

## Non-Selective Weed Control - Choose Your Weapon

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Prior to the mid-1970s, products using paraquat and diquat were used extensively for non-selective weed control. These products offered quick burn-down of the above ground portions of green plant material. When the Monsanto product, Roundup herbicide (glyphosate) was introduced in the mid-1970s it quickly became the herbicide of choice for non-selective vegetation control. Roundup had a distinct advantage over paraquat and diquat because it also controlled below ground storage structures (roots, rhizomes, tap roots) of perennial plants. Users of Roundup became familiar with the activity of Roundup that began about 7-10 days after treatment and expected complete control of most existing vegetation.

More recently, a product was introduced by AgrEvo that would burn-down vegetation within 3-5 days after treatment. Finale (glufosinate) was introduced in the early 1990's as an alternative to Roundup for non-selective weed control. The product served as an important herbicide where conditions required a quicker burn-down of vegetation or a better edge effect because of the limited translocation of the product through the plant. However, some research has shown that while Finale completely controls annual vegetation, it does not always provide complete control of perennials. Studies have also shown Finale will burn-down most vegetation but it does not eliminate the perennial vegetation. This drawback could limit Finale's use in areas that require complete control of all perennial vegetation.

In the last couple of years, Monsanto has introduced a new non-selective herbicide, Roundup Pro. Initial research of this new product has shown burn-down within 3-5 days, similar to Finale. The introduction of Roundup Pro raises some questions:

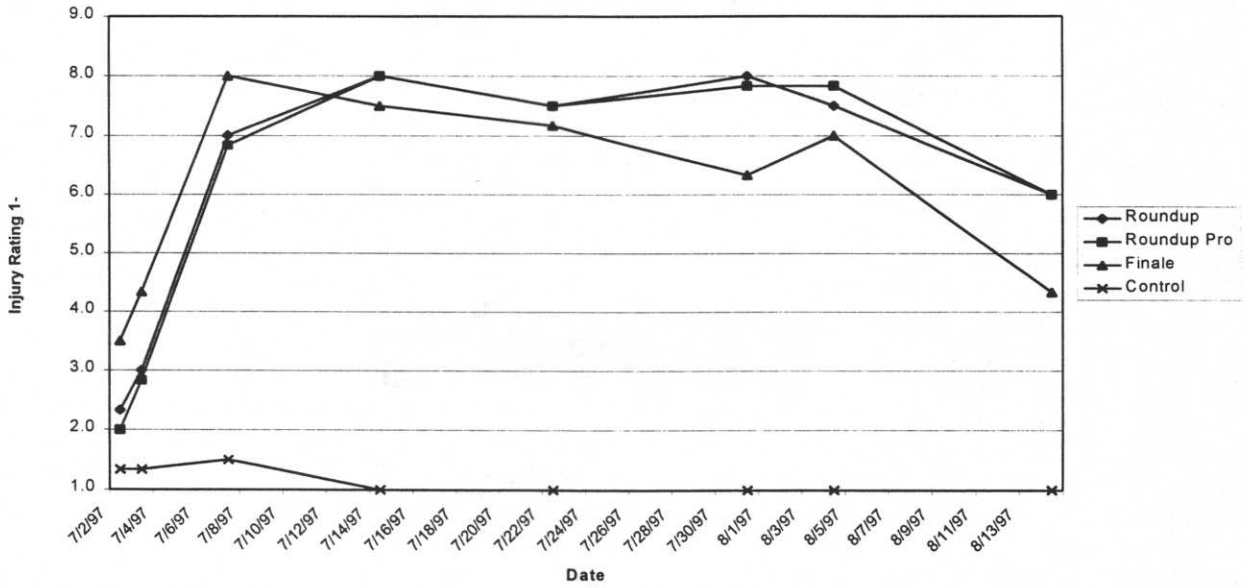
- First, how does Roundup Pro compare to the original formulation of Roundup?
- Second, does Roundup Pro provide a faster burn-down of vegetation similar to Finale?
- Third, does Roundup Pro also provide complete control of perennial vegetation?

Other research has shown that the use of ammonium sulfate (AMS) in combination with certain herbicides increases efficacy. How would the use of this chemical affect the control of Roundup, Roundup Pro and Finale?

Hypothesis: Roundup, Roundup Pro and Finale will burn-down vegetation at different rates and effectiveness depending on annual versus perennial vegetation. In addition, AMS tank-mixed with these products will enhance product performance.

Experiment: Two areas were chosen for comparison of the products at the Hancock Turfgrass Research Center. The first area was comprised of a recently tilled field in which field weeds were permitted to establish. The second area was an established Kentucky bluegrass, perennial ryegrass, and fine fescue mix in which turf weeds were not controlled. The areas were treated with all three products, both with and without AMS, 8 weeks, 4 weeks, 2 weeks and 1 week before Field Day. This time frame is sufficient to evaluate the effectiveness of control on perennial plants. Figures 1 and 2 illustrate the rate of burn-down for annual and perennial vegetation, respectively.

**Figure 1: Burndown of Annual Weeds with Non-Selective Hercides**



**Figure 2: Burndown of Perennial Vegetation with Non-Selective Herbicides**

