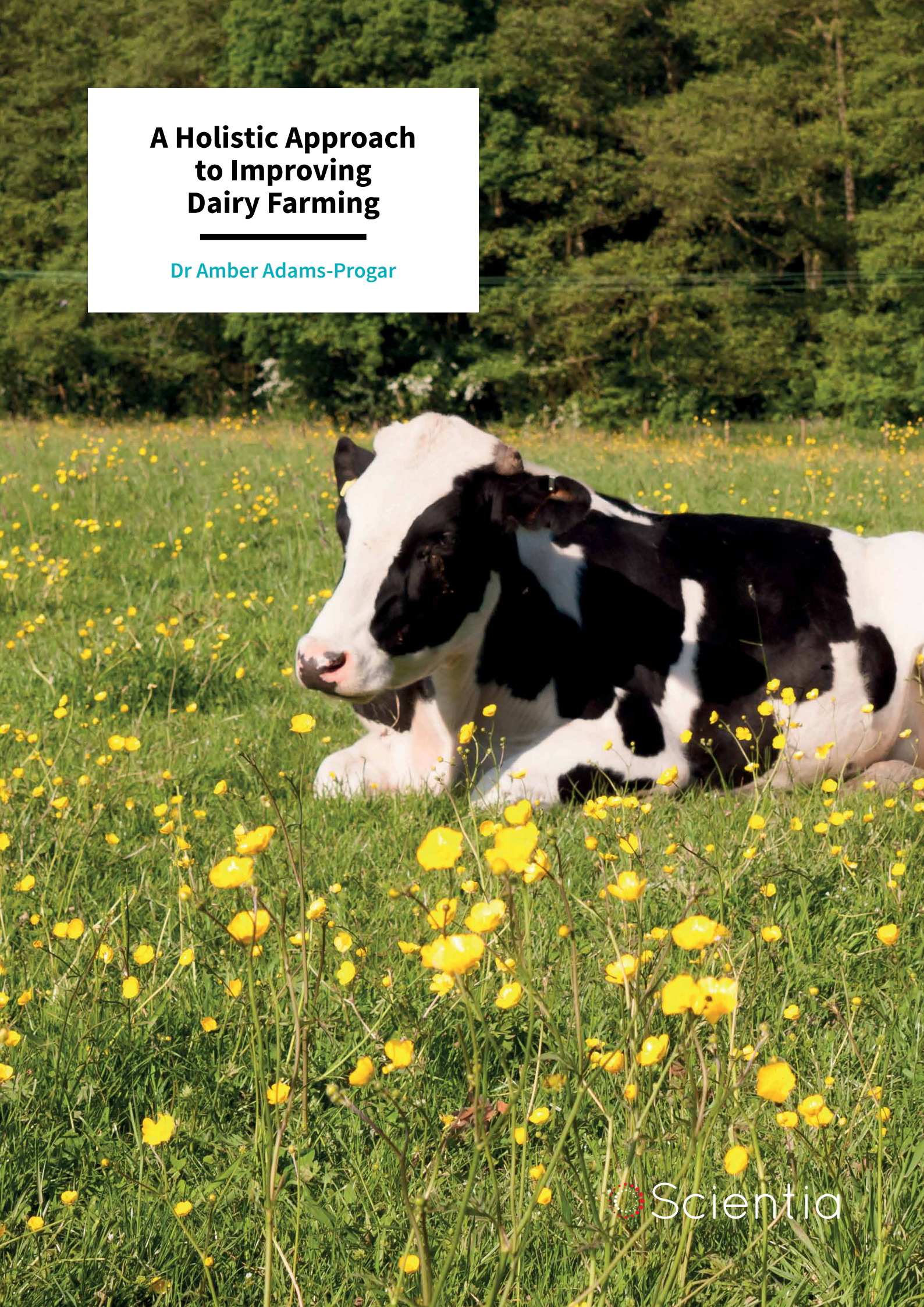


# **A Holistic Approach to Improving Dairy Farming**

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Dr Amber Adams-Progar





# A HOLISTIC APPROACH TO IMPROVING DAIRY FARMING

Dairy farming is a tough business, where farmers experience countless challenges on a regular basis, from ensuring the health and welfare of their cattle to protecting the safety of their employees. **Dr Amber Adams-Progar** and her team in the Department of Animal Sciences at Washington State University are involved in many research projects, which aim to improve various aspects of the dairy industry, by protecting farm profits, worker safety and animal welfare.

