

CASE STUDY

Enhancing Biosecurity for Turkey Flocks at Zimmerman Farms

Implementing Visium Far-UVC
reduces airborne risk and microbial
load in turkey brooder barns

OVERVIEW

The Zimmerman Farms' brooder barn is a critical hub of their turkey operation, housing the poult production. As a component of the farm's ever-evolving biosecurity and biocontainment strategy, Visium Far-UVC adds protection for the young flocks cycling through, functioning as an additional barrier to reduce the risk of airborne threats such as *Influenza* and *Metapneumovirus*.

Poultry barns are particularly vulnerable to bioaerosols and airborne viruses such as Influenza, which can cause costly outbreaks. Located in Northfield Minnesota's densely packed agricultural region, the farm faces a high, consistent threat of contamination from the surrounding agriculture.



The Challenge

Traditional on-farm biosecurity focuses primarily on contaminated surfaces (fomites) and water systems. Once a virus such as *Influenza* enters a barn or infects a bird, limiting the risk of spreading becomes extremely difficult. By integrating Far-UVC technology, barns gain a proactive layer of defense. Far-UVC inactivates bioaerosols in the air as they

enter the space, lowering risk for both airborne and surface transmission. Continuous operation further reduces overall surface bioburden, strengthening biocontainment. By minimizing microbial load within the barn, exhaust air and aerosolized particulates carry fewer pathogens, helping prevent cross-contamination between facilities.



OUR SOLUTION Visium Far-UVC Sealed Fixtures

Five Visium Sealed fixtures were installed in a section of the brooder barn housing 10,000 poult. Fixtures were ceiling-mounted for seamless integration into the existing barn environment. With a coverage area of 750 sq ft and a treated air volume of about 4,624 ft³, the system provides continuous inactivation of airborne and surface pathogens.

KEY FEATURES



Industrial-grade IP65 enclosure



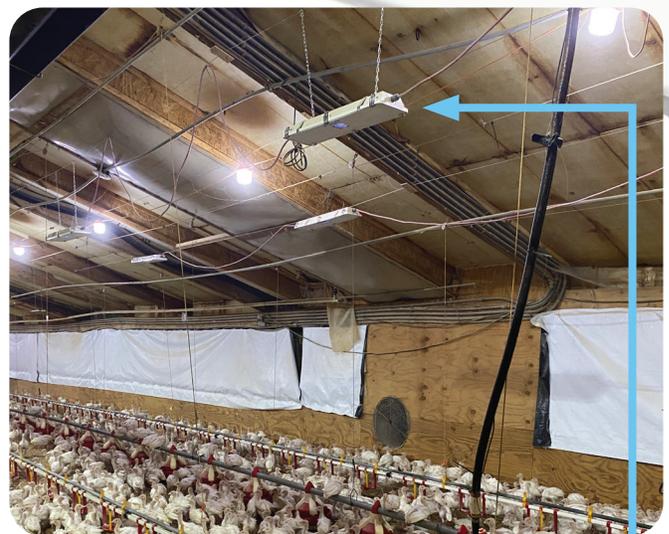
Pressure washer safe for easy cleaning



Withstands harsh, corrosive environments



Quick lamp replacement design



One of five Visium Sealed Far-UVC fixtures installed to continuously inactivate pathogens throughout the production area.

Third-Party Validation

Independent testing was conducted by STERIXENE to assess the microbial impact of Visium Far-UVC. Surfaces near the animals and at human-head height in the Visium-equipped section were compared with untreated controls.

Sealed bioindicator capsules containing *Bacillus subtilis* spores - known for their exceptional resistance to heat, UV exposure, and disinfectants - were placed at representative locations. Because these spores are significantly more resilient than typical bacteria or viruses, they serve as a stringent benchmark for validating germicidal effectiveness.

After four and eight hours of continuous operation, Far-UVC achieved a **94.8% or greater reduction** in spores at both heights and time points. At animal height after eight hours, Visium achieved a **99.79% reduction**, comparable to a **>6-log reduction (99.9999%)** of PRRS or H1N1 Influenza viruses.

Findings

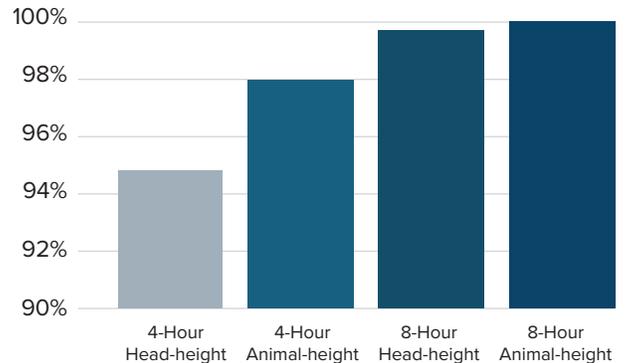
- ✓ Visium achieved a 99.79% reduction in hardy spores at animal height
- ✓ Reduction occurred at both animal and human-head heights, highlighting risk for animals and workers
- ✓ Significant reduction observed within four hours, demonstrating rapid inactivation capability

Outcome

Visium integrated seamlessly into Zimmerman Farms' biosecurity plan, delivering continuous, validated pathogen inactivation.

- ✓ Independent bioindicators confirmed consistent bacterial reduction with Visium use
- ✓ Up to 99.79% reduction in spore replication demonstrates strong efficacy against other pathogens
- ✓ Findings support reduced microbial risk to both flocks and staff

Spore Inactivation in Turkey Barn Over Time



8 Hours in this Barn at Animal Height

The amount of light needed to inactivate

✓ **97.79% of *B. subtilis* Spores**

would inactivate

- ✓ **99.89%** of *Salmonella enterica*
- ✓ **99.99%** of *E. coli*
- ✓ **100.00%** of H1N1 Influenza*
- ✓ **100.00%** of PRRS (MS2 as proxy)**

*25.9 times light needed for 6-log

** 7.4 times light needed for 6-log

Conclusion

The Zimmerman family are strong advocates for advancing animal welfare and disease prevention through innovation. By adopting Visium Far-UVC, their brooder barn strengthened its biosecurity infrastructure, improving air and surface quality without disrupting daily operations. Even in a busy poultry environment, Visium maintained consistently lower microbial levels compared to untreated spaces. Zimmerman Farms views Visium as a powerful safeguard against airborne pathogens and a promising tool for preventing diseases like HPAI that threaten flock health and productivity.

Contact & Next Steps

Ready to learn how Visium can transform your spaces? Find information about Visium and its applications at **Visium.one**.