



## What Smells Like Sour Milk & Controls Leguminous Weeds?

Pam Charbonneau, OMAFRA Turfgrass Specialist

As usual there has been a flurry of work at the Guelph Turfgrass Institute evaluating how effective some of the new bio-pesticides are at controlling turf pests. Two broadleaf herbicides came on the market this summer, Fiesta™ and Organo-sol®, and were the subject of research by myself and Cynthia Siva, a graduate student of Dr. Katerina Jordan. We both had Fiesta in our trials and Dr. Ken Carey also did several crop tolerance and rate trials with Fiesta. All of these results will be reported on at the Ontario Turfgrass Symposium February 23-24 at the University of Guelph. In this article, I'll focus on Organo-sol's effectiveness in our trials.

**O**rgano-sol is a product developed by Lacto Pro-Tech Inc., which commercializes products made from dairy ingredients that come from a certified food plant. It is a division of the cheese manufacturing company Saputo. Organo-sol is manufactured from lacto-fermented dairy ingredients and the active ingredients are citric and lactic acid (produced by lactic acid bacteria). Summer student Matthew Barnett thought it smelled like a mixture of orange juice and rotten milk and I thought it smelled like baby vomit. If you look at the ingredients, it is pretty close to both!

Organo-sol is labelled for the control of bird's-foot trefoil, black medick, clover and wood sorrel in established lawns. The product is applied as a mixture of 25% Organo-Sol, 3% surfactant and 72% water and applied at a rate of 200 mL per m<sup>2</sup>. The surfactants on the label include XA Oil Concentrate, Kornoil Concentrate and Assist. The application needs to be repeated every 14 days for a total of five applications.

### The Research Trial

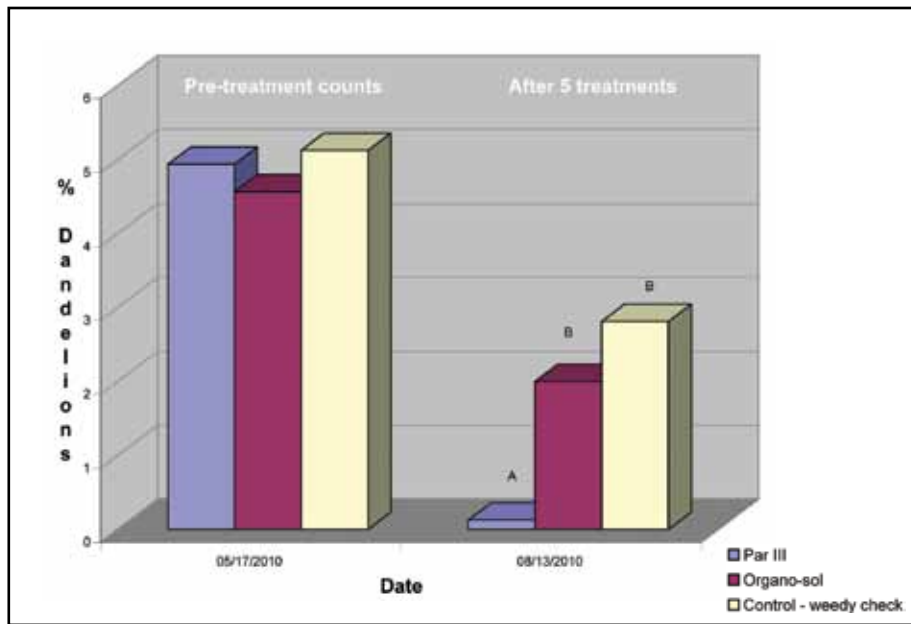
The trial was conducted following the label rate and timing. Treatments were applied on May 26, June 7, June 21, July 5 and July 19, 2010. The label mixing instructions