## A Difficult Business

Dairy farming is an extremely challenging business. The days are long, the mornings are very early indeed, and the profits are squeezed between the needs of the cattle and the demands of consumers. Therefore, dairy farmers are always searching for new information that may help them to alleviate the difficulties they face every day.

This is where researchers such as Dr Amber Adams-Progar and her colleagues at the Department of Animal Sciences, Washington State University, enter the picture. Through their research and outreach activities, Dr Adams-Progar's team develops and implements cost-effective best management practices to improve various aspects of dairy farming.

## Managing Feathered Pests

One of the challenges faced by dairy farmers are pest birds. Despite the common image in children's books, it is rare to find a farm where cattle graze in fields full of vibrantly-green grass all year round. Instead, many farmers need to supplement their cattle's nutrition in the form of grains.

Unfortunately, cattle are not the only hungry animals around, and it is common to see birds stealing grain from the feed bunk. The idea of tiny birds stealing food from enormous cattle seems absurd at first, but pest birds are actually a major problem for the US dairy industry. In fact, studies have shown that more than 4% of the available feed is plundered by pests, which will cost Washington State alone almost \$15 million in the next five years. A particular nuisance is the European Starling – a fast-breeding bird that has managed to grow from 16 individuals imported into the US into a 200-million strong horde today.

Many approaches have been trialed to scare away birds, including large gas-powered noisemakers, reflective tape that flutters in the breeze, and balloons with large, imposing eyes painted on them. Through their research, Dr Adams-Progar and her research team showed that many of these methods are ineffective, or are of varying use in different settings. Interestingly, they found that balloons with painted eyes tend to be effective, as are kites resembling falcons and the introduction of real falcons.



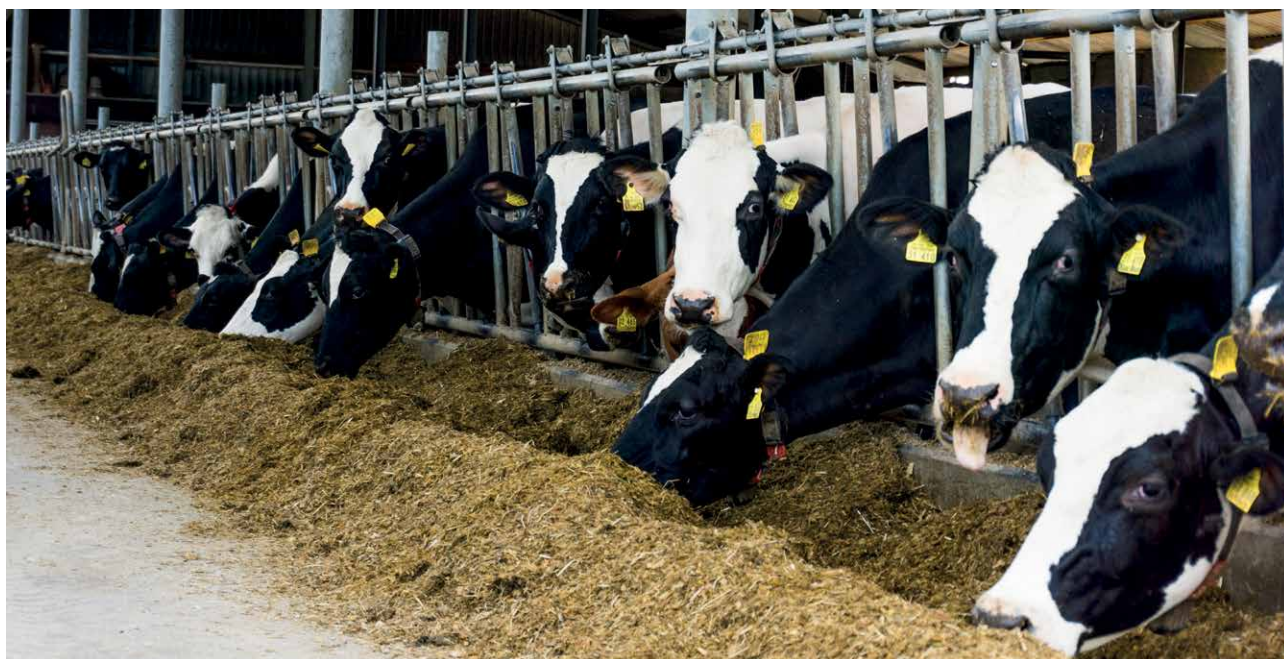
Dr Adams-Progar and her colleagues took their findings to the dairy farming community, by organising a series of workshops to teach effective deterrence methods that keep pest birds away. The research team estimates that the approximately 20–40% of attendees who will go on to implement these ideas will cut their feed losses in half, saving a total of \$1.7 million in the process.

