

# StartSmart Reduces Ammonia in Test vs Control Study

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## Protocol

The experimental conditions were as follows:

- 4 ponds, 5x5x0.8m= 20m<sup>3</sup> each (25 m<sup>2</sup>), two ponds for StartSmart treatment (test) and two ponds without StartSmart treatment (control)
- liming – 50 g/pond (@250 kg/ha)
- cow dung (initial dose) – 25 kg/pond (@10,000 kg/ha) + monthly dose of 4.0 kg/pond (@1600kg/ha)
- leave for 10 days
- stock fish fingerlings (Common carp with mean weight of 3.0 g)
- 18 fingerlings/pond (@7,200 fish/ha)
- feeding powdered RB+GOC (@ 5% BW)
- fortnightly sampling (every 14 days)
- duration of 7months or 210 days

The StartSmart batching and dosing were performed as follows:

**For the first 100 days (approximately) of the program, all four ponds were operated without StartSmart addition.**

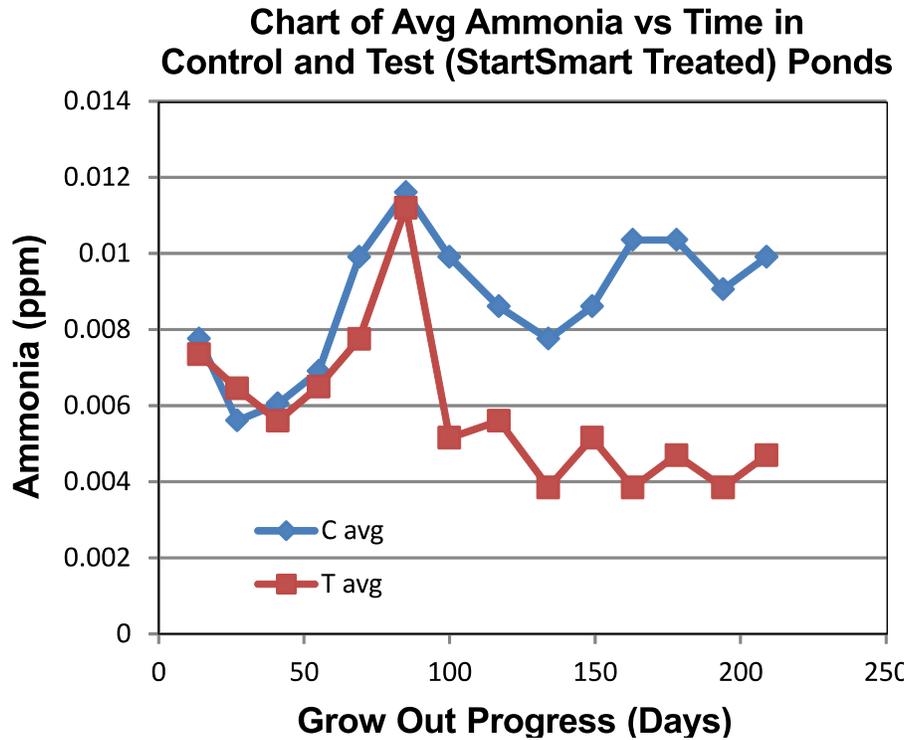
**On December 24, the StartSmart dosing begun as follows:**

- StartSmart was prepared in a 200 liter aerated drum for 14 days before the first dose
- Apply 25 liters incubated solution to each test pond, (two test ponds means 50 liters, or one half of the solution was used) still leaving 50 liters in the aerated drum
- For ongoing treatment, into the bioreactor (which after dosing is now at 50 liters volume), add 2 liters StartSmart and 300 grams Activator, then fill to 100 total liters with water. Aerate for 7 days, then dose 25 liters to each of the two test ponds
- Repeat every week using 2 liters of StartSmart and 300 grams of Activator

*Note: The StartSmart used in this experiment was received in India 18 months before the experiment began. It was stored at room temperature (usually 30 C).*

## Changes in Ammonia vs Time

The chart below shows the average ammonia in the 2 control ponds, compared to the average ammonia in the two StartSmart treated ponds (test), at approximately 14-day intervals during the grow out study.



For the first 100 days (no StartSmart dosing), the test and control ponds showed identical ammonia concentration. Once StartSmart dosing began with the aerated mixing drum (14 day holding time), the ammonia reduction in the treated ponds was dramatic.

The average ammonia (unionized) in the control ponds from day 100 through the end of the study was 0.0093, while the test pond ammonia averaged 0.0046 during this period. Once StartSmart dosing began, there was a 50% reduction in ammonia in the test ponds relative to the control ponds, which persisted for the duration of the 210 day grow out experiment.