

JUNE 2019

Soil Wealth
NURTURING CROPS



**Integrated
Crop Protection**
PROTECTING CROPS

CHILLI SPACING TRIAL: SUMMARY REPORT

Photo by Steve Johnson on Unsplash

KEY MESSAGES

- ✓ **The results showed the ability of chilli plants to respond to the 75% spacing (compared to 6.1 plants/m of bed) with an increase in growth and yield**
- ✓ **There may be benefits, not related to soilborne disease management, to reducing seedling density, and hence cost**
- ✓ **Spacing can have a substantial effect on yield and gross margin**

This trial was conducted as part of the Soilborne Disease project - VG15010

EFFECT OF PLANTING DENSITY ON THE INCIDENCE OF SOILBORNE DISEASE AND YIELD OF CHILLIES

INTRODUCTION

Intensive chilli production systems are susceptible to soilborne diseases, such as *Sclerotium rolfsii*, especially during the summer months.

This summary reports the results from a 2017 field trial that aimed to examine if reducing plant density can reduce soilborne disease incidence and/or improve marketable yields in chilli crops.

TRIAL DESIGN

Three spacing treatments were examined: current commercial spacing 100% (6.1 plants/m of bed), 75% and 50% of current spacing. Each treatment plot was 200m long and replicated four times.

RESULTS

Soilborne disease incidence

During the trial, there was a low level of soilborne disease incidence, with less than 2% of plants affected by *Sclerotium rolfsii*. As a result, the influence of plant spacing on *Sclerotium rolfsii* incidence, and soilborne diseases in general, could not be reliably assessed.

The trial provided useful information on spacing and yield.

Yield

The 75% spacing treatment yielding 33% more fresh market red chillies, compared to the 100% current practice, while the 50% spacing treatment yielded 16% more. Big increases in the amount of fruit per plant were behind the maintenance or increase in yield as the planting density decreased.



Setting up the trial

Differences in soil moisture under the spacing treatments may have also played an important role in the yield differences.

The higher yield and lower crop establishment costs (i.e. fewer seedlings) resulted in the 75 and 50% having higher gross margins than the 100% spacing treatment (see Table 1).

Assumptions were:

- that pre-harvest costs are the same per ha for each treatment; and
- that additional yield results in additional costs for harvesting, packing, cooling etc. and that post-harvest costs are 60% of gross income.

Table 1 - Yield and gross margin data

Spacing	Plants/ ha	Yield (kg/ha)	Gross margin \$/ha difference compared to standard practice
Standard spacing 100%	36,000	38,700	-
75%	25,000	39,400	\$3,215 benefit
50%	18,000	34,500	(\$5,430)



Care is required in interpreting the spacing treatments due to:

1. differences in soil moisture across the planting densities, and
2. at lower spacing there may be a higher risk of plants lodging,
3. The trial was run in summer allowing rapid growth by individual plants which more than compensated for the fewer plants at 50 and 75%.

NEXT STEPS

Further operational scale trials of the 75% spacing treatment are warranted given the higher yields, reduced costs and possible reduction in soilborne diseases in this 2017 trial.

Any future trial should aim to reduce the influence of irrigation on crop growth and yield so that spacing alone can be assessed.

The project team would like to acknowledge AustChilli Group for hosting the trial.