Smarter Irrigation for Profit PHASE II

Key Learning Sites Southern – making the most of water

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Australian Government
Department of Agriculture, Water and the Environment

PARTNERS

Irrigation/water challenge addressed

Q: How to best use water across different crops in a low water environment?

- Demonstrate management strategies and tools to help improve irrigation efficiency
- Assess feasibility of investing in improvement and change of irrigation systems

Achievements to date

LOTS

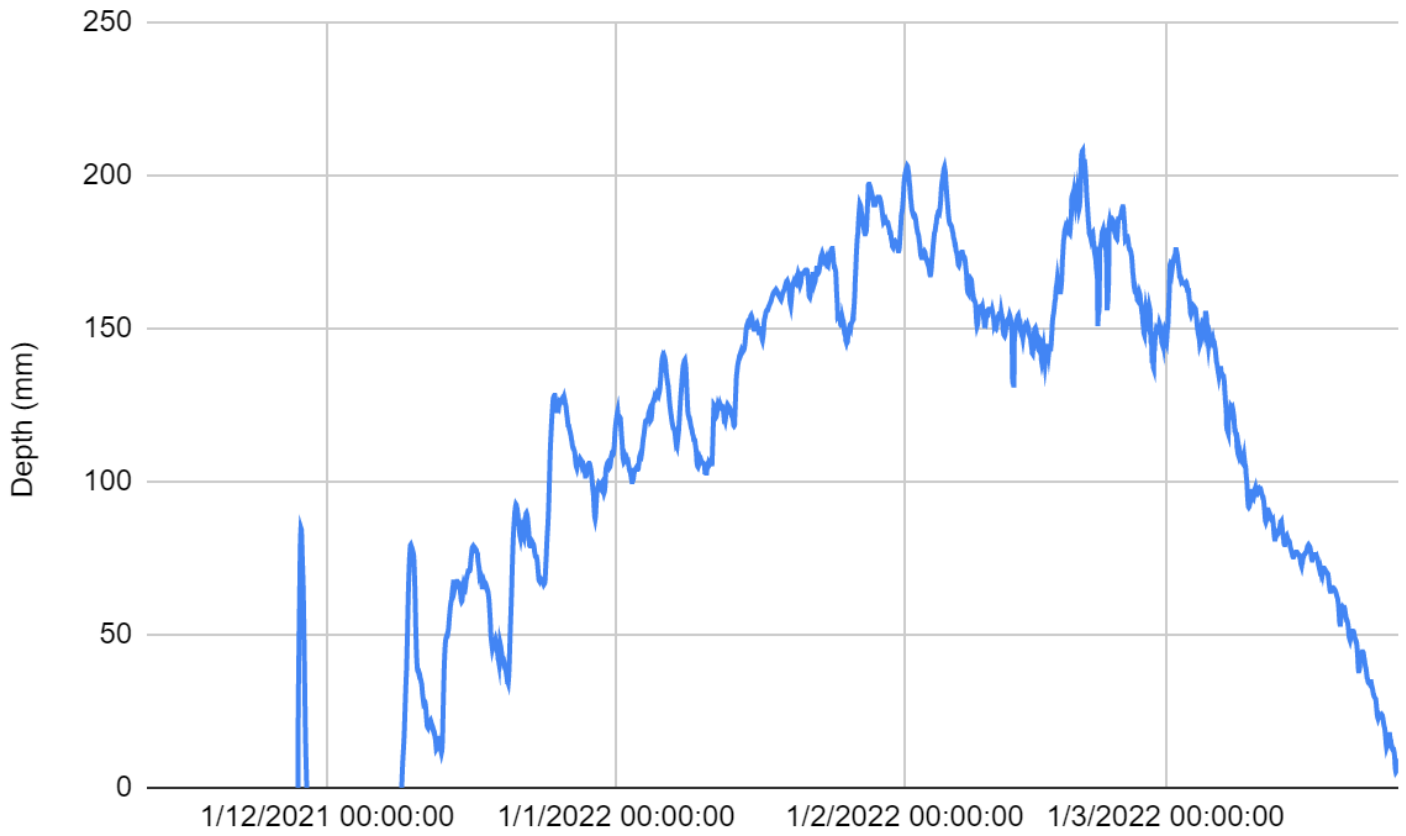
	Number	Audience reached
Field day	7	471
Newsletter	8	2392
Facebook	56	14,560
Tweet	101	187,624
Grower group crop walk	3	39
Printed booklet	1	300
Email	13	3,800
Podcast episode	1	142
Virtual field day	1	32

Key Learning Sites

- Central West Farming systems (CWFS)
- Irrigation Research & Extension Committee (IREC)
- Southern Growers (SG)
- Irrigated Cropping Council (ICC)

