

IRRIGATION SCHEME NUTRIENT MANAGEMENT IN AN ARABLE DENSE AREA

Eva Harris

Principal Environmental Advisor

Agronomy Symposium 2022



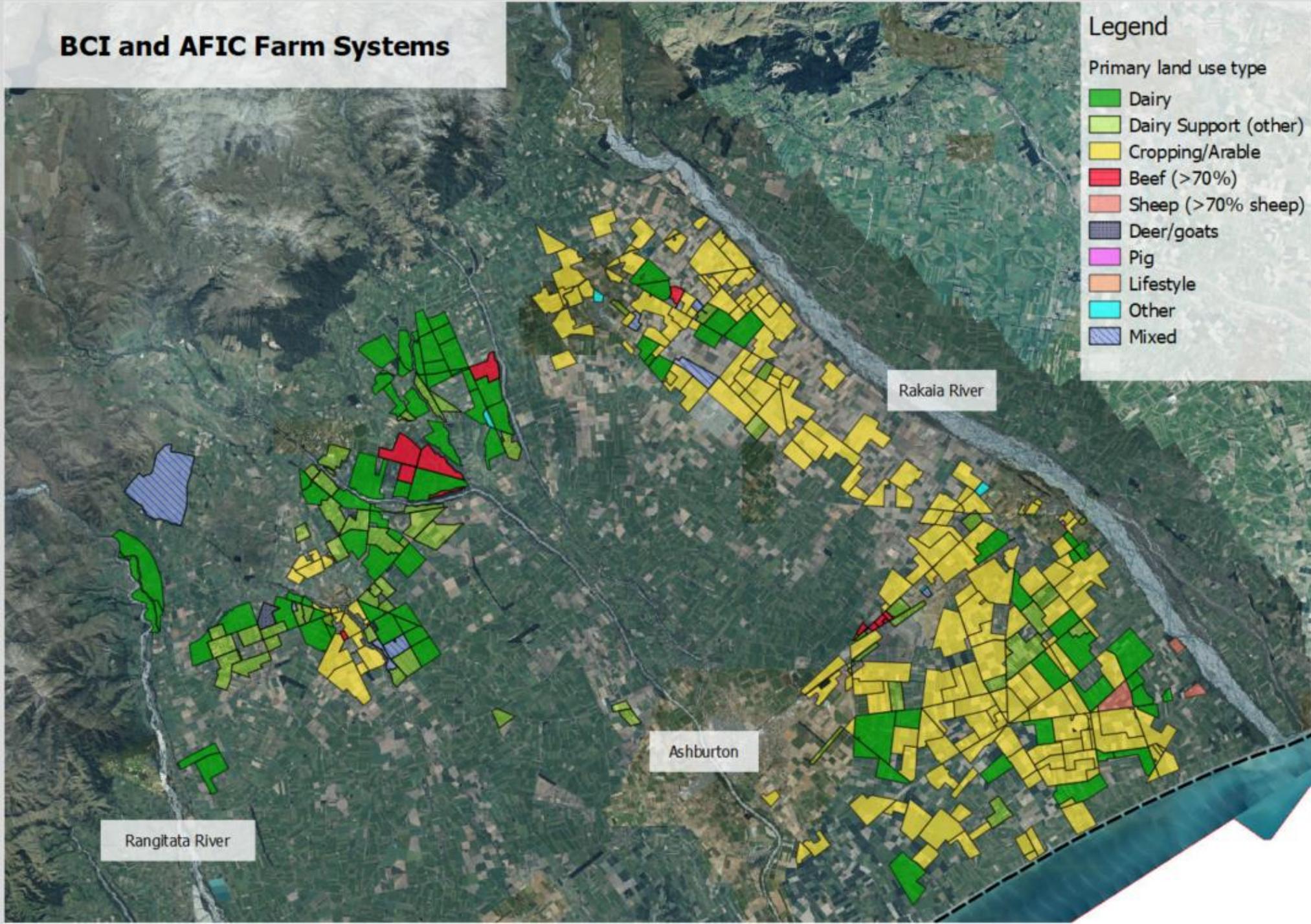
**ENVIRO
COLLECTIVE**

ABOUT US

Enviro Collective has been working with BCI and AFIC schemes and shareholder farms for over seven years to reduce their environmental impact.