## Caring for Calves

For any dairy farm to sustain itself into the future, the cows need to occasionally bear calves. The health of the pre-weaned calves is very important



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to farmers, and their survival has been shown to be one of the top six factors impacting the income and survival of dairy farms. However, one study showed that almost 8% of calves will die before weaning – with a quarter of these deaths caused by respiratory problems. Environmental stress, such as overly hot or cold environments, plays a major role.

Dr Adams-Progar and her team set out to examine the physiological responses of calves to both hot and cold environments, as well as the impact that different housing systems had on the calves’ levels of environmental stress. Using their findings from these studies, the researchers are currently developing best management practices, which will include housing recommendations, to minimise calf deaths. They then aim to distribute this information to the dairy farming community.

Previous work performed by the group had already examined the factors affecting the best feeding option, particularly when deciding between feeding calves from a milk bucket or bottle. The team had been able to show that the difficulty of the calf’s birth, its

gender, and even the time of year all played a part in determining the best feeding option.

Dr Adams-Progar’s hope is that the additional best-practice information established by her team’s new studies will be enough to further improve survival in the early weeks after birth. Although it would be ideal to achieve a calf mortality of 0%, the team’s long-term goal is to lower calf mortality to 5%, a significant improvement over the current rate of almost 8%. Achieving this outcome in Washington State alone would allow the industry to gain between \$780,000 to \$980,000 each year.

### Hoof Health

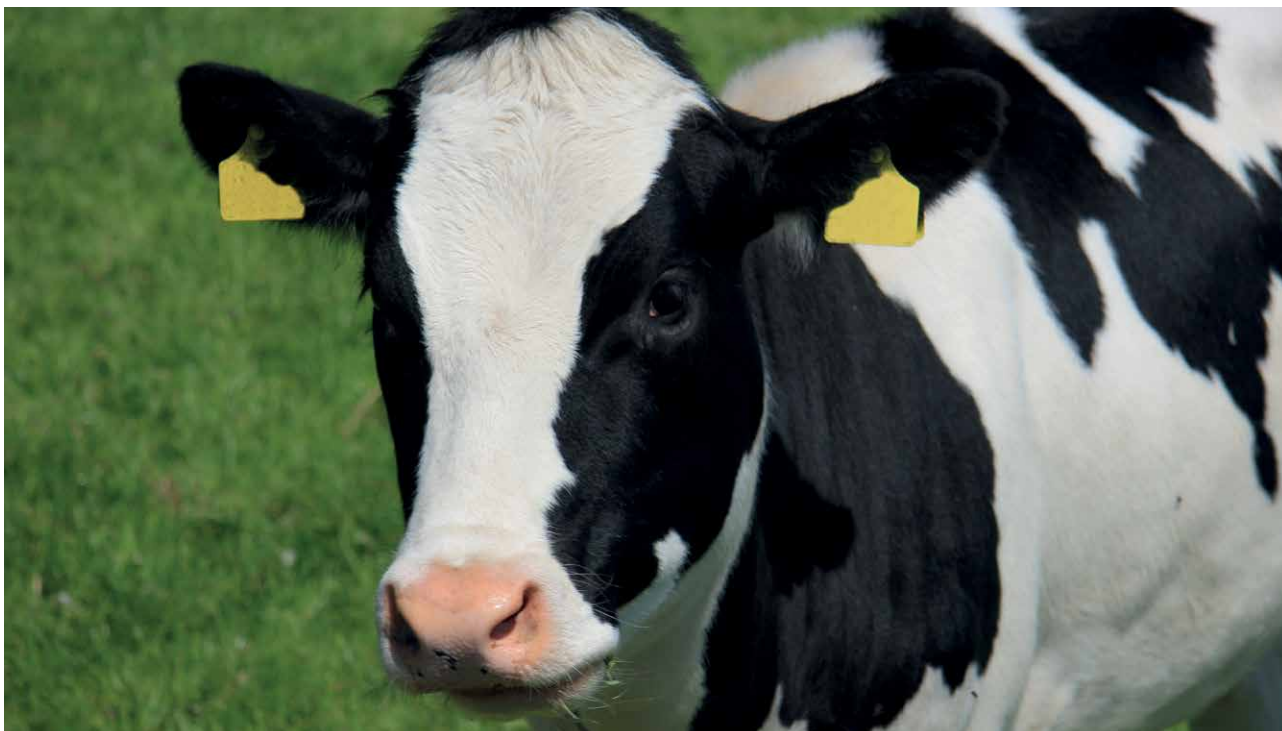
Diseases do not need to be deadly to cause problems in the cattle industry. A simple example is digital dermatitis, where an infection from several different bacteria causes ulcers on the feet of cattle. This is a very common affliction in dairy farms, with over 25% of producers reporting cases in their herds. Each case costs around \$65 to treat, which normally involves cleaning the affected area and applying various