Smarter Irrigation for Profit PHASE II

Monitoring rice water heights and soil moisture



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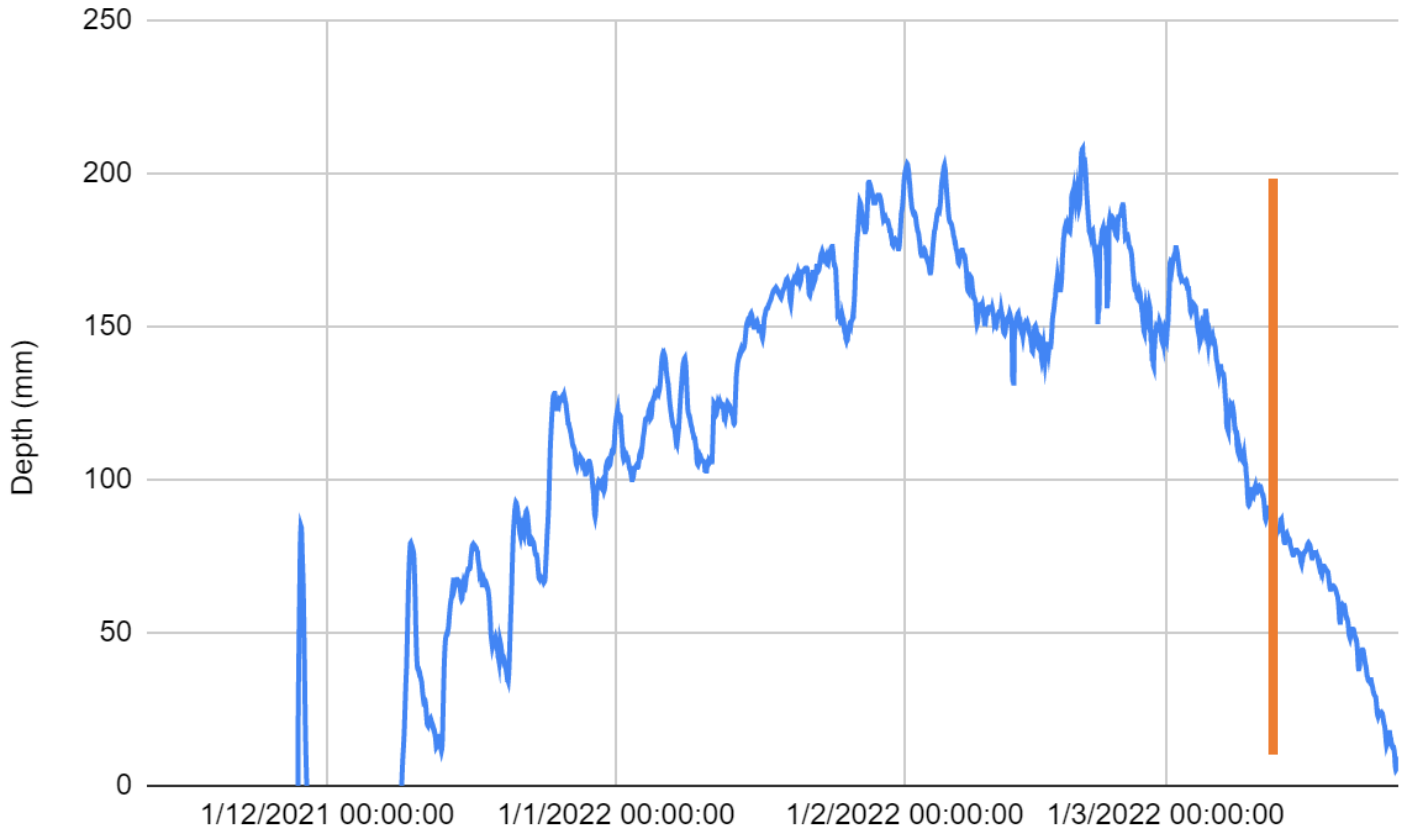
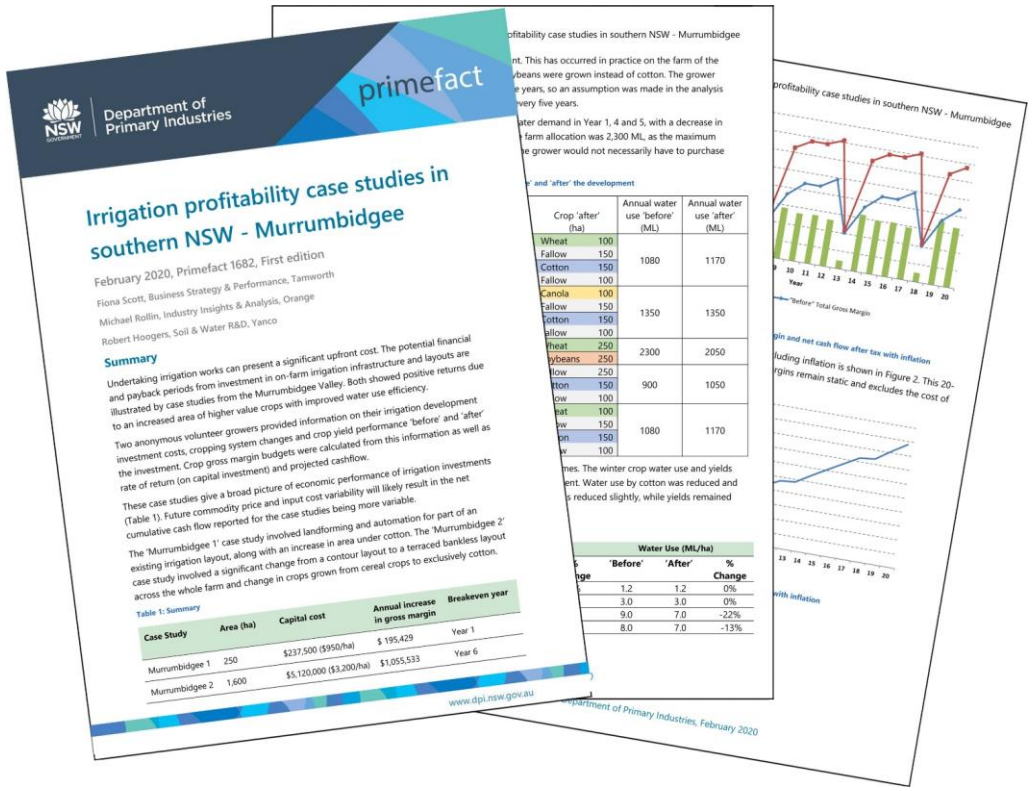