BCI and AFIC Farm Systems



- Started 2010
- ~200 farms
- ~ 60,000 ha
- 53% arable/hort



BACKGROUND

CONSENT

Granted 2013, expired 2021
First of its kind in Canterbury
Growth within limits
GMP by 2020

EMS

Environmental Management
Strategy
Legal effect under water agreement
Audited

N CAP

N load limit
Reported annually using
Overseer

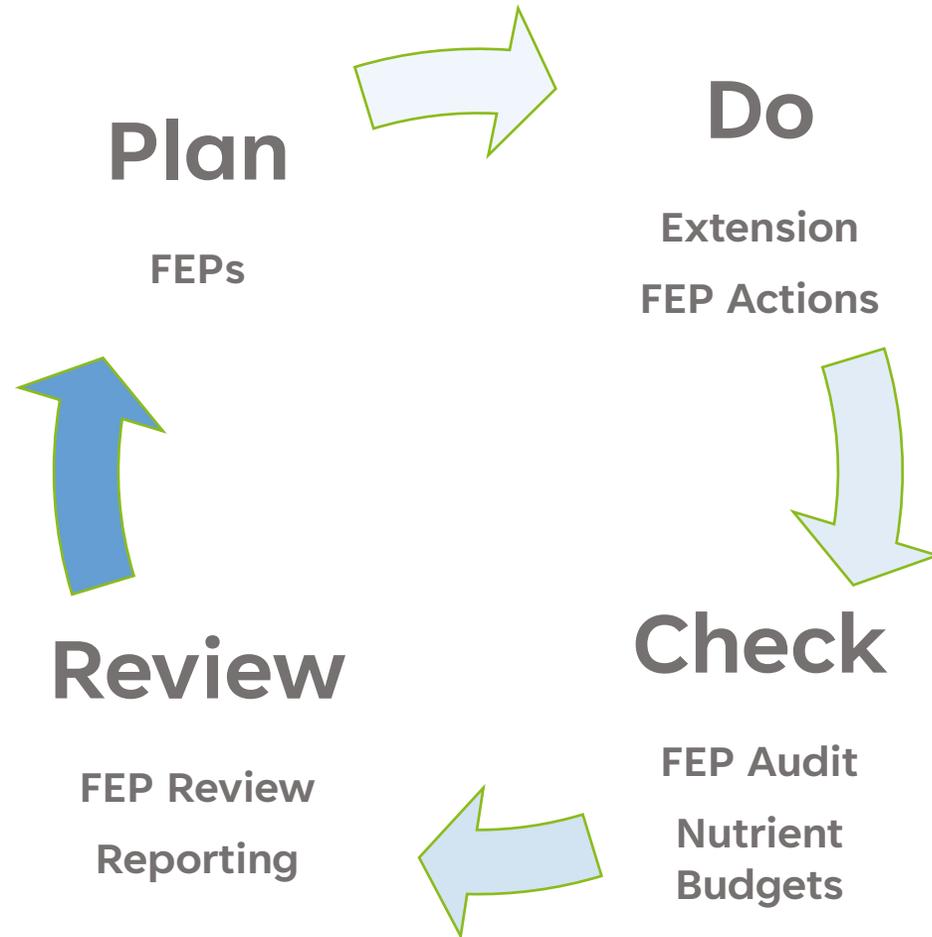
FARM PLANS

