The Critical Weed Free Period in Canola

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Canola emergence and plant stand densities can vary considerably among environments and to maintain canola productivity and yield under those circumstances, effective and efficient weed management is critical. To facilitate effective and efficient weed management in canola, the critical weed free period (CWFP) was determined in 14 environments across western Canada over 4 years. The CWFP was determined at three target canola stand densities (30, 60 and 90 plants m^{-2}) in two herbicide systems (glufosinate (fast acting) and glyphosate (slow acting)) in 3x2 factorial design using natural weed populations. A canola variety resistant to both glufosinate and glyphosate was used in these experiments. A CWFP with an acceptable yield loss of 5% was observed at 11 of 14 environments where at least one treatment showed more than 5% yield loss. The CWFP ranged from the seedling stage to season-long, but ended between the seedling and 4-leaf stage in over two thirds of the cases. The detection and duration of the CWFP depended largely on the size of the natural weed population present in each experiment and at locations where the natural weed population was small, the CWFP could not always be modelled. In specific, in- crop herbicides were not required to limit yield loss to less than 5%. When significantly different, low canola stand densities lengthened the duration of the CWFP. The CWFP tended to be longer in the glufosinate herbicide system than the glyphosate system in most cases when significantly different. Knowledge of the weed population and canola stand density are important for decisions on ideal timing of weed management to prevent unacceptable yield losses in canola.