Herbicide Evaluation for Weed Control in *Taraxacum kok-saghyz*

Ben Robinson and John Cardina  
Department of Horticulture and Crop Science

**ABSTRACT**

Without adequate weed control, large-scale production of *Taraxacum kok-saghyz* (TK) as a rubber crop will be impossible. We are developing methods for weed control in TK, focusing on the use of conventional herbicides that exhibit the highest level of safety to the TK crop, while suppressing the most common weeds in this region. Only a few promising candidate herbicides have been identified. Among pre-emergence herbicides, pendimethalin (Prowl H2O formulation) and sulfentrazone cause the least injury. For post-emergence applications, thifensulfuron, pendimethalin (Prowl H2O formulation) and sulfentrazone cause minimal injury to TK when applied at rates high enough to control important weeds.

**METHODS**

All new herbicides or formulations not labeled for dandelion control are tested. This criterion eliminates many classes of herbicides. Initial screening is done using a track sprayer to achieve accurate dosing. Plants are grown in commercial potting mix and/or field soil in plastic pots. Variables included in early tests include herbicide type, formulation, rate, time of application relative to planting, seed burial depth, seed coating, and adjuvants for post-emergence applications. Promising herbicides are evaluated in field experiments with interacting variables such as rate x time, formulation x seed treatment, for example. We use standard field rates to assure adequate weed control; therefore, most of our focus is on injury to the TK plant.

**INTRODUCTION**

The *Taraxacum kok-saghyz* (TK) crop will fail unless weeds are controlled effectively. Managing weeds in TK is difficult because:

- TK establishes slowly whereas weeds establish quickly;
- TK leaves lie on or very close to the soil surface and will not shade out weedy species;
- The soil is full of seeds of many weeds, including common dandelion, which are more effective competitors;
- TK and common dandelion are closely related and will respond the same way to any herbicide;
- Other weeds in the dandelion family will respond like TK to most herbicides;
- Most pre-emergence herbicides kill or injure dandelion species; so do most post-emergence broadleaf herbicides;
- TK seedlings will not survive cultivation until at least the 6-leaf stage, by which time weeds will overwhelm the TK crop.

**OBJECTIVE**

The specific objective of this research is:

To identify pre-emergence and post-emergence herbicides that cause minimal injury to TK when applied at rates high enough to control important weeds.

**RESULTS**

Where weeds were not adequately controlled, TK either did not persist or growth of surviving plants was severely suppressed. Pre-emergence herbicides varied greatly in safety to TK, and only lowest labeled field rates were acceptable. Several post-emergence herbicides have potential for use on TK, but all caused injury when applied at labeled rates.

**PRELIMINARY RECOMMENDATIONS**

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Main Weed Controlled</th>
<th>Rate/ Acre</th>
<th>Grasses</th>
<th>Broadleaf</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRE</td>
<td>Prowl H2O 8.8</td>
<td>4.5 oz.</td>
<td>annuals</td>
<td>pigweeds</td>
</tr>
<tr>
<td>PRE</td>
<td>Spartan 4F</td>
<td>4 oz.</td>
<td>fleece</td>
<td>pigweeds</td>
</tr>
<tr>
<td>POST</td>
<td>Harmony SG 50 DF</td>
<td>0.25 oz.</td>
<td>lambsquarters</td>
<td>pigweeds</td>
</tr>
<tr>
<td>POST</td>
<td>Amistar 3 EC</td>
<td>0.8 oz.</td>
<td>velvetleaf</td>
<td>pigweeds</td>
</tr>
<tr>
<td>POST</td>
<td>Raptor 1 AS</td>
<td>4 oz.</td>
<td>lambsquarters</td>
<td>pigweeds</td>
</tr>
</tbody>
</table>

**ACKNOWLEDGEMENTS**

Funding was provided by the PENRA Consortium, Ohio Third Frontier, OARDC, and federal Hatch funds.