ID and Mitigate Risks
Required for all farms

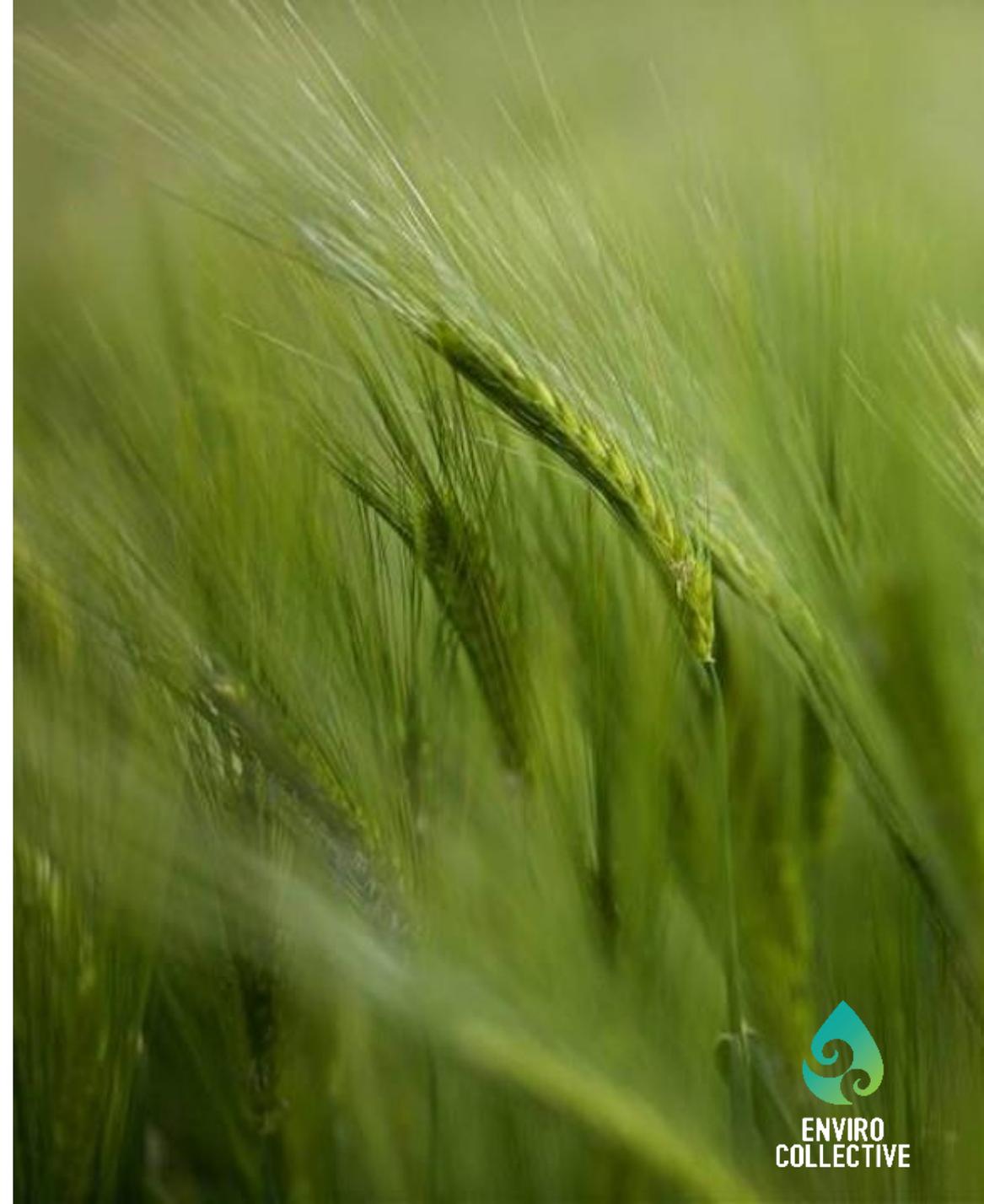
AUDITS

Started 2016
Makes sure farms meet GMP

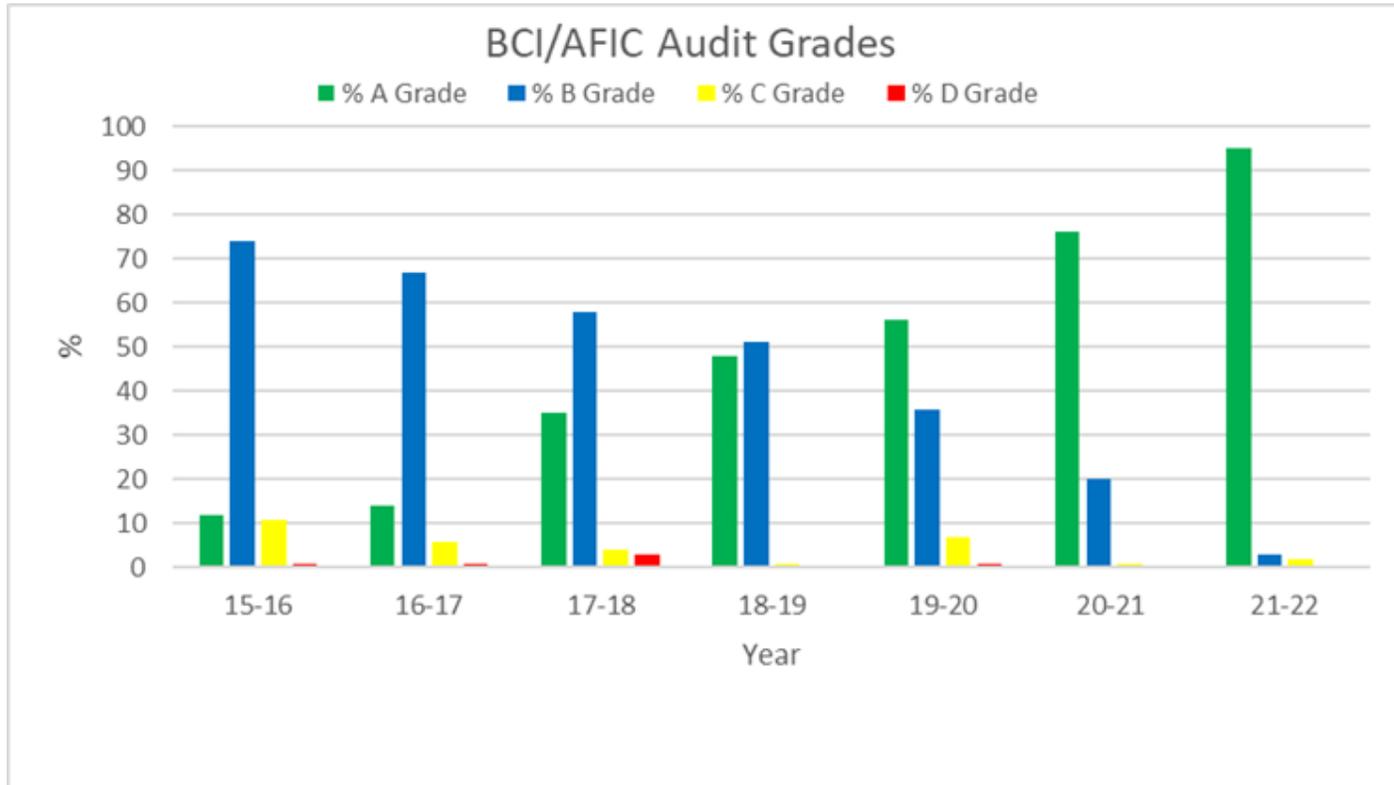
WHAT DID WE DO?



