Question on Notice

No. 506

Asked on 24 May 2022

MS K RICHARDS ASKED MINISTER FOR AGRICULTURAL INDUSTRY DEVELOPMENT AND FISHERIES AND MINISTER FOR RURAL COMMUNITIES (HON M FURNER)—

QUESTION:

Will the Minister highlight how the government is using artificial intelligence to detect invasive plants?

ANSWER:

The Queensland Government has a number of research projects that use artificial intelligence (AI) to detect weeds. These use machine learning algorithms to analyse imagery and identify specific weed species in a range of tropical and temperate environments.

As an example, Biosecurity Queensland researchers are using a drone mounted high-definition hyperspectral scanner to capture imagery of extensive Siam weed (*Chromolaena odorata* and *C. squalida*) infestations at flowering time. This imagery is used to train software to detect Siam weed in areas where Siam weed is at low density. This then directs on-ground surveillance of areas that Siam weed is currently invading.

Similar detection technology is being applied to wet tropics eradication targets such as *Miconia calvescens* in North Queensland. An early AI model has been developed to assist with the detection of this invasive tree in World Heritage Areas and the ongoing development of the AI system will support the national eradication efforts for this species. In southern Queensland, coastal weeds such as bitou bush (*Chrysanthemoides monilifera subsp. rotundata*) and rangeland weeds including parthenium (*Parthenium hysterophorus)* are also being targeted using AI.

Within Agri-Science Queensland, multispectral imagery combined with AI is being used to identify invasive weeds in coastal crops such as sugarcane. These weeds can cause significant production losses if not controlled in a timely manner. In some cases, drones are then tasked with returning to spray the weeds.

These studies and applications require collaboration with universities, interstate researchers, landholders, and private companies. The field of remote detection using airborne colour and multispectral sensors is developing rapidly. The productivity and environmental benefits include data capture to make operations more efficient by providing information that allows for better use of resources and localised applications, particularly in areas that are inaccessible or unsafe for surveillance by people on foot. The technology is also able to detect subtle variation in plant health before visible symptoms appear. A collaborative and coordinated approach is most efficient, avoiding duplication and maximise complementary expertise and resources.

These are just some of the ways Biosecurity Queensland researchers are harnessing new technologies to forge new pathways into weed management.