

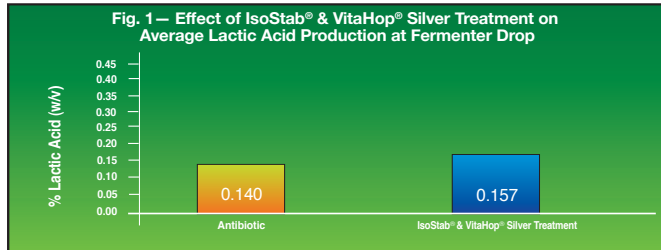


# BetaTec® – Case Study

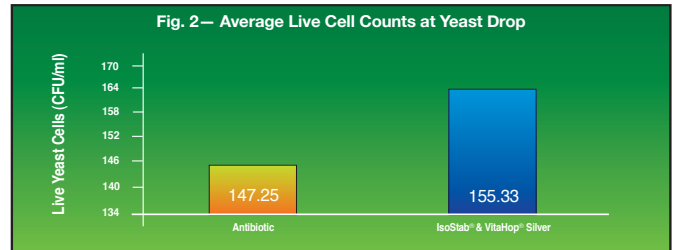
## IsoStab® & VitaHop® Silver in Full Scale Production Trial

### Iowa dry mill batch ethanol plant

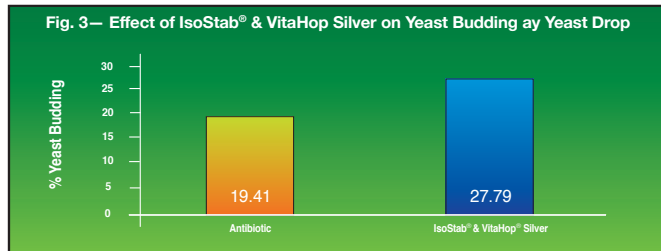
The following graphs show analytical data from a 110 MM gal/yr ICM fuel ethanol plant utilizing both BetaTec® IsoStab® antimicrobial and VitaHop® Silver yeast nutrient program. Both products were added to the fermentation process at an economic rate.



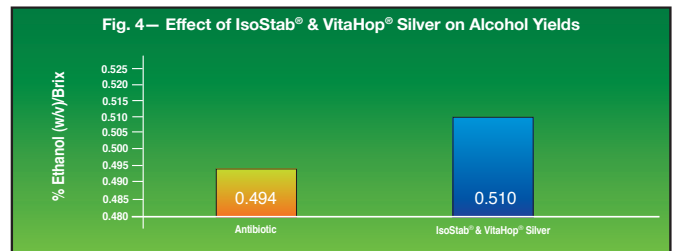
The average lactic acid levels in the batches that were on the antibiotic treatment were comparable to the levels obtained in batches treated with IsoStab® & VitaHop® Silver.



The BetaTec® program increased the live yeast counts at the end of propagation by 6% over the antibiotic regime.

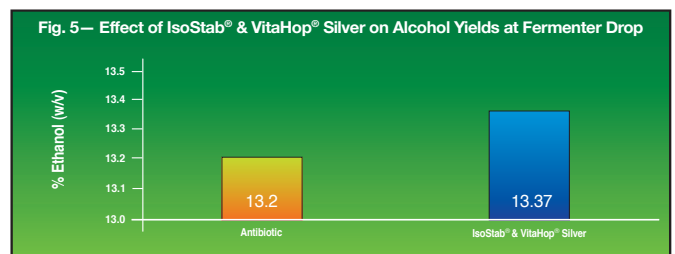


Average budding during the IsoStab® & VitaHop® Silver treatment increased by 43.2% over the antibiotics regime.



The Ethanol/Brix ratio is used as an indicator to determine the ethanol yield for each batch. The comparison clearly shows that the BetaTec® program increased the average ethanol yield by 3.2% over the antibiotic treatment.

- IsoStab® & VitaHop® Silver reduced the sugar residue by 4.86% at the end of fermentation when compared to the antibiotic treated batches.
- The BetaTec® treated batches were able to consume sugar faster starting at the 24<sup>th</sup> hour. That enhanced rate of fermentation led to faster production of alcohol when compared to the control.
- Based on this plant's average daily production, the BetaTec® treatments would yield an extra 3,900 gallons of 200 proof per day. Assuming \$1.60 per gallon, this translates to over \$2.3 million per year added to the bottom line.



The IsoStab® and VitaHop® treatment increased the % ethanol by 1.30%.

For more information on IsoStab® and VitaHop® Silver yeast nutrient visit [www.bthp.info](http://www.bthp.info).

