

# Completed Research

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Project #F013

## Novel Preharvest Intervention Strategy Targets Drinking Water for the Control of Food Borne Pathogens in Poultry Production

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### “Treatment of Drinking Water to Aid in Prevention of *Salmonella* Colonization in Broilers”

*Salmonella* contamination continues to be problematic for the poultry industry. Drinking water chlorination and acidification were evaluated as an on-farm *Salmonella* control option. Gas chlorine was injected to provide  $\geq 1$  ppm free chlorine and acidified calcium sulfate also injected at a rate necessary to maintain  $\geq 650$  mV oxidation reduction potential (ORP). In two experiments, male broiler chicks were given this water sanitation program while control birds received dechlorinated municipal water. Average weights, feed conversions and livability were measured at 21 and 42 days of age. For each treatment, birds were challenged via the crop with nalidixic acid resistant *Salmonella typhimurium* (NAL-SAL) at either 7 or 35 days of age. At day 42, challenged and un-challenged birds were sacrificed and the incidence of NAL-SAL determined. In trial 2, the chlorinated birds were significantly lighter with less mortality than the control birds at 42 days of age. There were no other significant differences in weight, feed conversion or mortality. In both trials, there was a significantly higher incidence of *Salmonella* in the chlorinated birds as compared to the control birds for birds challenged with NAL-SAL at 7 days of age. However for birds given NAL-SAL at day 35, the incidence of NAL-SAL was significantly higher for the control birds. Results indicate that young birds exposed to NAL-SAL were not protected from infection by the sanitized water; possibly due to reduced water consumption. However, in this trial, older birds consuming chlorinated water had a reduced risk of *Salmonella* infection. In conclusion, chlorine-acid based water sanitation providing  $\geq 1$  ppm residual free chlorine and 650 mV ORP may be of value in preventing *Salmonella* contamination late in the life of the flock.

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