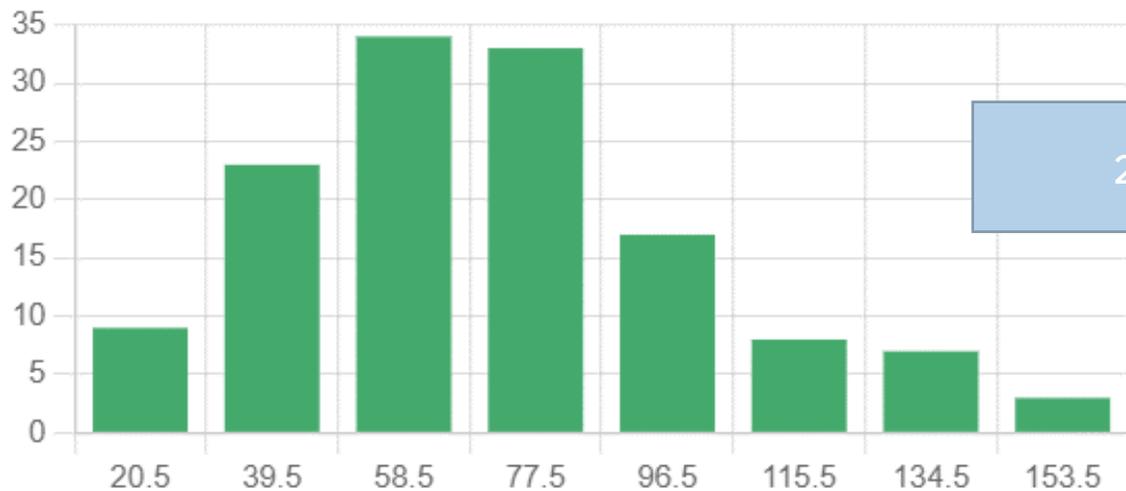
Cycle of Continuous Improvement



HOW DID WE GO?

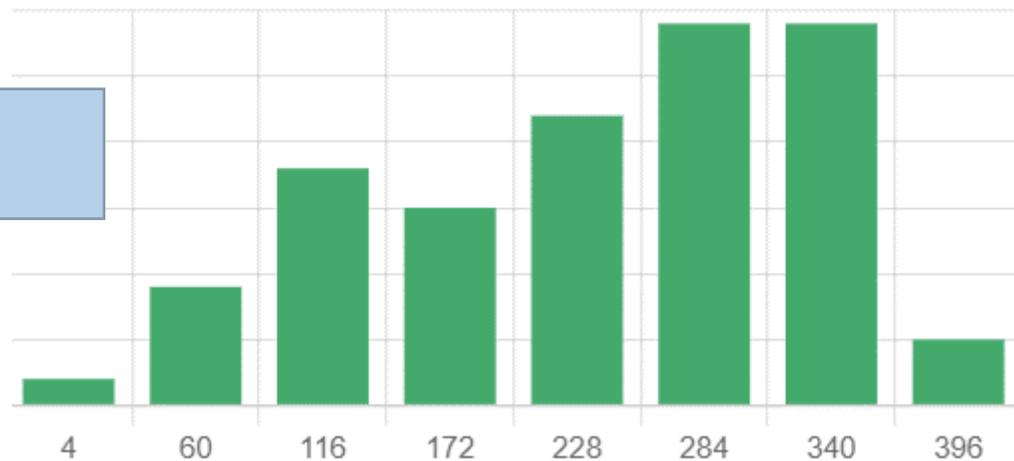


N loss (kg/ha)

