

## PHYTOPHTHORA EFFICACY SUMMARY

**Product ID:** BW102N “a” and “b”  
**BW Product(s) Tested:** RootShield WP  
**Location:** BioWorks facility in Victor, NY  
**Crop/Variety:** Vinca/Pacifica Apricot  
**Target Pests:** *Phytophthora nicotianae*  
**Objective:** Determine efficacy of BW102N “a” & “b” against *Phytophthora nicotianae* inoculated Vinca.

**Pot Size:** 4”

**Replications:** 10 per treatment

### TREATMENT LIST

Treatment	Rate	Frequency
1. Untreated	n/a	n/a
2. Inoculated check	n/a	n/a
3. Chemical check Subdue Maxx (mefanoxam)	1oz/100gal	Drench, applied once
3. BW102Na (4 strains): A. EcoBac B. EcoNutrient	20mL/1L (2% v:v) 1g/5mL EcoBac	Drench; applied twice
4. BW102Nb (3 strains): A. EcoBac B. EcoNutrient	20mL/1L (2% v:v) 1g/5mL EcoBac	Drench; applied twice
5. RootShield® WP (T22)	4oz/100gal	Drench; applied once

### Methods:

1. Individual seeds were planted into plug trays containing standard, peat-based potting media (Metro-Mix).
2. After 3 weeks of growth in plug trays, plants were transplanted into 4” pots containing potting media.
3. The appropriate treatment was applied to the plants in water as a drench after transplant to 4” pots. Each plant was treated with the solution until saturation, or when the liquid began to run out the bottom of the pot (~200mL).
  - a. 10 plants were drenched with BW102N “a” at a 2% (v: v) rate.
    - i. BW102Na treatment also contained EcoNutrient, a 100% soluble powder containing microbial nutrients. This was included to increase germination and biochemical activity of *Bacillus* strains in BW102Na.
    - ii. 10g of EcoNutrient material was dissolved into 2L of municipal water. 40mL of BW102Na was added to the solution and mixed thoroughly.
  - b. 10 plants were drenched with BW102N “b” at a 2% (v: v) rate.
    - i. BW102Nb treatment also contained EcoNutrient, a 100% soluble powder containing microbial nutrients. This was included to

- increase germination and biochemical activity of *Bacillus* strains in BW102Nb.
- ii. 10g of EcoNutrient material was dissolved into 2L of municipal water. 40mL of BW102Nb was added to the solution and mixed thoroughly.
  - c. 10 plants were drenched with RootShield® WP at a rate of 4oz/100 gal.
  - d. 30 plugs remained untreated and drenched only with water. These were the untreated, inoculated, and chemical checks.
4. One week following treatment, the plants were treated with a liquid inoculum of *Phytophthora nicotianae*.
    - a. 10 untreated plants were treated with ~200mL/pot of municipal water. These were the untreated checks.
    - b. The remaining plants were treated with ~200mL/pot of *P. nicotianae* liquid inoculum. The inoculum was created by blending 1 infested PDA plate into 1L of sterile DI water.
  5. 24 hours after drench treatment with *P. nicotianae*, plants were removed from the grow room and drenched with the appropriate treatment:
    - a. Untreated check, inoculated check, and RSWP treated plants were drenched with ~200mL of municipal water.
    - b. 10 plants from the BW102Na treatment were drenched with BW102Na treatment containing EcoNutrient at the same rate listed under 2a (see above).
    - c. 10 plants from the BW102Nb treatment were drenched with BW102Nb treatment containing EcoNutrient at the same rate listed under 2b (see above).
    - d. 10 plants were drenched with chemical treatment, Subdue Maxx, at a rate of 1oz/100gal.
  6. Plants were incubated in a grow room at ~27°C under fluorescent lighting for 3-4 weeks. Plants were watered as needed with 100ppm nitrogen fertilizer water.
  7. Individual plants from each treatment were measured from the soil line to the apex at the conclusion of the study, after approximately 4 weeks.
  8. Root weight of each individual plant from all treatments was recorded by severing the root ball of the plant, washing all dirt and debris away, and blotting dry. Shoot weights were recorded by taking the severed shoot (anything above the soil line) and measuring the weight.
  9. Efficacy was evaluated based on plant growth, root and shoot weights. Observations of disease symptoms were also recorded.

#### **Results/Conclusions:**

- **Observed disease symptoms included severe plant stunting, root and shoot necrosis, and death. Four out of ten plants in the disease check were dead on the day of evaluation, approximately 21 days post-inoculation.**
- **Treatment with the chemical, Subdue Maxx (mefanoxam) resulted in the best control against *Phytophthora nicotianae*. Plants were similar numerically in size to plants in the untreated check. No plants in this treatment died due to inoculation with *P. nicotianae*.**
- **Plants treated with RootShield WP (RSWP) were slightly larger numerically in height, shoot and root size compared to the inoculated check, however three out of 10 plants died due to inoculation with *P. nicotianae*.**

- Treatment with either BW102N a or b resulted in plants that were slightly smaller numerically relative to the untreated and chemical checks, however were larger compared to the inoculated check. One plant out of ten died in the BW102Na treatment, and no plants died in the BW102Nb treatment.

Data:

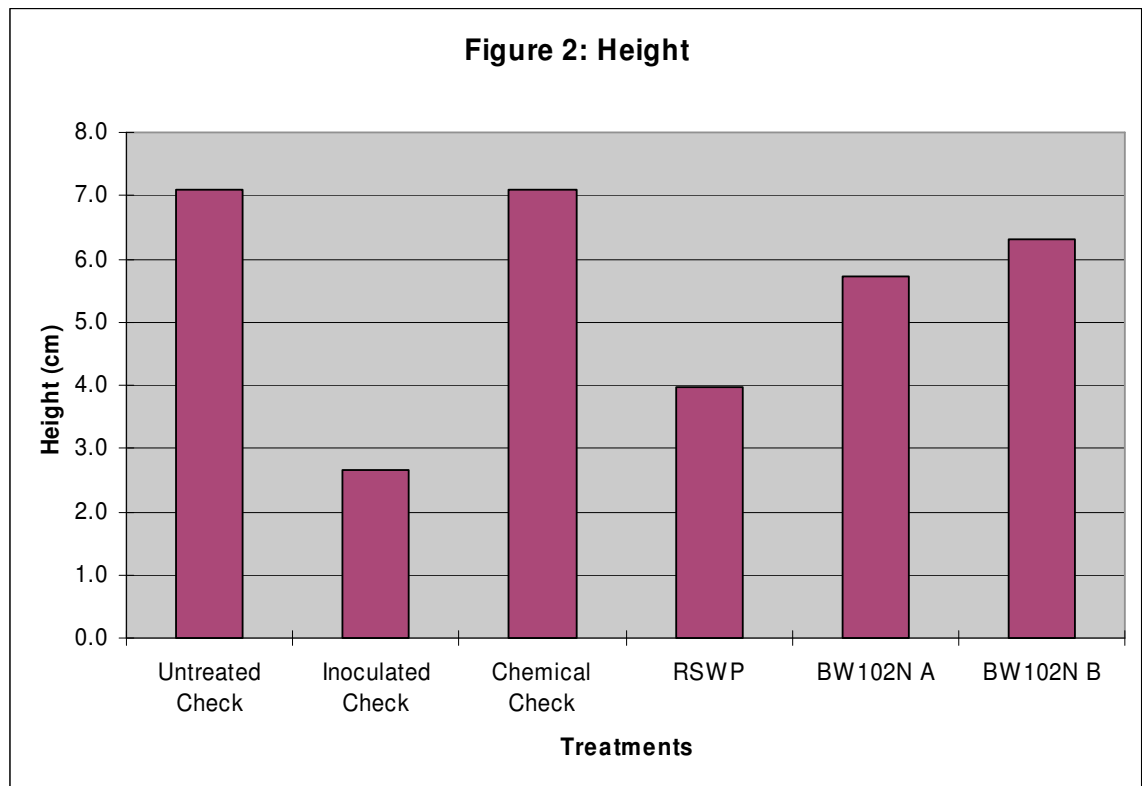
Figure 1: Photo of *Phytophthora* Efficacy Study 1.6.10:



