Matricaria/globe chamomile (Pentzia globifera) density and seed production

J. Dodd

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4. *Matricaria/Globe Chamomile (Pentzia Globifera)*

Density and Seed Production

Preliminary measurements of plant density and seed production were made in November 1987 at two infested properties near Mukinbudin.

**Results:**

**Table 7. Density and seed production in P. globifera at Mukinbudin, November 1987**

<table>
<thead>
<tr>
<th>Location</th>
<th>Site</th>
<th>Plant density (m^-2)</th>
<th>Seed output</th>
<th>Seed output</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean</td>
<td>Range</td>
<td></td>
</tr>
<tr>
<td>Barbalin</td>
<td>Stubble*</td>
<td>254</td>
<td>28-540</td>
<td></td>
</tr>
<tr>
<td>Barakee</td>
<td>Stubble*</td>
<td>670</td>
<td>220-1204</td>
<td></td>
</tr>
<tr>
<td>Barakee</td>
<td>Old pig pens</td>
<td>495</td>
<td>136-1188</td>
<td></td>
</tr>
</tbody>
</table>

**a) Plant density**

<table>
<thead>
<tr>
<th>Location</th>
<th>Site</th>
<th>Plant density (m^-2)</th>
<th>Seed output</th>
<th>Seed output</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean</td>
<td>Range</td>
<td></td>
</tr>
<tr>
<td>Barbalin</td>
<td>Stubble*</td>
<td>14</td>
<td>1-71</td>
<td>3600</td>
</tr>
<tr>
<td>Barakee</td>
<td>Stubble*</td>
<td>7</td>
<td>1-112</td>
<td>1700</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**b) Seed production per plant**

<table>
<thead>
<tr>
<th>Location</th>
<th>Site</th>
<th>Seeds per plant Mean</th>
<th>Range</th>
<th>Seeds per capitulum Mean</th>
<th>Range</th>
<th>Seeds per plant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barbalin</td>
<td>Stubble*</td>
<td>259</td>
<td>96-388</td>
<td>3600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barakee</td>
<td>Stubble*</td>
<td>243</td>
<td>79-412</td>
<td>1700</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**c) Seed production per m^2 of infestation**

<table>
<thead>
<tr>
<th>Location</th>
<th>Site</th>
<th>Seeds per plant</th>
<th>Plant density m^-2</th>
<th>Seed output m^-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barbalin</td>
<td>Stubble*</td>
<td>3600</td>
<td>254</td>
<td>914,000</td>
</tr>
<tr>
<td>Barakee</td>
<td>Stubble*</td>
<td>1700</td>
<td>670</td>
<td>1,140,000</td>
</tr>
<tr>
<td>Barakee</td>
<td>Old pig pens</td>
<td>1700</td>
<td>495</td>
<td>842,000</td>
</tr>
</tbody>
</table>

* Cropped in 1986.

Some very high plant densities were measured at all sites. Plants from dense stands tended to carry few capitula and in many cases only a single capitulum was present. Average seed content per capitulum was similar at the two properties, suggesting that this is a relatively stable biological attribute.

The total seed output at each site as approximately 1 x 10^6 seeds.m^-2 of infestation (Table 7). During seed sampling, it was noticed that about one third of all seeds were pale and possibly not viable, in which case the output of viable seeds would be about 6 x 10^5 seeds m^-2 of infestation.

**Conclusions:**

Matricaria infestations produce massive quantities of minute seeds each year, of which only a small fraction gives rise to seedlings in the following year. It is not known whether the weed develops a seed bank of long-lived dormant seeds. The small size and chaffy nature of the seeds probably contribute to
their dispersal. Once established, plants of Matricaria appear to be able to develop without hindrance, because of their unpalatability.

5. VERMIN FENCE HERBICIDE TRAILS
   (Established by J. R. Peirce: 85ME63, 65, 68, 69, 70)

a) Response of native plants to herbicides

During assessment of the vermin fence herbicide trials in November 1987, certain plants in the sprayed plots were noted as being undamaged, even by the highest rates of herbicides used. The accompanying table (Table 8) lists those tolerant species. The numbers in the table indicate the particular trial in which this tolerance was noted.

Results:

Forty species from 23 families were listed as tolerant of one of more of the herbicides (Table 8). All but four were native species. Ten species belonged to the family Myrtaceae and, of these, seven were in the genus Melaleuca. Other families represented by more than one species were Chenopodiaceae (4 species), Poaceae (3), Asteraceae, Fabaceae and Goodeniaceae (2 each). In most cases, a particular species was found to be tolerant of only one herbicide in one trial. However, a few were tolerant of several herbicides, e.g. Callitris preissii, Dampiera lavandulacea, Lomandra sp. and Platysace effusa, all of which showed tolerance to five herbicides. Since C. preissii is one of the main species causing regrowth problems along parts of the fence, this finding suggests that higher rates or different herbicides will have to be used if this species is to be controlled effectively.

The herbicides for which the greatest number of tolerant species was recorded were Diuron, at 20 L.ha⁻¹ (19 species), Tordon 50-D at 5 L.ha⁻¹ (14 species) and Velpar at 8 kg.ha⁻¹ (11 species). This suggests that these herbicides, at the rates shown, are not fully effective at achieving total control of the diverse assemblage of plant species that comprise the regrowth along the fence.

b) Herbicide damage to non-target species

Although herbicides were sprayed only onto those plants occupying a 1 m wide band at the base of the fence, occasional trees and shrubs in the adjacent vegetation showed signs of herbicide damage, including chlorosis of the foliage, canopy thinning, proliferation of branching and, occasionally, death of the plant. In the sandheath areas south of the Great Eastern Highway, damage was restricted to plants bordering the c. 10 m wide tracks that run along both sides of the fence. In the salmon gum woodlands north of Bullfinch, damaged trees could be found tens of metres away from the track, the distance generally increasing with the height of the individual tree. In most cases, however, damaged trees in the woodland were within 10 m of the edge of the track.

The species involved are listed in Table 9. This is not a complete inventory and a more detailed assessment remains to be performed.