

Improving IWM practice of emerging weeds in the Western Region

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Summary Changes in farming systems, management practices and climate are resulting in a change to the weed spectrum that is causing increased cost and yield loss for growers. Emerging summer weed species such as fleabane (*Conyza* spp.), tar vine (*Borhavia* spp.), sowthistle (*Sonchus* spp.) and button grass (*Dactyloctenium radulans* (R.Br.) P.Beauv.), and emerging winter weeds such as brome grass (*Bromus* spp.), Indian hedge mustard (*Sisymbrium orientale* L.) and wild radish (*Raphanus raphanistrum* L.) are becoming increasingly resistant to a broad number of herbicide modes of action. As a consequence these species are now increasing in crop, resulting in increased control costs and crop losses. This project aimed at delivering new knowledge on the biology and management of emerging summer weeds and winter weeds in the western region. Research results showed that emergence of button grass, fleabane, tar vine and sowthistle were not restricted to summer. Seed germination of exhumed fleabane and sowthistle was low and declined over time, while exhumed tar vine and button grass seed germination showed a cyclic pattern of dormancy release. Double knockdowns (mixture of 2,4-D + glyphosate or 2,4-D + glufosinate followed by paraquat-based mixture controlled 94% to 98% fleabane, sowthistle and tar vine. Narrow row

spacing and high density of a wheat crop with a high level of soil disturbance resulted in negligible emergence of summer weeds. Glyphosate alone was also effective on button grass and tar vine over summer. High herbicide rates were required to kill summer weeds when temperatures were high, but lower rates achieved the same result on cooler days. Low harvest height and windrowing of wheat crop collected 70% of brome grass seed on windrows. Subsequent burning of the windrows reduced the seedling emergence of brome grass by 93% to 99%. A roadside weed survey across the Western Australian wheatbelt during late summer and early autumn of 2015 showed that the most common summer weed species were African love grass, fleabane, windmill grass and wild radish. Sowthistle and fleabane seed samples collected during the survey was tested for resistance to glyphosate and three sowthistle populations were found resistant to 1080 g a.i. ha⁻¹ glyphosate. The results have been communicated in four media releases, two factsheets, eight field walk/field days, and 11 GRDC/Grower Groups Research Update articles.

Keywords Emerging summer and winter weeds, seed dormancy, emergence pattern, seed exhumed, windrow burning, herbicide resistance, summer weed control.