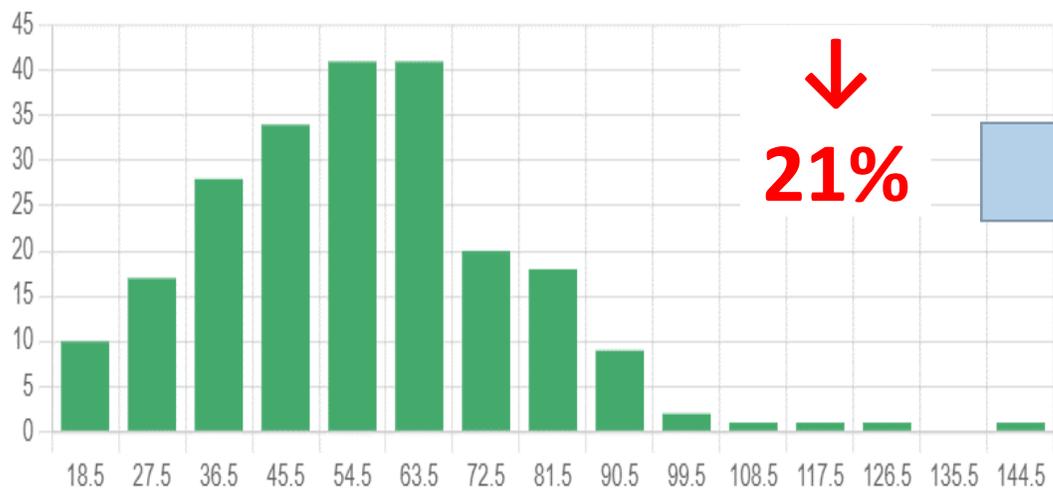


MIN	MAX	MEAN	MEDIAN	STD DEV	LOWER QUARTILE	UPPER QUARTILE
11	229	73.8	70	33.4	50	90

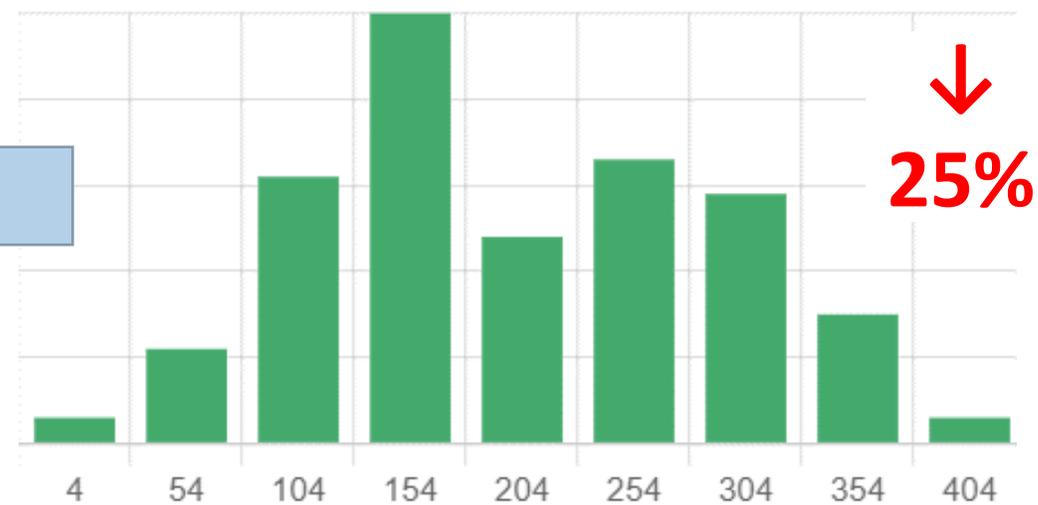
N surplus (kg/ha)