Economic analysis



RMCG

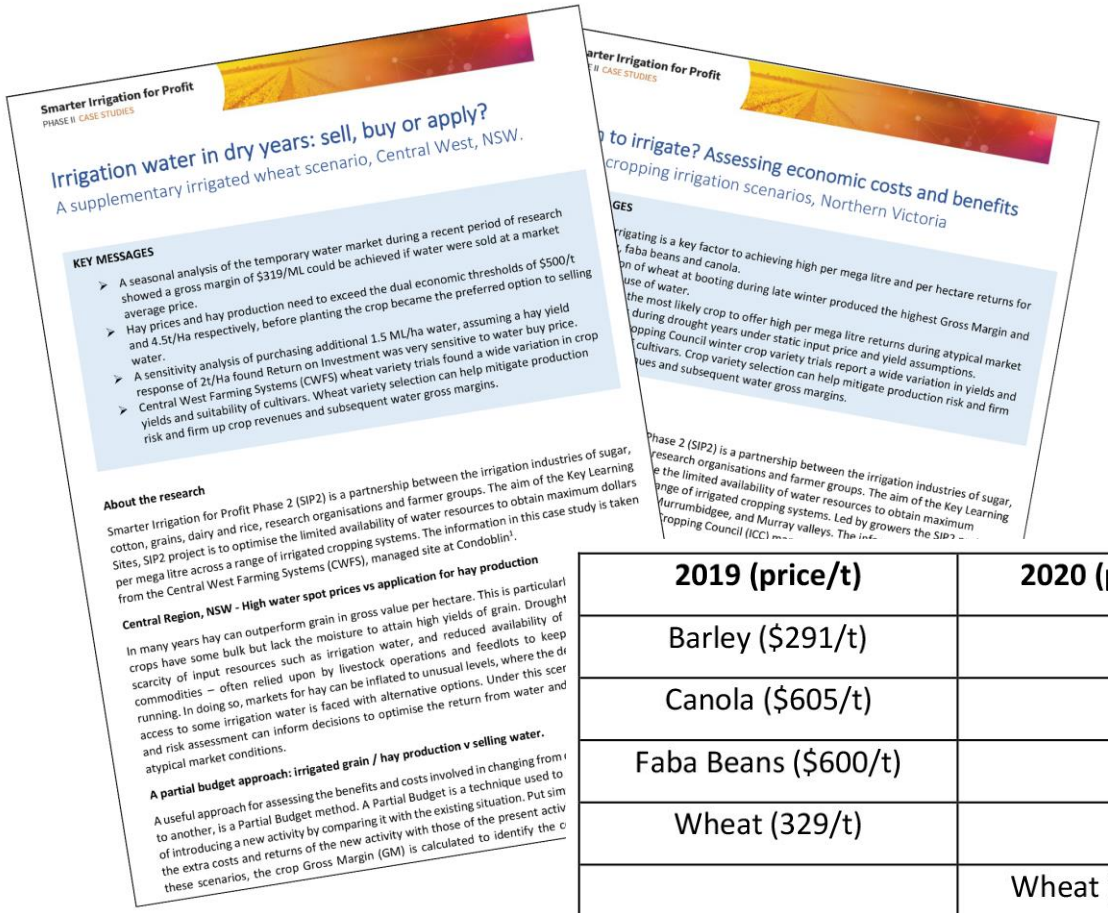
Analysis of risk:

- Water markets
- Yield
- Commodity prices

Case studies included:

- Purchase undeveloped land
- Converting surface irrigation to overhead
- Upgrade to automated irrigation system

Economic analysis



Smarter Irrigation for Profit
PHASE II CASE STUDIES

Irrigation water in dry years: sell, buy or apply?

A supplementary irrigated wheat scenario, Central West, NSW.

KEY MESSAGES

- A seasonal analysis of the temporary water market during a recent period of research showed a gross margin of $319/ML could be achieved if water were sold at a market average price.
- Hay prices and hay production need to exceed the dual economic thresholds of $500/t and 4.5t/Ha respectively, before planting the crop became the preferred option to selling water.
- A sensitivity analysis of purchasing additional 1.5 ML/ha water, assuming a hay yield response of 2t/Ha found Return on Investment was very sensitive to water buy price.
- Central West Farming Systems (CWFS) wheat variety trials found a wide variation in crop yields and suitability of cultivars. Wheat variety selection can help mitigate production risk and firm up crop revenues and subsequent water gross margins.

About the research

Smarter Irrigation for Profit Phase 2 (SIP2) is a partnership between the irrigation industries of sugar, cotton, grains, dairy and rice, research organisations and farmer groups. The aim of the Key Learning Sites, SIP2 project is to optimise the limited availability of water resources to obtain maximum dollars per mega litre across a range of irrigated cropping systems. The information in this case study is taken from the Central West Farming Systems (CWFS), managed site at Condoblin[1].

Central Region, NSW - High water spot prices vs application for hay production

In many years hay can outperform grain in gross value per hectare. This is particularl crops have some bulk but lack the moisture to attain high yields of grain. Drought scarcity of input resources such as irrigation water, and reduced availability of commodities – often relied upon by livestock operations and feedlots to keep running. In doing so, markets for hay can be inflated to unusual levels, where the de access to some irrigation water is faced with alternative options. Under this scer and risk assessment can inform decisions to optimise the return from water and atypical market conditions.

A partial budget approach: irrigated grain / hay production v selling water.

A useful approach for assessing the benefits and costs involved in changing from to another, is a Partial Budget method. A Partial Budget is a technique used to of introducing a new activity by comparing it with the existing situation. Put sim the extra costs and returns of the new activity with those of the present activ these scenarios, the crop Gross Margin (GM) is calculated to identify the c

Smarter Irrigation for Profit
PHASE II CASE STUDIES

to irrigate? Assessing economic costs and benefits

cropping irrigation scenarios, Northern Victoria

GES

rigating is a key factor to achieving high per mega litre and per hectare returns for , faba beans and canola.
on of wheat at booting during late winter produced the highest Gross Margin and use of water.
the most likely crop to offer high per mega litre returns during atypical market during drought years under static input price and yield assumptions.
opping Council winter crop variety trials report a wide variation in yields and cultivars. Crop variety selection can help mitigate production risk and firm ues and subsequent water gross margins.

