

**Published peer reviewed scientific evidence about the soil
types within the PC69 area
and
comments in relation to K. McCusker's Evidence**

By

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I disagree with K McCusker's Conclusions on Versatile Soils in the PC69 area

1. In my opinion the area of highly productive land in the PC69 area is greater than 4.6 ha.
2. In my opinion the cumulative effect of losing this highly productive land around Lincoln is very significant.

S-Map Soil data for the PC69 area (and soils west of Springs Rd)

Soil	Area	Approximate Location
Wakanui	87 ha	c. 45% west of Springs Rd; c. 55% east of Springs Rd
Templeton	11 ha	East of Springs Rd
Taitapu	26 ha	East of Springs Rd
Flaxton/Temuka	69 ha	East of Springs Rd

S-Map Soil Data abstracted from K McCusker's Evidence Fig 2A

Green circle shows 'well drained area' with water table > 3 m BGL = c. 50 ha Highly Productive Land



Two scientific studies show no significant differences in barley yield found between Wakanui and Templeton soils despite differences in the natural drainage of the soils (Bennett et al. 1980; Bennett & Webb 1987)



Influence of soil type on barley yield

C. M. Bennett , T. H. Webb & A. R. Wallace

To cite this article: C. M. Bennett , T. H. Webb & A. R. Wallace (1980) Influence of soil type on barley yield, New Zealand Journal of Experimental Agriculture, 8:2, 111-115, DOI: [10.1080/03015521.1980.10426244](https://doi.org/10.1080/03015521.1980.10426244)

Soil	Barley Yield (kg/ha)
Wakanui	6670 a
Templeton	6830 a
Eyre stony	2810 b

(Different letters indicates statistical difference at $P < 0.01$)



Influence of soil type and irrigation on yield of spring-sown barley and peas and autumn-sown greenfeed in Canterbury

C. M. Bennett & T. H. Webb

To cite this article: C. M. Bennett & T. H. Webb (1987) Influence of soil type and irrigation on yield of spring-sown barley and peas and autumn-sown greenfeed in Canterbury, New Zealand Journal of Experimental Agriculture, 15:2, 123-133, DOI: [10.1080/03015521.1987.10425549](https://doi.org/10.1080/03015521.1987.10425549)

Soil	Barley Yield (kg/ha)
Wakanui	2770 a
Templeton	2550 a
Templeton (mod deep)	2110 b
Eyre (shallow)	1010 c

(Different letters indicates statistical difference at $P < 0.05$)



Influence of soil type and irrigation on yield of spring-sown barley and peas and autumn-sown greenfeed in Canterbury

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Higher yield of ryecorn on Wakanui soil vs Templeton soil

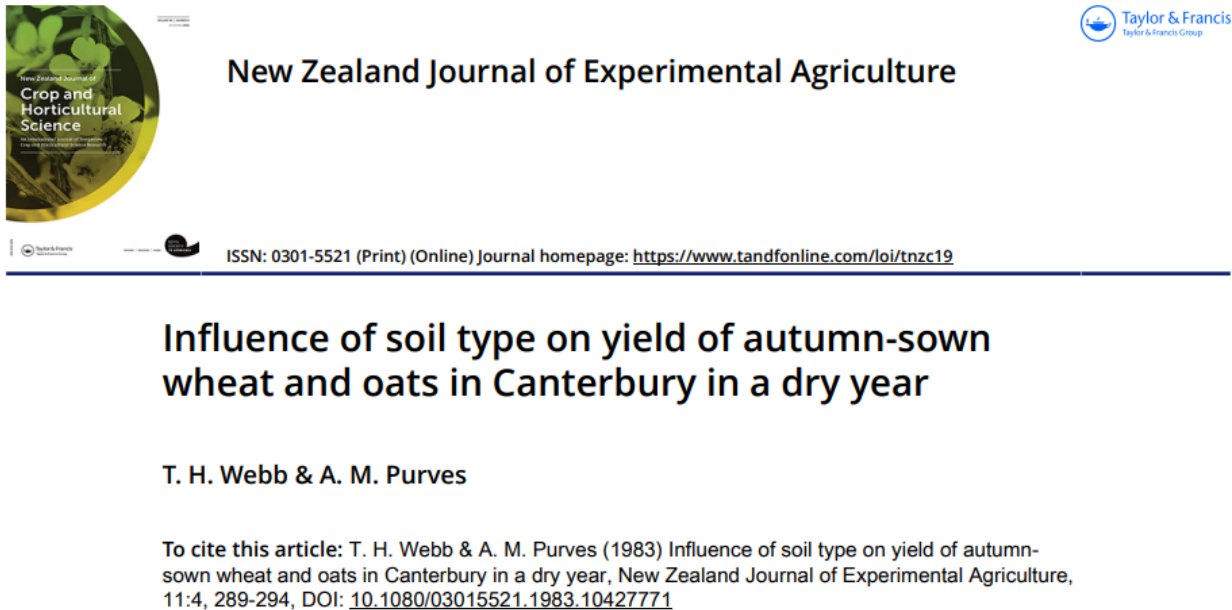
Soil	Ryecorn (kg/ha)
Wakanui	2600 a
Templeton	2380 b
Templeton (mod deep)	2130 c
Eyre (shallow)	1850 d

No significant differences in pea yields between Wakanui and Templeton soils.