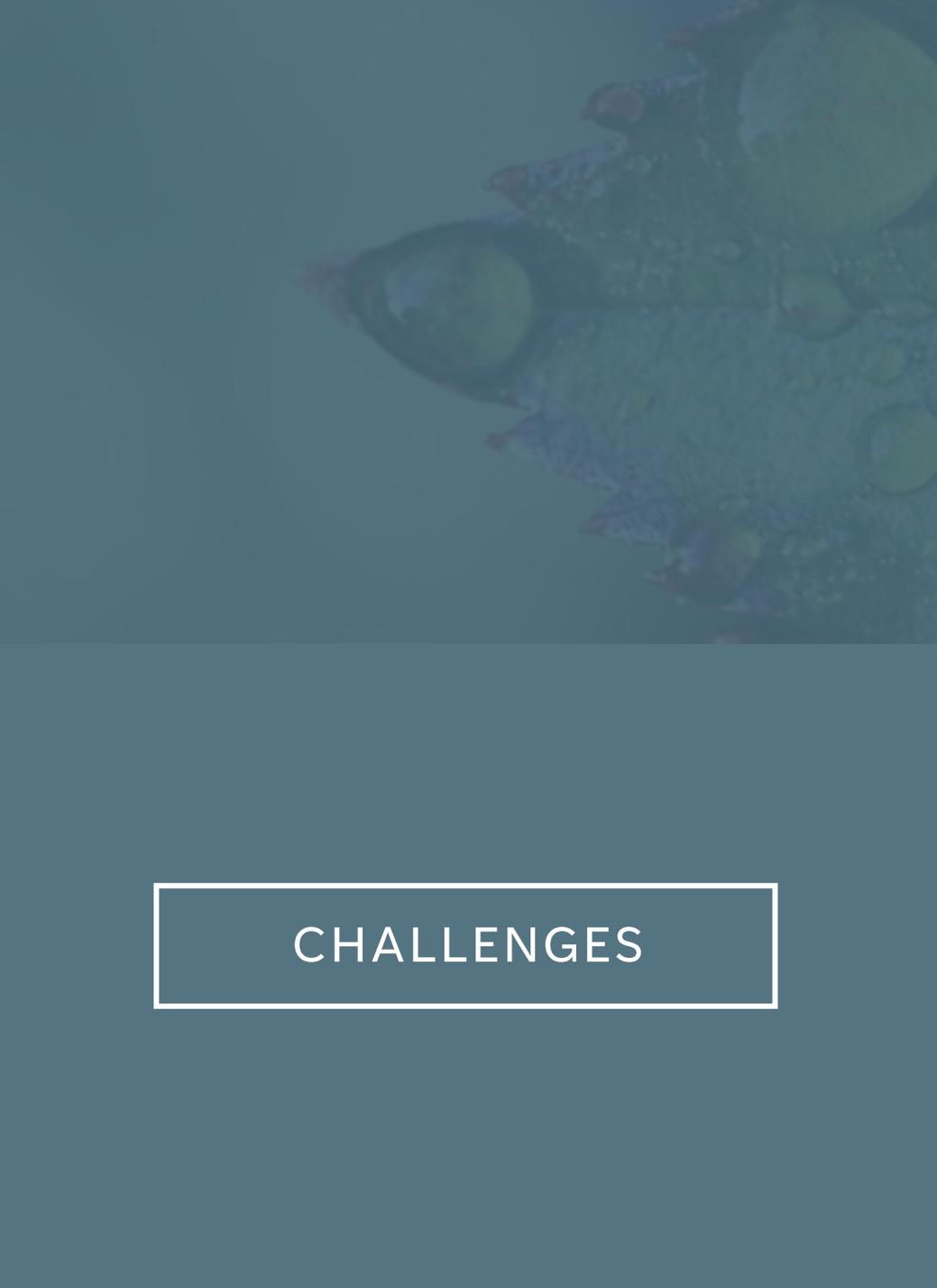
MIN	MAX	MEAN	MEDIAN	STD DEV	LOWER QUARTILE	UPPER QUARTILE
-136	532	234.9	249	105.8	147	318.3