### EDITOR'S NOTE

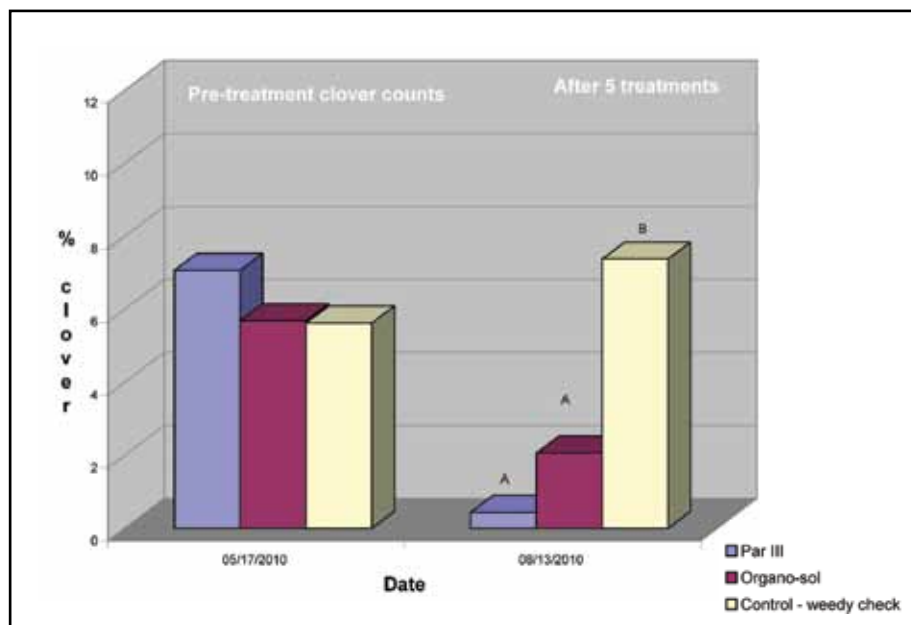
See the Summer 2010 issue of Sports Turf Manager where Pam covers the efficacy of fall applied iron chelate, a herbicide for broadleaf weed control.

**Figure 1 Above.** Organo-sol® treated plot 3 days after treatment showing the grass phytotoxicity. **Figure 2 Inset.** A close-up of grass and weeds treated with Organo-sol showing typical damage several hours after treatment. Notice the damage to clover but not dandelion.

**Figure 3. Effect of Organo-sol on Dandelions.**



**Figure 4. Effect of Organo-sol on Clover.**



were followed by a different surfactant that was suggested by Lacto Pro-Tech, LI700 from United Agri-Products. The research site was an area of established turf (a mixture of Kentucky bluegrass and turf-type perennial ryegrass infested with dandelions, black medick, clover, narrow-leaved plantain and other lawn weeds). Turf was maintained as a low maintenance turf with weekly mowings at 6 cm, no supplemental irrigation, and fertilized once a year with 0.5 kg N/100 m<sup>2</sup>.

Organo-sol gave poor control of dandelions (but this is known) and good control of clover, black medick and total broadleaf weeds.

The treatments were untreated control, Organo-sol at the label rate, and Par III (a herbicide consisting of 2,4 D, mecoprop and dicamba) applied at label rate. Each treatment was replicated four times in 2 x 2 m plots in a randomized complete block design. Percent cover of each weed species (dandelion, black medick, narrow-leaved plantain, broadleaf plantain, bird's-foot trefoil, clover and mouse-eared chickweed) was recorded in each plot on June 11, June 17, June 30, July 15, July 29 and August 13.

Four randomized point quadrats measuring 60 cm x 60 cm with 25 points in each quadrat (points 10 cm apart) for a total of 100 points in each plot were used to record estimated percent broadleaf weed cover of each of the broadleaf weed species at each assessment date. All measurements were analysed by the appropriate statistical analyses. The only broadleaf weed species that were in high enough numbers to observe significant differences were clover,

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 890 Fairground Rd. R.R. #4 Langton Ont. N0E 1G0  
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 email: [mastersturf@hughes.net](mailto:mastersturf@hughes.net)

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dandelion and black medick and total weeds and only these will be reported here.

## Results

Visual observations that were made several hours after treatment showed phytotoxicity to the grass and weed leaves turning them light brown to yellow. The grass phytotoxicity lasted for roughly one week after treatment (Figure 1).

Organo-sol gave poor control of dandelions (Figures 2 & 3), but this is known to the company and dandelions do not occur on the Organo-sol label. Organo-sol did give good control of clover (Figure 4), black medick (Figure 5) and total broadleaf weeds (Figure 6). Organo-sol gave the same level of control for clover and black medick as Par III reducing the clover by roughly 70%. Overall, the total weeds were reduced by Organo-sol by 66%, but the reduction was not as great as the reduction in total weeds with Par III, which was a 95% reduction over the untreated control.