Soil	Seed Pea Yield (kg/ha)
Wakanui	3060 a
Templeton	3290 a
Templeton (mod deep)	2570 b
Eyre (shallow)	1540 c

(Different letters indicate statistical difference at $P < 0.05$)

No significant difference in yield of oats on Wakanui and Templeton soils (Webb and Purves (1983))



Soil	Oats Yield (t/ha)
Wakanui	4.82 a
Templeton	4.58 a
Eyre	2.29 b

(Different letters indicate statistical difference at $P < 0.001$)

Wakanui soil produced world record wheat yield (2020)



- “Eric Watson, from Wakanui near Ashburton, has broken his own Guinness World Record for the highest average wheat yield of 17.398 tonnes per hectare. Working with his wife Maxine, he set the previous record of 16.791 tonnes with feed wheat in 2017. Irrigated wheat yields in New Zealand average about 12 tonnes per hectare.”

<https://www.caseih.com/anz/en-nz/News/Pages/World-Record-Holder-Reaps-Crop,-Soil,-And-Technology-Gains.aspx>

The scientific evidence provided above shows that the soils to the west of Springs Rd represent approximately 50 ha of Highly Productive Land

S-Map Soil Data abstracted from K McCusker's Evidence Fig 2A

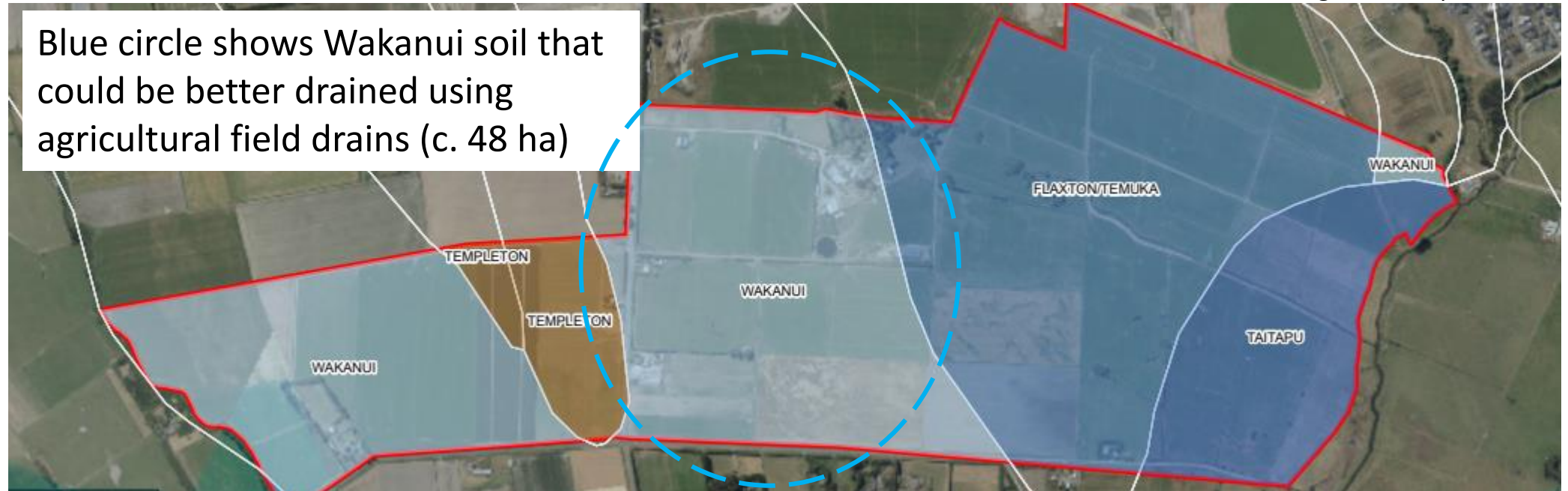
Green circle shows 'well drained area' with water table > 3 m BGL
= c. 50 ha Highly Productive Land



Soils of the PC69 area (and east of Springs Rd)

Soil	Area	Approximate Location
Wakanui	87 ha	45% west of Springs Rd; 55% east of Springs Rd
Templeton	11 ha	East of Springs Rd
Taitapu	26 ha	East of Springs Rd
Flaxton/Temuka	69 ha	East of Springs Rd