medical creams. Although \$65 might seem to be a fairly small sum, the disease is common enough that it can lead to accumulated losses of over \$4.4 million each year across the entire state of Washington.

Dr Adams-Progar and her group received funding from the dairy industry to investigate the ways that digital dermatitis affects cow behaviour and to identify the most effective treatment. To do this, they spent two years following over 200 cows, tracking the presence and appearance of any lesions and then determining how the occurrence of digital dermatitis related to temperature, rumination and eating behaviour.

The team showed that cows with the condition spent less time eating, but tended to become more active as the lesions cleared up. This means that farmers using activity monitoring devices (a fairly common setup these days) would be able to spot cows with lesions from their behaviour alone, before the condition becomes problematic.





Their research, which was disseminated in both academic journals and magazine articles for farmers, identified a series of best management practices that farmers could use. One of these approaches is the use of footbaths – the dairy cattle simply walk through a pool of disinfectant which kills off most of the dangerous microbes. According to Dr Adams-Progar's estimates, implementing these footbaths across Washington State dairies would reduce digital dermatitis levels by 8%, saving over \$350,000 per year.

### **Improving Worker Safety**

Working with cattle can be a dangerous job. Cows are big – easily weighing over half a tonne – and can become easily startled. Furthermore, cow pens and milking sheds are covered in slippery surfaces and hard concrete, and the working hours are notoriously long. Workers compensation claims are common in the Washington State dairy industry, and are predominantly due to cattle-related injuries or slips, trips and falls. Farmers need insurance against these accidents, but the generally risky field of work means that farmers in Washington State pay around \$11 million in insurance premiums each year – and this number is only rising.

In conjunction with several other groups, Dr Adams-Progar and her team have partnered with dairy farmers across Washington State. Their aim is to help farmers and farm workers understand safer farm practices and cow-handling techniques. By following these practices, workers are better equipped to avoid slips and farmers can spot dangerous working environments before they lead to injury. So far, over 400 people in the industry have attended the research team's training workshops.

The team has carried out this work in conjunction with the upcoming Washington State Dairy Network, a collaboration between research and industry partners. Their aim is to develop a joint learning network that is supported by science. This network will allow research findings from one area, or problems identified by dairy workers on a particular farm, to be passed on to workers in other parts of the state.

Dr Adams-Progar is working on a series of training modules that cover common animal-related injuries such as crushed fingers and the best way to avoid this. 'By taking the training, farmers, managers and staff will have the tools and skills they need to keep themselves and their animals safe,' says Dr Adams-Progar. 'We're empowering people to go back to their dairies and train their own employees. It's an exciting opportunity to help Northwest dairies become safer and more productive.'

The long-term goal of the researchers is to reduce these accidents by a quarter. This is in everyone's interest, as Dr Adams-Progar notes: 'Farmers don't want employees to get hurt, and employees don't want to get hurt either!'

### **The Farm of the Future**

This is hardly a short list of accomplishments, yet Dr Adams-Progar is not content to rest on her laurels. She intends to bring new scientifically-backed methods and information into the Washington State dairy industry, with the aim of promoting sound management practices that save money and improve conditions for animals and workers. She is confident that these will be well received. 'I enjoy working with producers,' comments Dr Adams-Progar. 'Washington dairy producers are progressive and open to new ideas.'



# Meet the researcher

**Dr Amber Adams-Progar**  
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Dr Amber Adams-Progar began her research career at Texas A&M University, where she investigated the impact of transport on cattle stress levels, and was awarded her PhD in 2012. Upon graduating, she worked as a Research Associate at the University of Minnesota, before taking her current role as Assistant Professor in the Department of Animal Sciences, Washington State University. During this short time, she has authored over 17 peer-reviewed publications in prestigious academic journals, and has successfully applied for grants and research donations totalling over \$450,000 for her research group. Dr Adams-Progar is also regularly featured in trade press discussing recent scientific breakthroughs, and has hosted a number of workshops and training events where the practical outcomes of her research are provided to the agricultural community.

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