When applied according to the label with the addition of the surfactant LI700, Organo-sol did provide significant control for clover, black medick and total broadleaf weeds in this study. Though not reported here, a trial including Organo-sol was conducted by Cynthia Siva for her Master's research project using the surfactant Assist and the efficacy was much lower than with LI700. What is still unclear is if the level of phytotoxicity that occurs after each treatment and lasts for roughly one week will be acceptable in the marketplace. In addition, the smell of the product is unpleasant – this may also impact its acceptability. Lastly, the need for five applications in a season for efficacy may also be a deterrent.

Figure 5. Effect of Organo-sol on Black Medick.

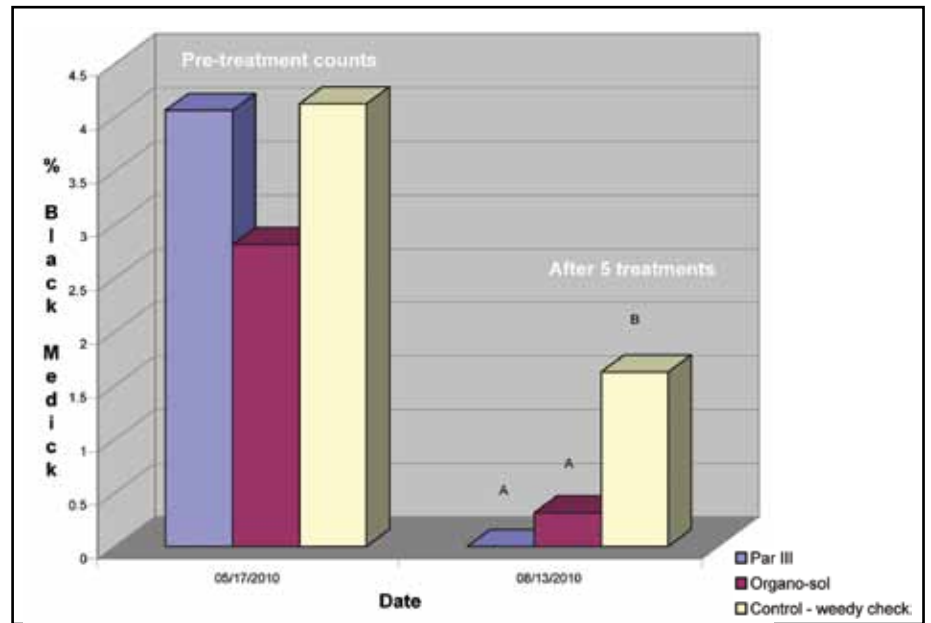
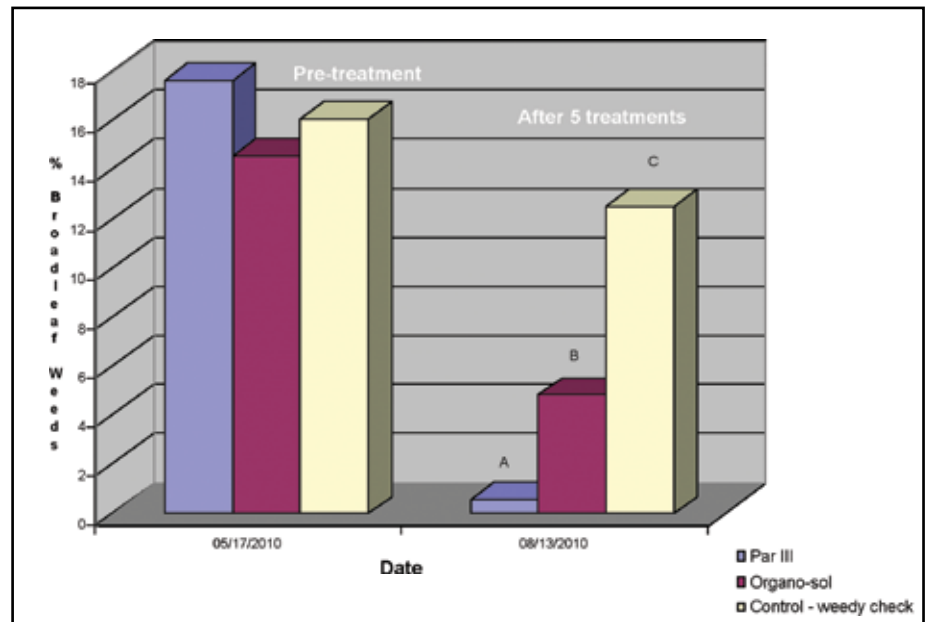


Figure 6. Effect of Organo-sol on Broadleaf Weeds.



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