Phase 2 (SIP2) is a partnership between the irrigation industries of sugar, research organisations and farmer groups. The aim of the Key Learning e the limited availability of water resources to obtain maximum ange of irrigated cropping systems. Led by growers the SIP2 Murrumbidgee, and Murray valleys. The inf
Cropping Council (ICC) ma

AgEcon

Central West Farming Systems:

- Hay 4.5t/ha @ $500/t, water $311/ML
- Showed opportunities in drought to make money off purchased water

Irrigated Cropping Council:

2019 (price/t)	2020 (price/t)	Irrigation Treatment	Best Gross Margin decision option (@$60/ML)	
Barley ($291/t)		Pre-irrigation + 1 spring	$860/ha	$313/ML
Canola ($605/t)		Pre irrigation + full spring	$1,463/ha	$390/ML
Faba Beans ($600/t)		Pre irrigation + full spring	$1,779/ha	$383/ML
Wheat (329/t)		No pre-irrig. + 1 spring	$780/ha	$520/ML
	Wheat ($270/t)	No pre-irrig. + 1 spring	$725/ha	$659/ML

Irrigated Cropping Council

	Irrigation (Ml)			Water = $60		Water = $500/750	
Wheat ASW @$329/t	Pre-irrigation	Spring	Yield (t/ha)	$/ha	$/Ml	$/ha	$/Ml
No pre-irrigation + 1 spring	0	1.5	3.62	$780	$520	-$255	-$170
No pre-irrigation + full spring	0	3.4	5.00	$1,105	$381	-$897	-$308
Pre-irrigation + 1 spring	1.75	1.0	4.95	$1,075	$391	-$385	-$140
Pre-irrigation + full spring	1.75	2.9	6.15	$1,255	$270	-$1,516	-$326

Gross margin for the average of the 6 wheat varieties. Input costs (excluding water and urea) used in the calculation were $318/ha

Irrigated Cropping Council

Treatment	Irrigation (mm)	Harvest DM t/ha	Header Yld	Yield (12%)	Protein %	Screen %	TGW	Test weight kg/hl	HI	kg/mm	GM $/Ml	GM $/ha
SMM Full Spr	420	19.24	7.47	7.66	9.3	1.8	45.0	85.0	0.40	15.9	$ 262	$ 1,102
SMM 2 Spr	330	17.98	7.08	7.25	8.8	1.3	43.4	83.4	0.39	18.6	$ 332	$ 1,095
Flowering	240	17.18	6.26	6.42	10.4	1.0	45.6	84.7	0.40	21.6	$ 401	$ 961
Boot	240	18.17	6.22	6.38	9.3	1.1	45.8	85.7	0.40	21.4	$ 396	$ 950
Boot + Flower	330	20.18	6.46	6.63	9.3	0.7	45.0	85.4	0.41	17.0	$ 276	$ 912
No Spr	150	15.93	5.70	5.85	10.1	2.7	39.6	83.5	0.39	28.5	$ 603	$ 904
											$120/Ml	

Extension

Before SIP2

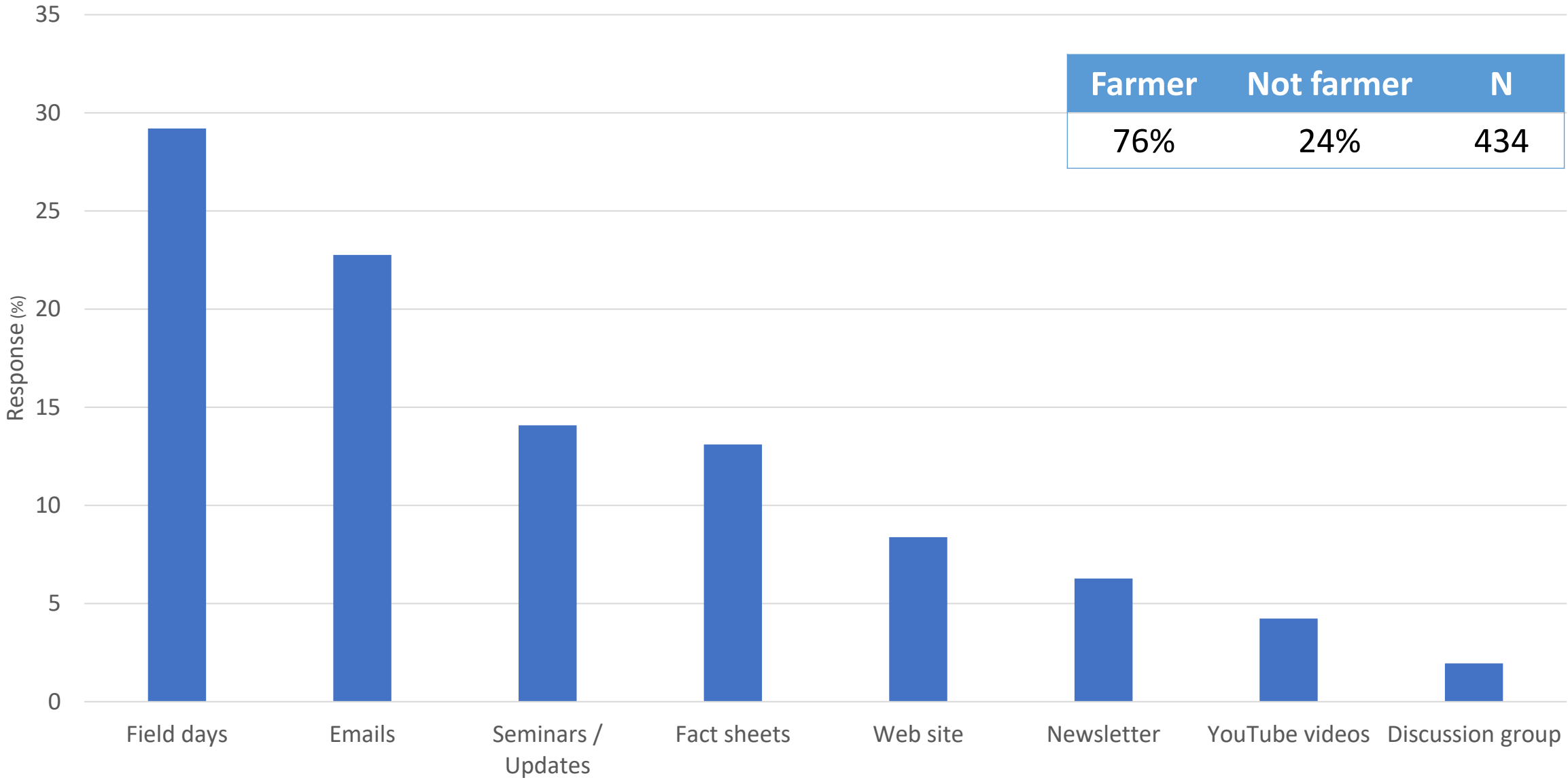
How did people like to get there information?

