

Name of research project:	<b>Applied Weed Management in Western Australia</b>
Research organisation(s):	Department of Agriculture and Food WA (DAFWA)
GRDC Project code:	DAW00158
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Project objectives:	<ol style="list-style-type: none"> <li>1. Develop techniques for weed seed head trimming and increase crop competition to reduce weed seed bank and sustain crop productivity in cereals and canola.</li> <li>2. Identify herbicide resistant weeds and publicise to motivate growers to adopt IWM and minimise weed problems.</li> </ol>
Project period: Start and finish dates	July 2007 – June 2010
Project outcomes and status:	<p><b>1. Weed seed trimming</b> If regrowth does not occur and most weed seed heads are above crops such as lupins or chickpea, weed seed head trimming performed before weed seed maturity may be effective in reducing weed seed production and subsequently weed seed bank replenishment.</p> <p><b>2. Crop competitive ability</b> Trials conducted on the suppression of weeds by increasing crop competitive ability showed that crop type, cultivar canopy height, canopy width, light interception and seasonal conditions all influenced competitive ability of crop cultivar in wheat, barley and canola.</p> <p><b>3. Herbicide resistant weed biotypes</b></p> <p>3.1. Glasshouse trials confirmed four glyphosate resistant populations of annual ryegrass – two from grain fields and two from vineyards.</p> <p>3.2. A previously identified population of glyphosate-resistant annual ryegrass in a vineyard (central wheatbelt) is being monitored to practically monitor on-farm gene flow of glyphosate resistance. Testing has indicated that resistance is still apparent in the vineyard and also found at very low levels in the surrounding grain paddocks.</p> <p>3.3. In a long term field trial (1999 to 2013) to select for glyphosate resistance, annual ryegrass seed is collected and glyphosate resistance is tested annually. No glyphosate resistance has yet been detected even though glyphosate is applied once a year at high rate.</p> <p>3.4. A long term trial on biology and dispersal of fleabane was established in December 2007 (Merredin). Data has been collected on emergence time, cohort size, survival, seed production and dispersal of fleabane.</p>

#### **4. Correct glyphosate rates**

Trials on glyphosate rates at different growth stages of annual ryegrass and under different environments were conducted in 2008 and 2009 at four locations. Effective rate of glyphosate is dependent on the ryegrass density, growth stage and environmental conditions. Annual ryegrass tolerates high doses of glyphosate for about a week after emergence. The current models overestimate the effects of temperature, water volume, water stress and weed size when young and underestimate the effects of weed size later in the season.

Links: