**Introduction**

Zebra Chip (ZC) is a potato disease caused by the bacterium *Candidatus Liberibacter solanacearum* and vectored by the potato psyllid, *Bactericera cockerelli*. Currently, the only effective approach to managing ZC is to apply insecticides for the control of the potato psyllid.

The focus of this study was to look at two non-insecticide alternatives: 1) target the pathogen by using an antibiotic (streptomycin sulfate) in combination with plant nutrients; and 2) utilize nutrient supplements to offset the effects of ZC by supplying key nutrients (micro and macro) lost or unavailable to the plant due to insect or pathogen related stress.

**Materials and Methods**

- Field plots were located near Springlake, Texas in a commercial grower’s field (Springlake Potatoes).
- Experiments were arranged in a Randomized Complete Block Design (RCBD).
- For each treatment, four (4) replications of 30 plants were used, for a total of 120 plants per treatment.
- Ten treatments were carried out and all received a seed treatment of Cruiser Maxx® Potatoes (Insecticide + Fungicide).
- Treatments were: 1) Control (Grower Practice); 2) Keyplex 1000 DPX (micronutrients, other); 3) Keyplex 1000 DPX + Renew (Urea, Phosphate, Phosphite, Potassium, Other); 4) KPX-B1 (micronutrients, others) + Renew; 5) Firewall (Streptomycin sulfate) + SAver (Nitrogen, Potassium, others); 6) Firewall + KPX B1+ Renew; 7) Firewall + KPX 1000 DPX + Renew; 8) More Power (Calcium+) Stoller’s Force (Potassium, Nitrogen)+ Energy Power (Micronutrients, other); 9) More Power + Stoller’s Force + Energy Power + Renew; and 10) Nutriplant (Nitrogen, Phosphorous, Potassium, secondary macro/micro nutrients)
- All treatments were sprayed with a nonionic oil concentrate/buffering adjuvant.
- ‘Russet Norkotah’ 278® potatoes were planted on April 2, vines were killed July 31, and harvest took place on August 23.
- Treatments were sprayed beginning at around flowering and sprayed biweekly on 14-Jun, 26-Jun, 10-Jul, and 22-Jul.
- All treatments received grower application of insecticides, herbicides, fungicides, and other chemicals for potato production.
- Potatoes were processed for yield and presence of ZC by the frying tuber slice test (One .05” slice per tuber, at least 10 tubers per rep, 1 min 25 sec, 365°F corn oil)

**Results**

- Treatment #9 (More Power + Stoller’s Force + Energy Power + Renew) was the only treatment that had statistically higher yields in comparison to the Control (Treatment #1) for both total yield of all potatoes and for total yield of U.S. No. 1 potatoes.
- Although not statistically different, treatments #2 (Keyplex 1000DPX), #7 (Firewall + KPX 1000 DPX+ Renew), and #8 (More Power + Stoller’s Force + Energy Power) were slightly below the cutoff for statistical differences.
- Except for one treatment (#10, Nutriplant), all other nine treatments had ZC as determined by the tuber slice frying test.
- Treatment #10 had the worst yield and significantly below the control.

**Discussion**

- The addition of nutritional supplements as, used for Treatment 9, was able to give statistically higher yields than the control (grower practice).
- This treatment may be counteracting nutrient deficiencies as a result of ZC, the pathogen, psyllid damage to the plant, or other stresses such as chemical applications by grower or weather related events.
- Although ZC levels varies amongst treatments, they were not statistically different. Although no ZC was detected for treatment 10, that could be a result of low sampling numbers (10 tubers per replicate).
- Gottwald et al. (2012) consider nutritional treatments as “inconsequential” for control of citrus huanglongbing, caused by *Ca. Liberibacter asiaticus*. However, recent but preliminary research would indicate that a “nutrient cocktail” can rejuvenate an HLB-infected tree (Boyd, 2012).
- This foliar nutrition approach may need to be further looked at not only for HLH (Spann et al., 2011) but for potatoes and ZC.

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**References**