‘Soils under an irrigated environment’

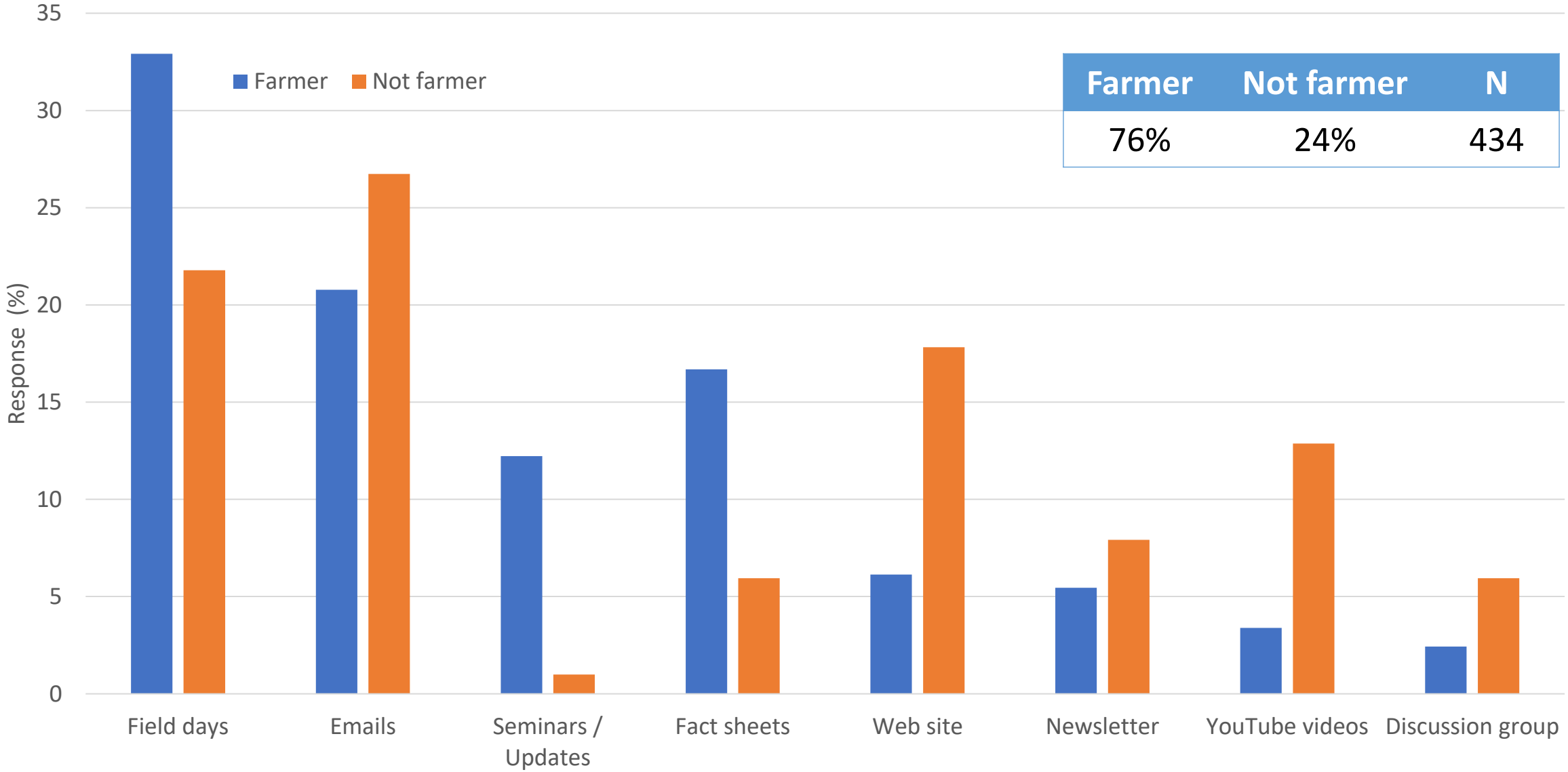
NSW Department of Primary Industries, GRDC funded project