MIN	MAX	MEAN	MEDIAN	STD DEV	LOWER QUARTILE	UPPER QUARTILE
14	142	55.7	55	20.9	41	67.5



MIN	MAX	MEAN	MEDIAN	STD DEV	LOWER QUARTILE	UPPER QUARTILE
-271	471	195	186	105	130.5	271



CHALLENGES



GMP not linked to water quality outcomes in catchment

Annual Overseer budgets expensive, unpredictable

On-farm limits not clear



NEW CONSENT

MATRIX

Catchment N calculator

Within 1% Overseer

Representative N loss based on on-farm GIS maps

ADVANCED MITIGATION

Step beyond GMP

Cost neutral or beneficial to farmers

Targeted to address water quality in catchment

SENSITIVE RECEPTORS

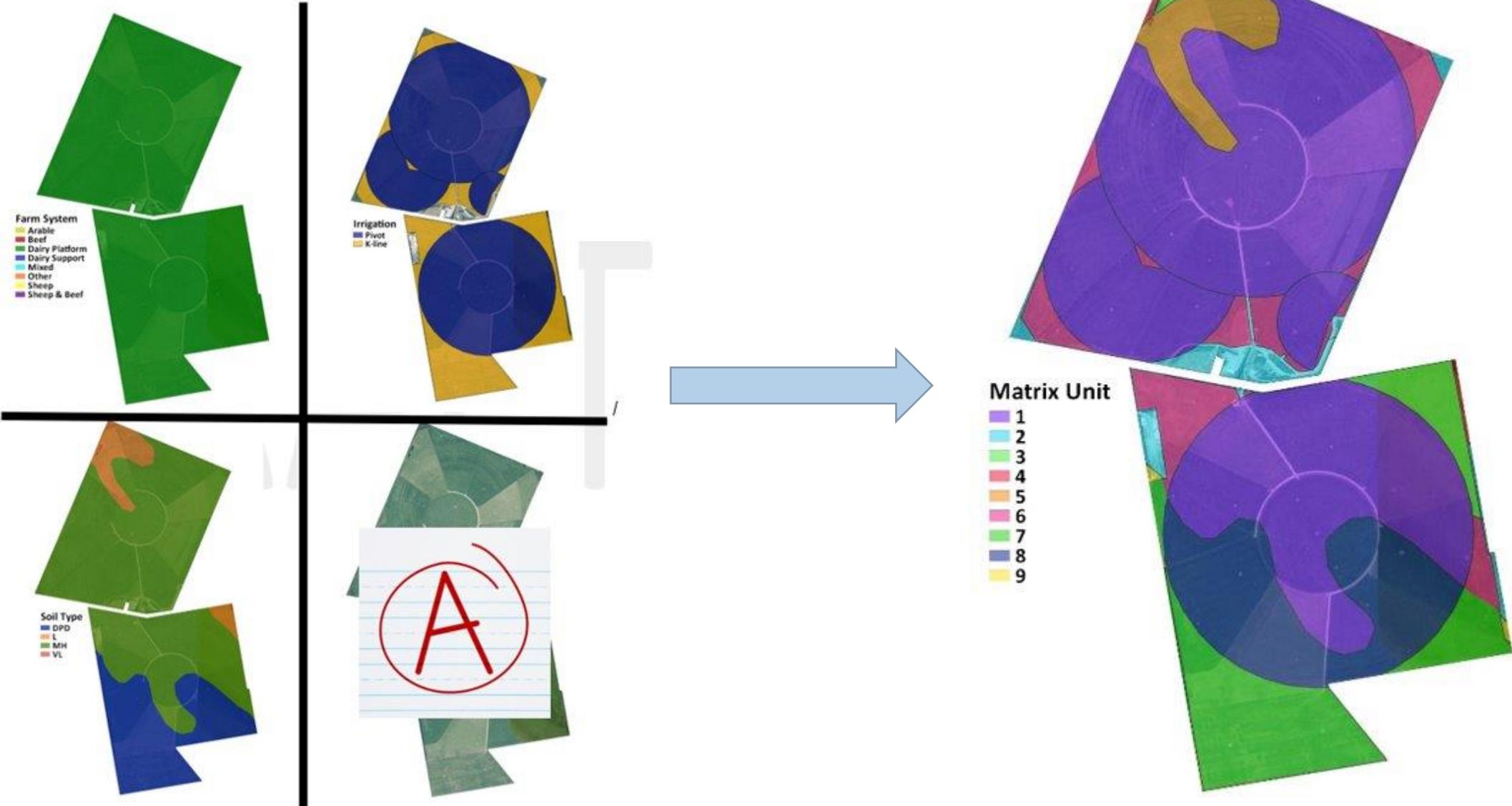
Avoid, remedy or mitigate effects

WATER MONITORING

Sets baseline for catchment

Adaptive management if water quality deteriorates

MATRIX



THE MATRIX – WHAT DOES IT MEAN?

- Apples with apples reporting
- Predictable trends
- Long term planning
- On-farm risk assessment tool



ADVANCED MITIGATION

SUMMARY

Achievement targets set in consents

Integrated into existing audit framework

Standards designed for water quality issues in our catchment

Modelled in Matrix

KEY OUTCOMES

- Precise and accurate irrigation to meet crop demand, maximise capture of rainfall
- Optimise N surplus for property
- Manage point sources

SUMMARY

Understand what needs to be achieved
Have clear, consistent goals
Make it practical



QUESTIONS?



Eva Harris
eva@envirocollective.co.nz