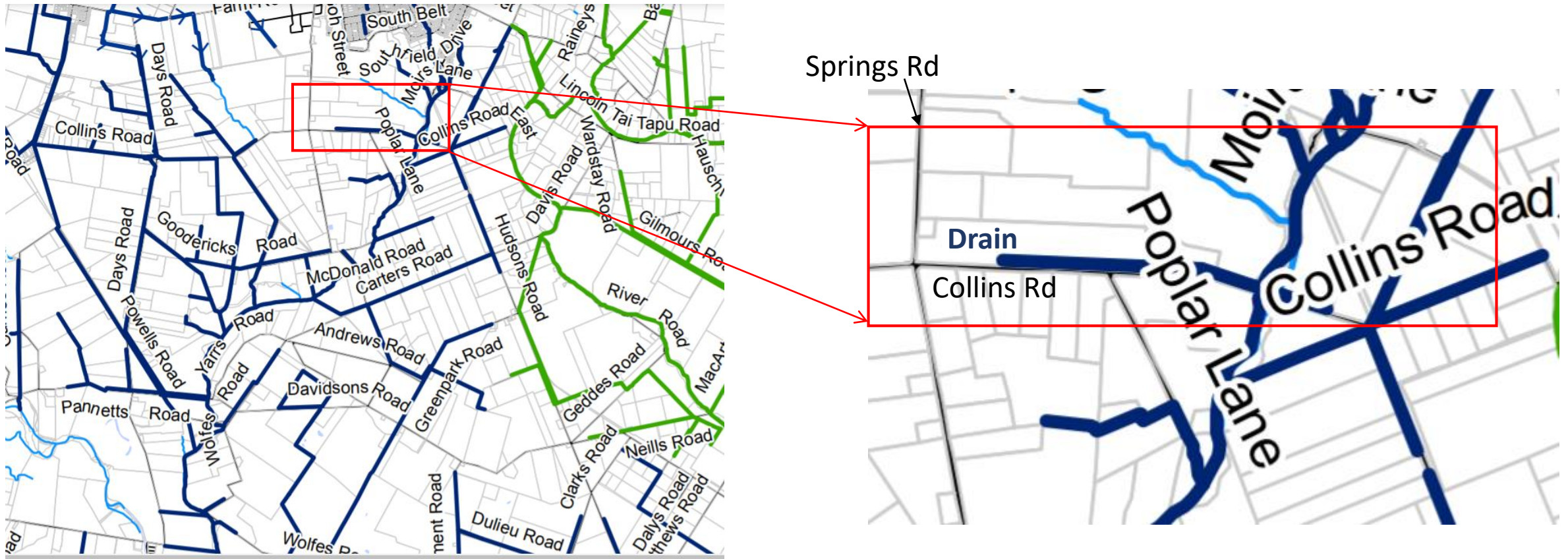
Abstracted from K McCusker's Evidence Fig 2A: S-Map Soil Data



Assoc Prof Almond's evidence shows water table 1.4m BGL

There is a drainage ditch alongside Collins Road next to the PC69 area which is connected into a land drainage network maintained by Selwyn District Council

Drainage of the Wakanui soil to the east of Springs Road could be improved using standard agricultural field drains. An improved farm drainage system could be connected into the existing drainage network.



The drainage ditch along the northern edge of Collins Rd next to PC69 area could be improved to enhance drainage from the PC69 area