Soils under an irrigated environment - First preference – 2015/2016

Farmer	Not farmer	N
76%	24%	434

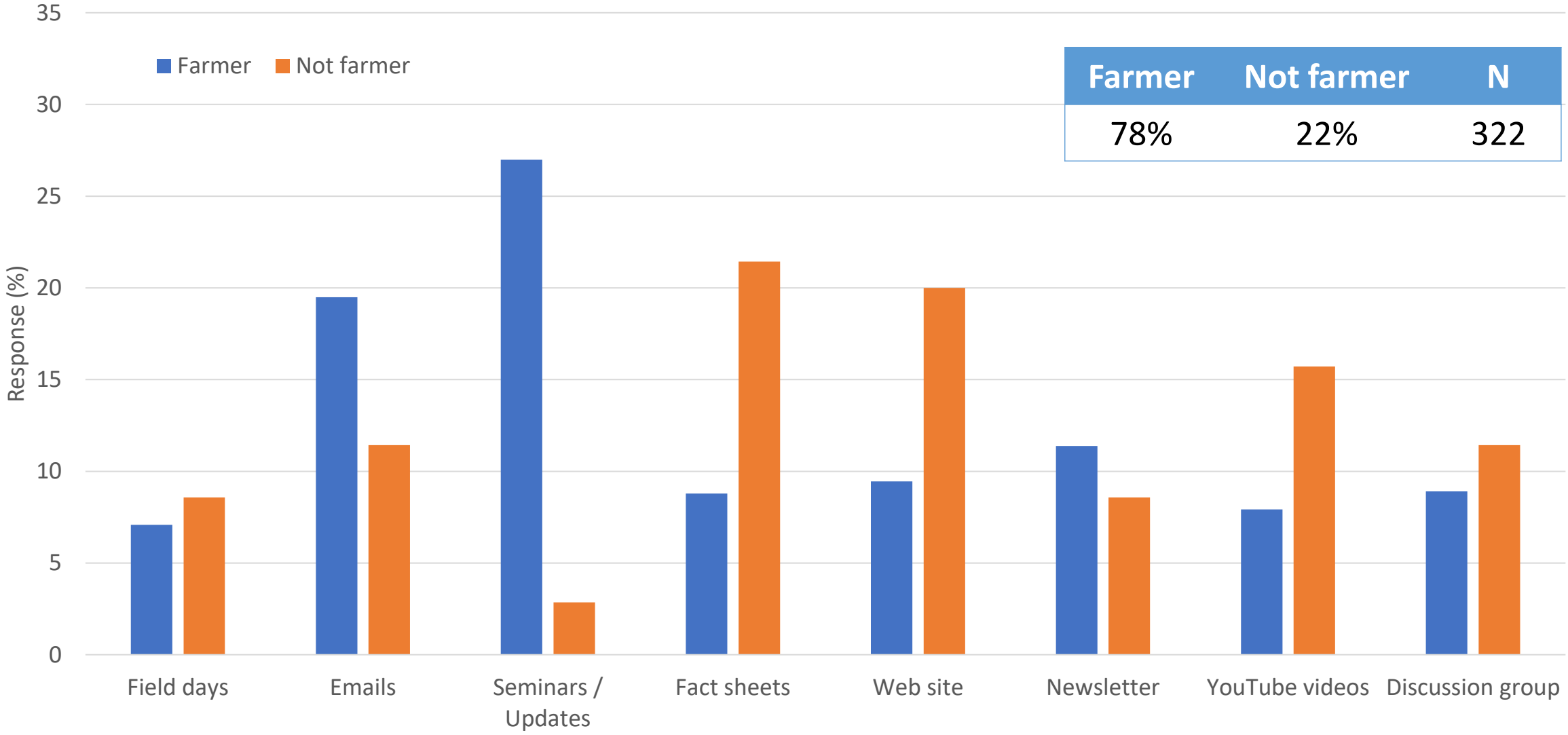


Soils under an irrigated environment - First preference - split



Farmer	Not farmer	N
76%	24%	434

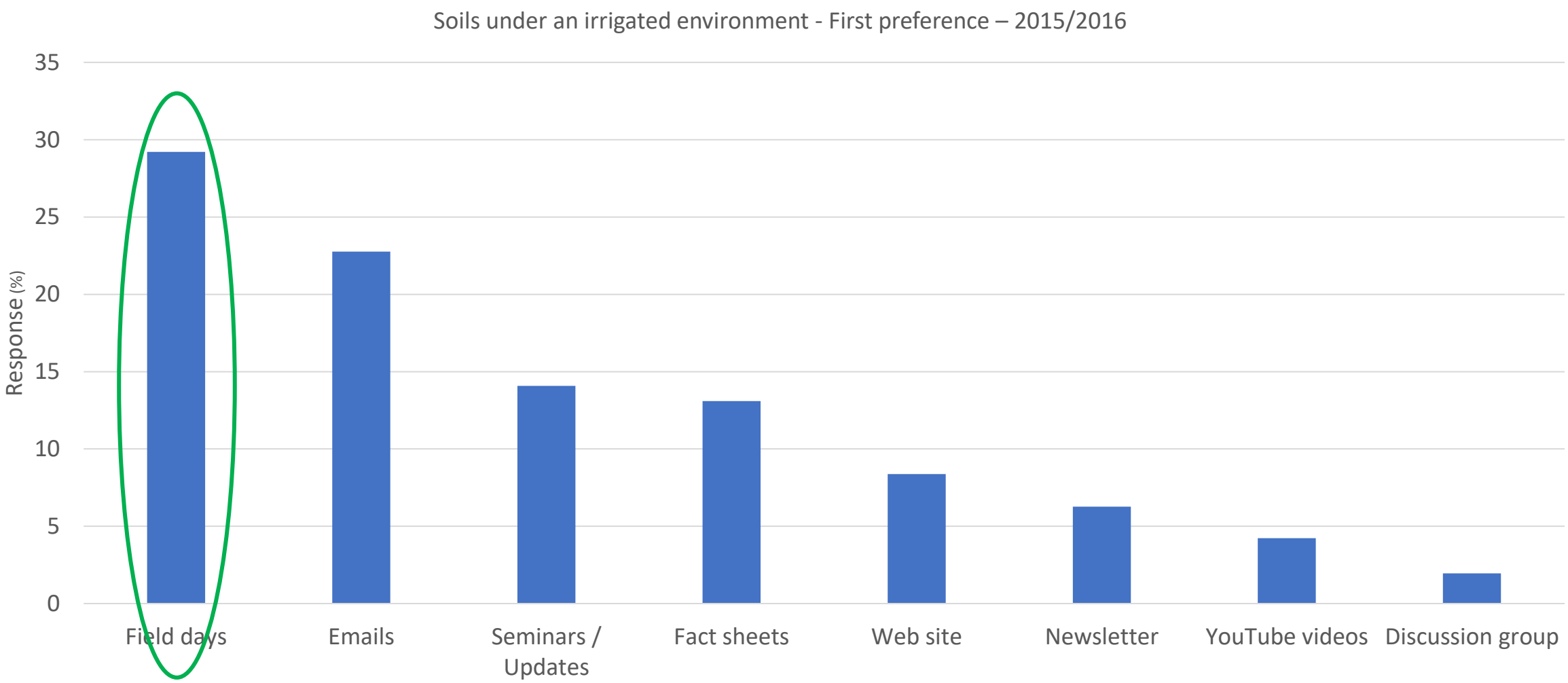
Soils under an irrigated environment - Second preference - split



Farmer	Not farmer	N
78%	22%	322

2020 KG2 findings

