



MAKING HIGHER YIELDS HAPPEN. by Phil Needham, Needham Ag Technologies, LLC

The world population quietly clicked over the 7 billion mark earlier this year and if forecasts are accurate, it's expected to increase to around 9 billion by 2050. Feeding and supporting an additional 2 billion people will be a huge undertaking, especially when the world's available farm land is decreasing as a result of expanding cities, roads, and infrastructure. Understanding the agronomy required to maximize yields is critical, not only to ensure profitability, but also to better feed our growing population.

ROW SPACING STUDIES.

An important aspect of creating high yield potential is row spacing. There is abundant replicated research which has been conducted over many years to reinforce that narrow rows reduce inter-row competition and in turn increase yield potential. In addition, crops seeded on narrow rows have been found to better utilize light, moisture and nutrients than those on wider rows with the same seed population.

In 2010, I helped conduct a wheat row spacing study in the lower rainfall region of north-central Kansas. In this replicated field trial, we used two identical air seeders, identical except one was set up with 7.5" rows and the other with 10" rows. (Refer to Figure A.) The seed population per square yard was calibrated and set equally across both seeders with only 11-52-0 being utilized with the seed to eliminate the effects of fertilizer injury as row spacings were increased. The remaining nitrogen was top-dressed in the spring. The trial layout included four replications with fungicide treatment and an additional four replications without a foliar fungicide. The results highlighted a clear advantage for narrow row spacing, both with the treated and untreated trials.

2010 Wheat Row Spacing Study.

Location: Jewell, Kansas

Averages from four replications of both fungicide and non-fungicide treatments.

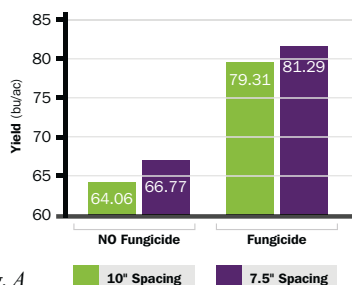


Fig. A

SEMI-ARID REGIONS.

Frequently, I hear that the effects of row spacing might be reduced within shorter and drier growing seasons within the Northern Plains states of the US and the western provinces of Canada. However, spring wheat row spacing research conducted in central Montana during 2004 and 2005 suggests this is not the case. (Refer to Figure B.) For example, two site years illustrated significant yield increases came from planting spring wheat on 6" compared to 12" rows across a location with a 98 year average annual rainfall amount of 15.7". What I also found interesting was this research studied seeding rate compared to row spacing interactions and they observed seeding rates within 12" rows could not be increased enough to match the yields of lower seeding rates within the 6" rows.

The Effect of Row Spacing on Spring Wheat Yields.

Location: Moccasin, Montana

Researchers: Chen, Neill, Wichman, Westcott. Source: Agronomy Journal, Vol 100, Page 1296

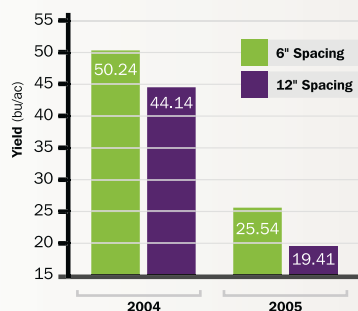


Fig. B

COMPARISON

Wider seed row spacings present some advantages to the producer. These include better residue handling (especially on hoe drills) and reduced initial equipment costs (due to the reduced frame weight requirement and need for fewer openers).

On the other hand, most trials suggest that higher wheat and canola yields are possible with narrower rows and low-disturbance openers, especially within higher yielding environments.

Slightly higher emergence percentages have been seen to occur with wheat and canola. In fact, trials across Western Canada have shown 10-20% increased plant emergence with 8" rows in comparison to 12" rows.

Narrower seed rows allow for higher rates of in-row fertilizer without the danger of seedling injury.

Research also suggests that significant reductions in grass and broad-leaved weeds occur in narrower rows, but this should not be considered a substitute for sound weed control practices.

Limitations and benefits can be found with both wide and narrow row spacings. Only by doing a careful study can farmers determine what row spacing will provide the best returns for their operation and help to ensure adequate food stock for a growing population.

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