their expertise.”

Have there been any challenges along the way?

“The floods in the region at the beginning of 2022 impacted on our access to the research site, and the obvious restrictions through the peak of the COVID pandemic also challenged our way of working at the time in keeping track of the progress of our trials.

We are also still working on developing more targeted guidance around installation costs and requirements for the expected life of the product, as the answers to these sorts of questions can be challenging yet are really important to help growers decide their preferred course of action.

However overall the results have been very promising.”

What timeframes can we expect until commercial release and adoption occurs?

“We have a range of products that are available to purchase now, however we are currently planning a full scale commercial release in the first half of 2023 where we will conduct a wider engagement initiative with growers to demonstrate the benefits that can be gained through smart films.”

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Hort Innovation is the grower-owned, not-for-profit research and development corporation for Australian horticulture. For more information visit www.horticulture.com.au.

For more information on this grower case study, please contact Adam Briggs, Associate Economist and Evaluator at Ag Econ, through adam@agecon.com.au.

Image credit: LLEAF