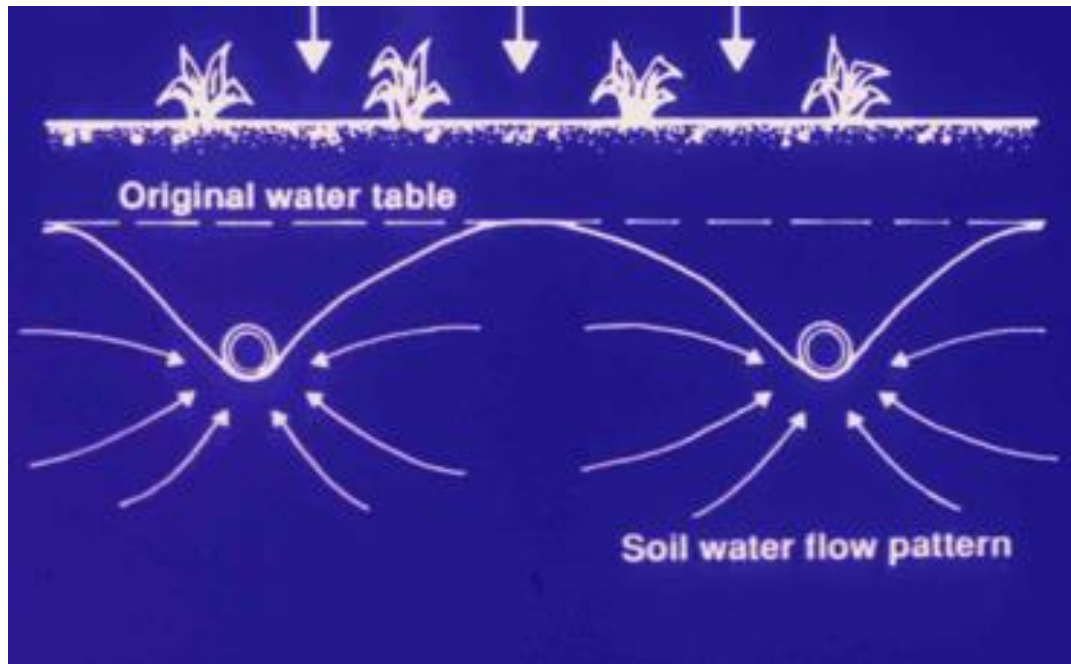


West

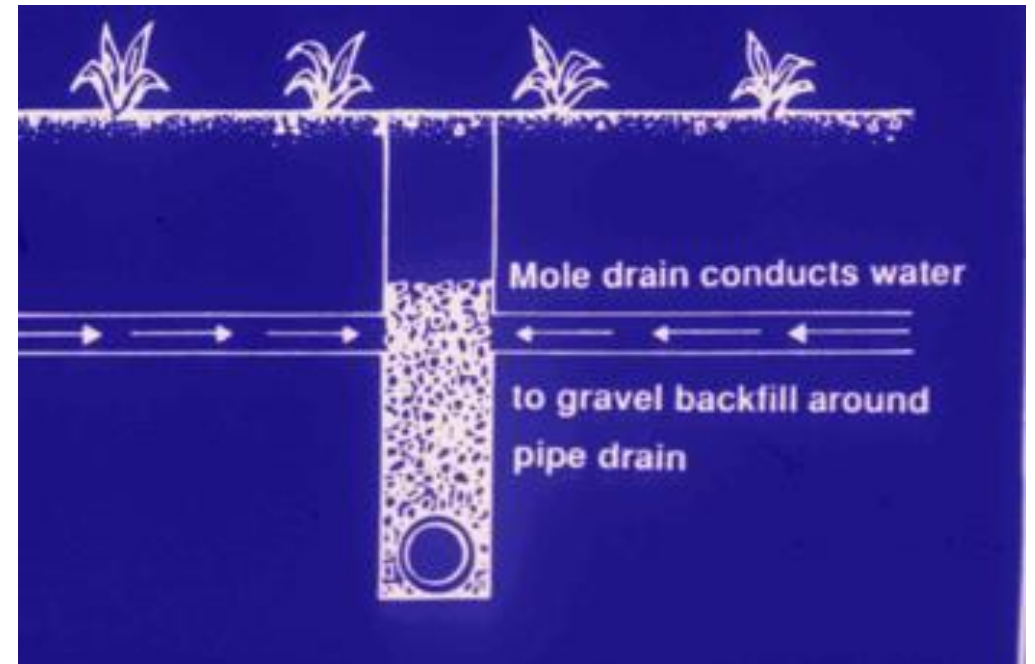


East

Farm drainage could be improved to increase soil aeration for plant growth and allow the soil to be cultivated or carry stock and machinery



Drains can effectively lower the water table under each of the paddocks in the PC69 area



Pipe drains with gravel back fill and 'mole drains' are often used to improve soil aeration and plant growth

The area of highly productive land in PC69 area is greater than 4.6 ha

- The scientific evidence above proves that the area of 'high productive land' and 'versatile soil' includes both the Templeton and Wakanui soils; which cover an area of 98 ha and represents > 50% of the land area in PC69.

The 'Cumulative Effect' of approving PC69 would be an increase in the loss of 'highly productive land' and 'versatile soils' around Lincoln by 25%

- In the past 25 years alone, over 400 ha of Highly Productive Land has been lost to housing around Lincoln
- The area of 'high productive land' and 'versatile soil' in PC69 area is comprised of Templeton and Wakanui soils and amounts to 98 ha (which represents over 50% of the land area proposed for this subdivision)
- Approval of PC69 would increase the loss of 'highly productive land' and 'versatile soils' around Lincoln by 25%.

**I plead with SDC to demonstrate leadership by protecting
NZ's Highly Productive Land; especially at this '11th hour'
before the NPS - HPL legislation comes into effect**

Lismore stony soil is best for housing



Templeton and Wakanui soils are best for food production

