



**Greenhouse TPM/IPM Bi-Weekly Report**  
**University of Maryland Cooperative Extension**  
**Central Maryland Research and Education Center**

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**Root Aphids**

An interesting sample made its way to our office last week. It was a root aphid on *Ranunculus* plants (shown in photo). The nursery had been growing the plants in a heated greenhouse on benches for a couple of weeks before moving the plants to a minimally heated greenhouse. The plants have been growing on a weed barrier on the floor for the last two months. Root aphids were not in all of the plants; the estimate is that at least 50 plants were infested. The growth on the *Ranunculus* was not



reduced but there was white wax on the root system of the plants. Some of the root aphids had moved up onto the foliage where they were very noticeable. Most of the root aphids we have received on other plants such as *Aster* and *Boltonia* have been in the genus *Pemphigus*. An aphid expert from Florida suggested that they could be in the genus *Thecabius*. In searching this down, I found that *Thecabius affinis* has been reported on *Ranunculus* in Iceland, Britain, and several states in the United States, but not in Maryland so far. We are sending samples to an aphid expert at USDA for species identification. We will let you know which species was found.

**Control:** Fortunately root aphids are relatively easy to control. Soil drenches of imidacloprid (marathon) or a synthetic pyrethroid should give pretty good control.

**Here are a few growing hints from the greenhouse conference last week in Southern Maryland:**

**Flowering Vinca**

Flowering annual vinca is a tough plant that needs a high soil temperature. They grow best at nighttime temperatures between 68 and 72 °F. Keep pH levels between 5.3 and 5.8 for optimum uptake of iron and suppression of *Thielaviopsis*. *Pythium* and *Botrytis* stem cankers is very common on vinca.



**Vinca seedlings in 70 °F greenhouse on March 18<sup>th</sup>**

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## **Growing Calibrachoa, Bacopa, Diascia, Scaevola, Verbena, Petunia**

For this group of plants (Calibrachoa, Bacopa, Diascia, Scaevola, Verbena, and Petunia) make sure to keep the pH between 5.3 and 5.8 to avoid problems with iron deficiency. We often see plants with interveinal chlorosis show up in the growing season. One of the approaches is to use an acidifying fertilizer such as 21-7-7 or 18-9-18. If you have high alkalinity water sources then the first choice should be sulfuric acid injection to lower the pH level. Keeping the pH low is the best way to prevent iron chlorosis but sometimes additional iron may be needed – apply as iron chelate or iron sulfate (**always rinse foliage when using iron sulfate to prevent foliar burn**). The pH can be lowered using iron sulfate at 1 - 3 lbs per 100 gallons. Apply chelated iron such as Sprint 138 or 330 as a drench at 3-5 oz per 100 gallons.

### **Interveinal chlorosis on gerbera daisy**



## **Calibrachoa**

Begin feeding as soon as roots are visible. Start with 75 ppm nitrogen then increase to 150 ppm. Choose a fertilizer with low levels of ammonium based nitrogen and avoid overhead feeding with fertilizer containing phosphorus. Once the roots reach the bottom of the pot then apply 250-300 ppm constant liquid feed. Optimum EC is 1.0 to 1.2 mS/cm (SME) when using a 2:1 saturated paste method. Provide periodic clear water application if excess salts accumulate. Several growers have used a slow release fertilizer to supplement a constant liquid feed program which may provide improved performance for the consumer.

**If you see yellowing of lower foliage on calibrachoa, there are a few things to check to help diagnose the source of the problem:** Make sure that fertilizer injectors are functioning properly. Check for low nitrogen and magnesium levels in soil and tissue. Supplement with a magnesium sulfate drench if magnesium levels are low. Do a soluble salts test to determine if the E.C. levels are high. Remove plants from pots to see if there is any root rot and look closely at stems for disease problems.

**Insects:** Aphids love calibrachoa (**photo**). Keep in mind that applying excess fertilizer can increase aphid populations. Keep weeds out of a greenhouse since they serve as an epicenter of aphid populations.



**Height control:** Try using Florel at 500 ppm foliar spray as soon as established. Apply Bonzi on calibrachoa at 1 2- ppm early in the crop cycle, applied as a drench.

## **Wave Petunia- Plant Height Control**

Try 300 ppm of Florel and then use Bonzi applied as a soil drench at 4 - 8 ppm to keep plants compact.

### Gerbera Daisies

Keep the soil pH between 5.7 and 6.2. This crop needs a fair amount of magnesium so apply Epsom salts to this crop. Grow gerbera daisy at 65 °F when starting the crop; once established run greenhouse at 62 - 64 °F, with day temperatures about 5 degrees warmer.

**Diseases:** Powdery mildew has to be treated preventively on this crop. Compass, or Heritage used preventively helps to keep out powdery mildew for 30 - 40 days. Downy mildew is commonly found on gerbera daisy.



**Powdery mildew on gerbera daisy foliage**

### New Guinea Impatiens

Soil pH is best between 6.0 and 6.5 to avoid micronutrient deficiency. Grow at nighttime temperatures between 65 and 68 °F. If you grow the crop cooler then root diseases move in on this crop. Keep soluble salts at .75 – 1.2 mS/cm (SME). Do not let crop dry down excessively.

#### Why New Guineas Impatiens Do Not Bloom:

If New Guinea impatiens will not bloom then the problem is often that they are too crowded. When crowded the lower leaves are covered and do not photosynthesize well and reduces blooms. As the plants fill in, make sure they are adequately spaced.

**Fertility:** New Guinea impatiens are low to moderate feeders during the growing season so 100 – 200 ppm is usually adequate, With New Guinea Impatiens reduce the fertilizer at the last 1/3 of the crop cycle.

**Cupping of Leaves:** The cupping and wavy leaves appear to be favored by dry soil and cool moist air. These symptoms commonly show up in March and April and usually disappear as weather improves later in spring. A lot of the orange cultivars show this symptom in the early spring.

### Zinnias

There are two big zinnia leaf spots in Maryland, one bacterial, caused by *Xanthomonas zinniae*, and the other fungal, caused by *Alternaria zinniae*. Bacterial leaf spots are small, angular, brown spots often surrounded by a yellow margin. *Alternaria* leaf spots are larger and reddish brown with grayish centers. Both diseases result in leaf blighting, and death of foliage and sometimes the whole plant. Both zinnia diseases can be seed-associated, so purchase seeds from a reliable source. Fungicides may be beneficial for *Alternaria* leaf spot, but will not control bacterial leaf spot. Try to avoid overhead watering late in the day on this crop.

**Calcium Deficiency:** If the leaves curl then it is showing calcium deficiency in summer. Apply calcium chloride dehydrate at ½ oz per 3 gallons

#### **April 3, 2009 Greenhouse Growers' Program**

Location: Garrett Community College, McHenry, MD

Go to <http://ipmnet.umd.edu/crses97.htm> for the schedule and registration information.

Contact the University of Maryland, Garrett County office at 301-334-6960 for more information.