Figure 1 is the photo of treatments included in the *Phytophthora nicotianae* efficacy study, taken prior to evaluation on 1.6.10. Treatments, from left to right, are as follows: untreated check, inoculated check, chemical check, RootShield WP, BW102Na, and BW102Nb.

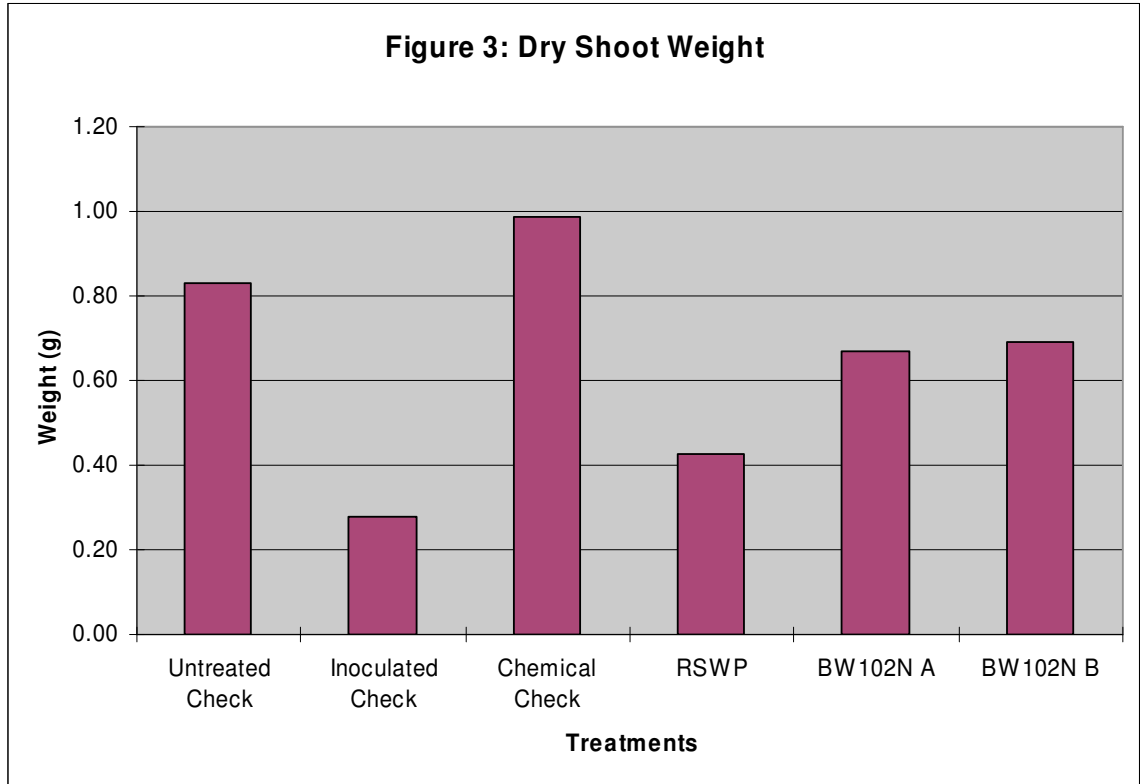
**Data (Charts):**

**A.** Average height of Vinca plants from each treatment listed in Table 1:



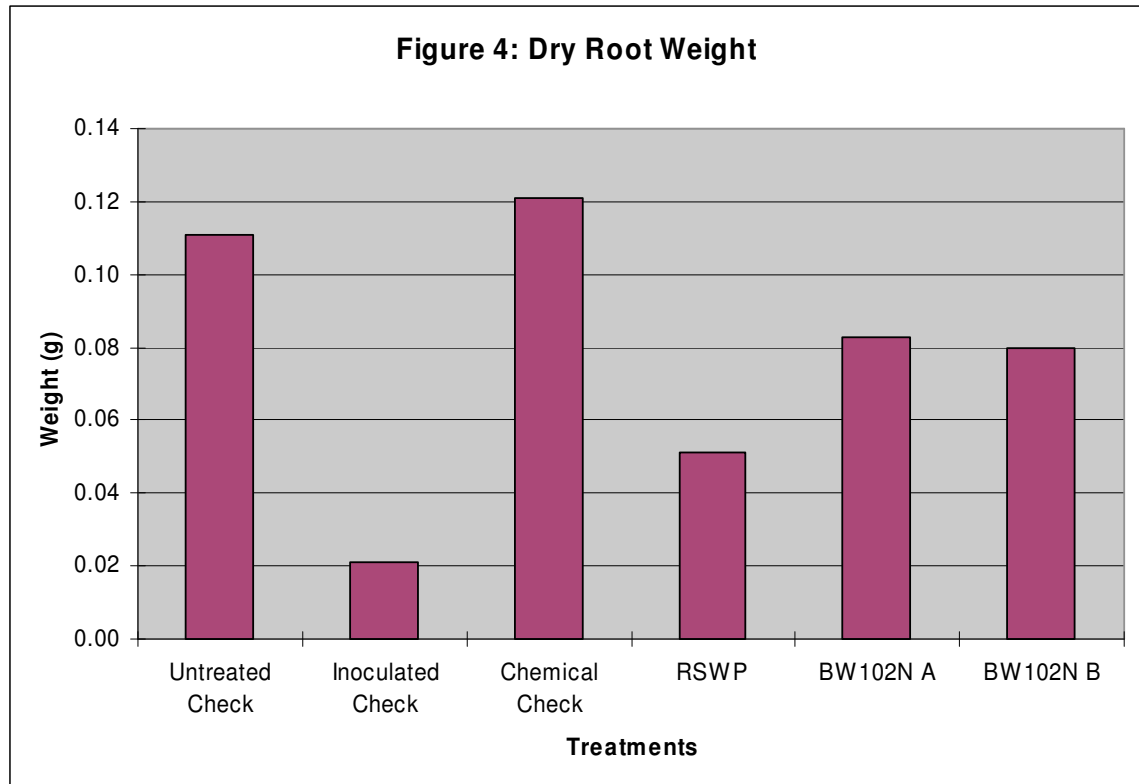
Plants in the inoculated check were the shortest out of all the treatments. Plants treated with the mefanoxam were almost identical in height to the untreated check plants. Treatment with RootShield WP (RSWP) resulted in slightly taller plants. Treatment with BW102N a or b resulted in plants slightly shorter numerically than the untreated check.

**B. Average shoot weight of Vinca plants from each treatment listed in Table 1:**



Plants in the inoculated check had the smallest shoot growth out of all the treatments. Plants treated with the mefenoxam had larger shoots than the untreated check plants. Treatment with RootShield WP (RSWP) resulted in slightly larger shoots than the inoculated check. Treatment with BW102N a or b resulted in plants comparable in shoot size to the untreated check.

C. Average shoot weight of Vinca plants from each treatment listed in Table 1:



Plants in the inoculated check had the smallest root growth out of all the treatments. Plants treated with the mefanoxam had larger roots numerically than the untreated check plants. Treatment with RootShield WP (RSWP) resulted in slightly larger roots than the inoculated check. Treatment with BW102N a or b resulted in plants with larger roots than the RSWP treated, but slightly smaller than the untreated and chemical checks.