

# Project Overview

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## Use of oaten hay to support sustainable development of dairy production

January 2021 - February 2025

### Background

During the past decade, there has been limited investment into livestock nutrition research by the Australian Export Fodder RD&E Program. As a customer of the fodder industry, the livestock sector decides to purchase hay based on how efficiently it's converted to milk production or weight gain. Australian oaten hay is regularly exported to China and Japan, with perceived nutritional benefits – such as high fibre digestibility – to improve livestock intake and production.

However, based on our recent literature review and industry consultation, there is limited scientific evidence to directly support these claims. In contrast, there's an abundance of data to support the use of lucerne and grass hays in cow diets. Lucerne and grass hays are frequently exported from the USA to China, competing in the Chinese dairy market with oaten hay from Australia.

This oaten hay research gap must be addressed urgently. Focusing on this would support the continued growth of Australia's export oaten hay market in China and retain the competitiveness of Australian oaten hay in international markets.

The project will help exporters to explore and capture opportunities to export more oaten hay to China. By replicating Chinese feeding systems, the project will provide solid evidence to support hay exporters to communicate and promote the nutritional benefits of Australian oaten hay for Chinese dairy production. More importantly, the methods and frameworks developed from this project, will help scientists conducting future projects in other countries that import Australian fodder, such as Japan.

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### Objectives

The project objectives include:

1. Review international scientific literature (in Chinese and English) about feeding oaten hay for livestock production.
2. Understand how, when, and why the Chinese dairy industry uses oaten hay in cow diets.
3. Develop scientific evidence through forage quality, rumen fermentation, digestibility, weight gain and milk production studies. Use this evidence to educate and promote the use of Australian oaten hay in Chinese dairy production.
4. Test and modify, as required, existing modelling approaches to predict cow weight gain and milk production, economic outcomes, urinary nitrogen excretion and greenhouse gas emissions from feeding Australian oaten hay. Develop four case studies for the use of oaten hay in the Chinese dairy industry, including the prediction of production, economic and environmental outcomes.
5. Collaborate with key experts in the Australian export fodder and dairy industries, and Chinese dairy industry.



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## Research

There is limited scientific evidence to demonstrate the potential nutritional benefits of oaten hay for dairy production, despite the growth of Australian oaten hay exports and the rapid expansion of Chinese dairy production. Using situational analysis of the Chinese industry and developing scientific data, this project aims to help fodder exporters explore and capture opportunities to sell more oaten hay to China. This project will improve the understanding of how, when and why Chinese dairy producers use oaten hay in cow diets and develop scientific evidence to educate and promote the use of Australian oaten hay in Chinese dairy production.

Scientists in other countries that import Australian fodder could benefit from the methods and frameworks developed as part of this project. The project will include a four-year, stepwise experimental program, comparing oaten hay use in dairying with the use of wheat, barley, timothy, ryegrass and lucerne hays as well as corn silage. The findings will be communicated to fodder exporters and the broader public through project reports, press releases, conference presentations, scientific journal publications and bilingual factsheets. The University of Melbourne will lead the project in collaboration with key experts in the Australian export fodder and dairy industries, and in the Chinese dairy industry.

## Expected outcomes and implications:

The project outcomes include:

1. Improved knowledge of oaten hay and its beneficial attributes for dairy production.
2. Enhanced understanding of how, when, and why Chinese dairying uses oaten hay in the diets of its cows and heifers.
3. Identified logistical constraints in the supply chain for exporting oaten hay to China.
4. Developed new knowledge about oaten hay and its affect on animal performance including nutritive value, rumen fermentation characteristics, nutrient digestibility, weight gain, milk production and its performance compared with other forages used in Chinese dairying.
5. Established prediction models to better understand the production, economic, urinary nitrogen excretion, and greenhouse gas emission implications of feeding oaten hay in various cow diet formulations.
6. Produce a scientific, evidence-based factsheet with a technical guidance manual about using oaten hay in a total mixed ration dairying system. This will be produced in English and Chinese, allowing Australian fodder exporters to illustrate and promote the nutritional benefits of Australian oaten hay to the Chinese dairy industry.

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