Impact of plant population on grain yield of rice in southeast Australia

B.W. Dunn[1] and T.S. Dunn[1]

[1] Yanco Agricultural Institute, Yanco NSW 2703, Australia. brian.dunn@dpi.nsw.gov.au

ABSTRACT

Difficult establishment conditions can reduce rice plant populations to low levels but no objective guidelines are available to growers and advisors from which to base decisions on re-sowing, abandoning or continuing with crops. Rice plant population guidelines that allow growers to determine the best management decisions are required. Ten aerial sown and eight drill sown experiments were conducted over three seasons across the Murray and Murrumbidgee Valleys to investigate the impact of plant population on grain yield.

The research showed that no relationship between plant population and grain yield was present for rice between 40 and 740 plants m^{-2} and there was no difference between aerial and drill sowing methods. Grain yield is maintained at low plant populations by a combination of increased number of tillers per plant and an increase in the number of grains per panicle. All of the varieties tested showed a similar ability to increase tiller number per plant and number of florets per panicle to compensate for reduced levels of plant population.

Row spacing between 18 and 27 cm is recommended for drill sown rice. Row spacing wider than 27 cm are not recommended as grain yield is reduced as missing rows or gaps in plants within rows cannot be compensated for by neighbouring plants. It is recommended that growers aim to achieve a plant population in the range of 100 to 300 plants m^{-2}, and then if plant establishment problems occur there is a buffer before grain yield may be reduced.