Farmers and service providers are most likely to attend field days (avg. **7.9 and 8.2/10**) followed by discussion groups (avg. **7.7 and 7.8/10**)



2020 KG2 findings

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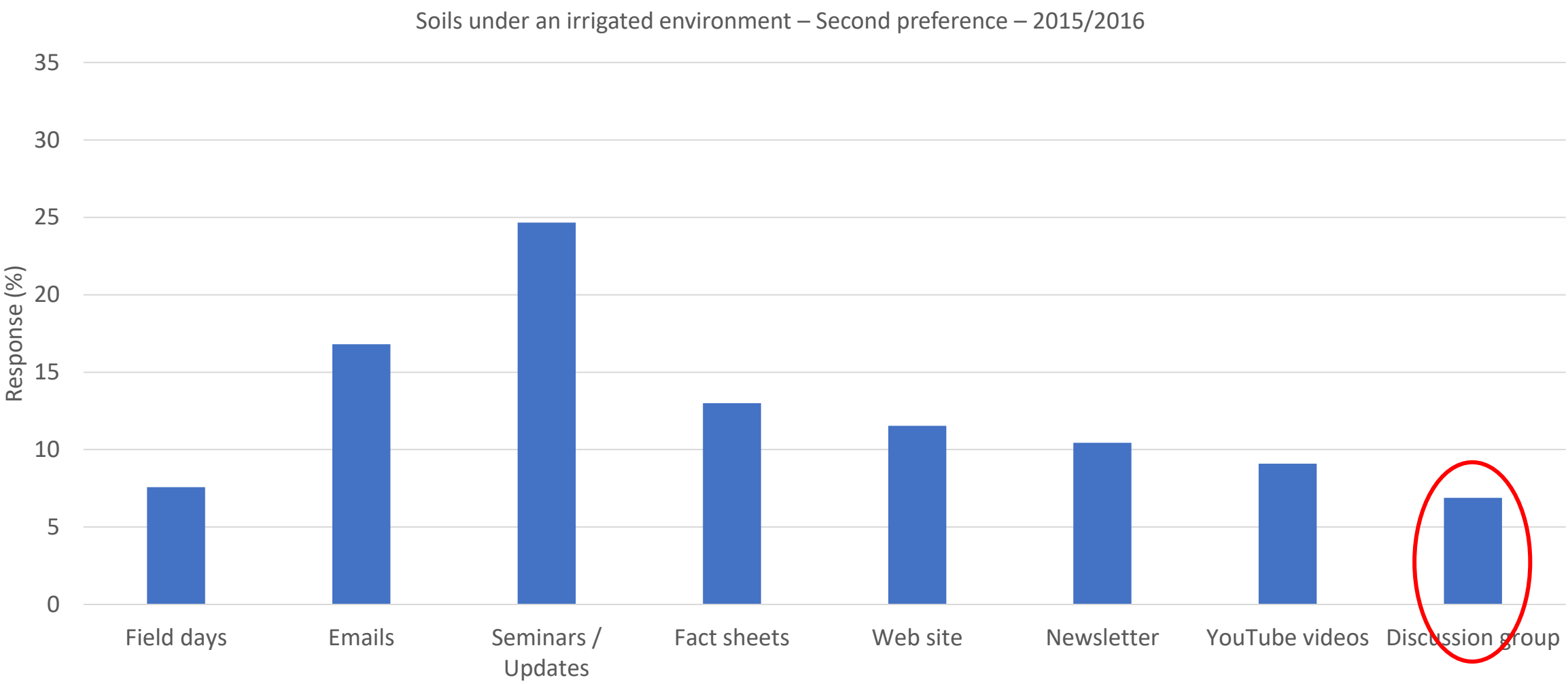


The challenge

Small/C-safe field days

- Less discussion
- Less socialising

Moving online:

- More service providers
- Fewer attending
- Far less discussion
- Only viewed when publicised
- Legacy

