Crop yields When Direct-Seeded into Extra-Tall Stubble

Herb Cutforth[1]*, Brian McConkey[1], Sangu Angadi[1], Yantai Gan[1]
[1]Agriculture and Agri-Food Canada, Swift Current, SK
*Box 1030, Swift Current, SK, S9H 3X2, ph 306-778-7259, fax: 306-773-9123
cutforthh@agr.gc.ca

From previous research in the semiarid region of the western Canadian prairies, we know that seeding wheat and pulse crops into tall stubble increased grain yield and water use efficiency by between 8 and 12% compared to wheat and pulses seeded into cultivated stubble. We also found that growing season evapotranspiration was not affected by stubble height. When the seedlings were small, compared to cultivated stubble, tall stubble (30 cm (12 inch) high) altered the microclimate near the soil surface by reducing the daily average windspeed, soil temperature, and incoming solar radiation, and increasing the reflected solar radiation. Throughout much of the growing season, potential evapotranspiration at the soil surface, measured with minilysimeters, was significantly lower in the tall stubble. Tall stubble, compared to cultivated stubble, increased the proportion of evapotranspiration that was transpired by the wheat. Producers now have the technology to seed directly into stubble standing 45 cm (18 inches) or higher. Will yields continue to increase as stubble height increases? How will microclimate be affected by extra-tall (45+ cm) compared to tall (30 cm) stubble? Will spring wheat, pulse and oilseed crops respond similarly to the increased stubble height or will shading become a limiting factor for shorter stature crops? In this presentation we will provide preliminary results addressing these questions.