Online content:

- Needs to be short
- Legacy

ICC @IrrigatedCC · 23 Sep 20

Last chance to register for tomorrows Virtual Field Day. We'll be joined by Nick Poole @far_australia and @Alex__Schultz @nswdpi at 8.30 to discuss all the latest #irrigatedgrains research. Message mel.mann@irrigatedcroppingcouncil.com.au for login details

Trend:

- Greater support for field days/crop walks
- More service providers (at some sites)

Project tours…

Northern tour

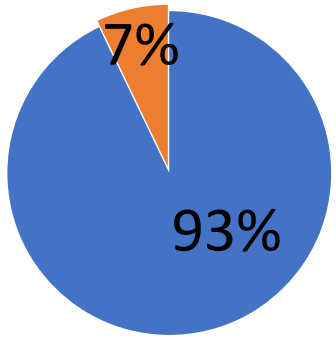
Why Growers attended:

- Networking
- Automation + irri tech
- Improve knowledge
- See other areas and ideas – 100%

What was of most value:

- Networking
- Irrigation layout and tech
- Talking to farmers about problems with water

Have you gained knowledge or skills as a result of this tour?



Informal "chat" (evaluation):

- Grower to grower learning
- Research too technical
- More machinery
- Water through stop

Southern tour

First attempt:

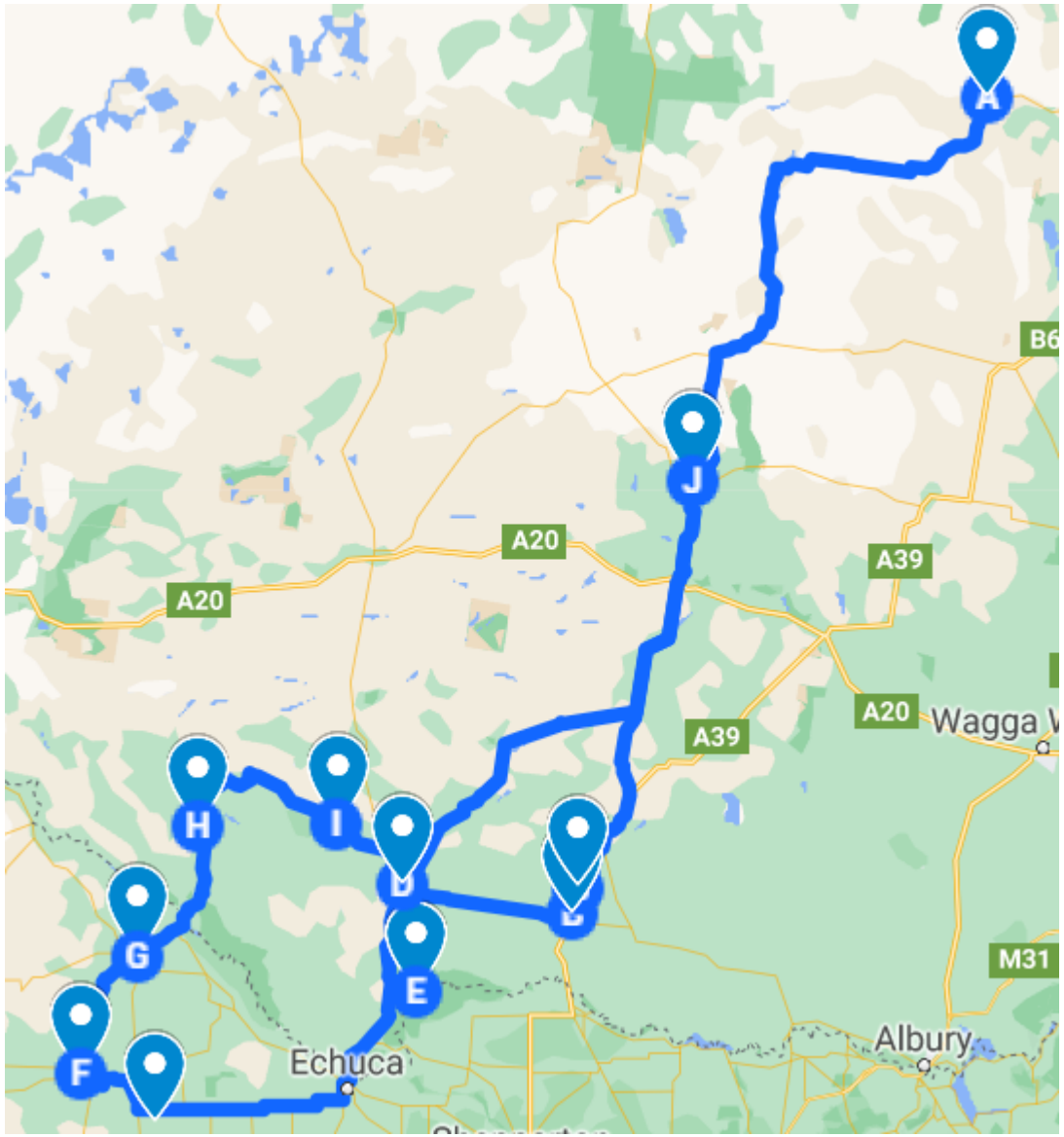
- Planed for September 2021
- Postponed due to cross boarder closure

Second attempt:

- Planned for February 2022
- Cancelled due to low numbers (3 growers)

Why the low numbers:

- **Too busy**
- **Covid**
- Not enough info given
- Not enough notice
- Too long (3 days)
- Cross industry (felt topics were irrelevant)



What next?

- **Field work/demonstrations**
- **SIP2 videos**
- **Economics videos and factsheets**

More **water** and **time** efficient farms

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Australian Government
Department of Agriculture, Water and the Environment

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