"The Fog Engineers"
IKEUCHI USA, INC.

Dry Fog at The Ohio State University CEARC

CASE STUDY

The environmental dataset provided by the Controlled Environment Agriculture Research Center (CEARC) at The Ohio State University spans a continuous monitoring period from August 2023 through May 2025. Throughout this timeframe, the CEARC collected high-resolution measurements of temperature, relative humidity, and outside PPFD at five-minute intervals.

The AKIMist®E Dry Fog humidification system was installed in September 2024, allowing for a direct comparison of environmental conditions before and after system implementation. Key findings below:

- **OVERALL RH INCREASE**

  10-30% point increase in relative humidity after installation

- **STRESS REDUCTION**

  >50% reduction in low RH stress events (below 50%RH)

- **NO MORE EXTREME DIPS**

  Near elimination of extreme dips below 40% RH

WHY IT MATTERS

- ☑ Stable + predictable environment
- ☑ Uniform growth = higher yields

THE DRY FOG ADVANTAGE

ULTRA-FINE DROPLETS = ZERO WETTING

ENERGY & WATER EFFICIENT

MODULAR & EASY MAINTENANCE SYSTEM

RECORDED DATA TREND

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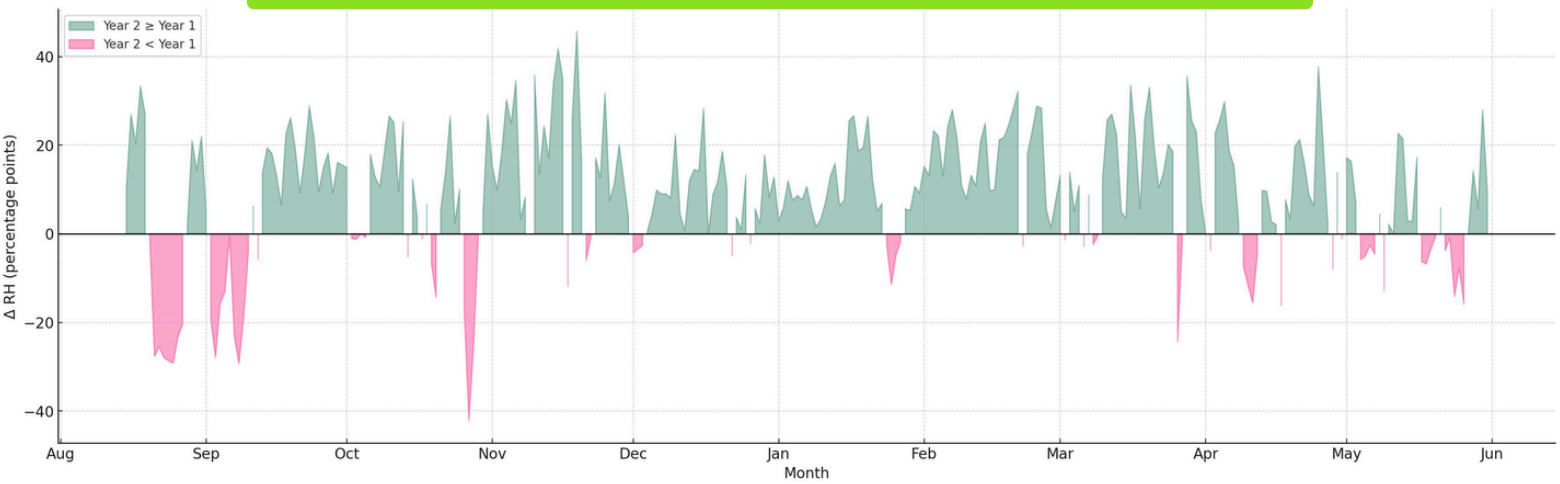
7-DAY ROLLING AVERAGE OF RH

- **The 7-day rolling average demonstrates long-term seasonal stability**
  - Year 2's RH line is smoother and remains elevated even in drier seasons.
  - Growers' ideal "tight environmental control" solution.

DIFFERENCE RIBBON - (YEAR 2 RH%) MINUS (YEAR 1 RH%)



- **The difference ribbon shows a strong net increase in RH virtually all year long**
  - Year 2 humidity is 10–30 percentage points higher than Year 1 during most periods.
  - Occasional dips are less severe than pre-installation levels.
  - The system replaced volatility with consistency, eliminating damaging dry valleys.

RECORDED DATA TREND

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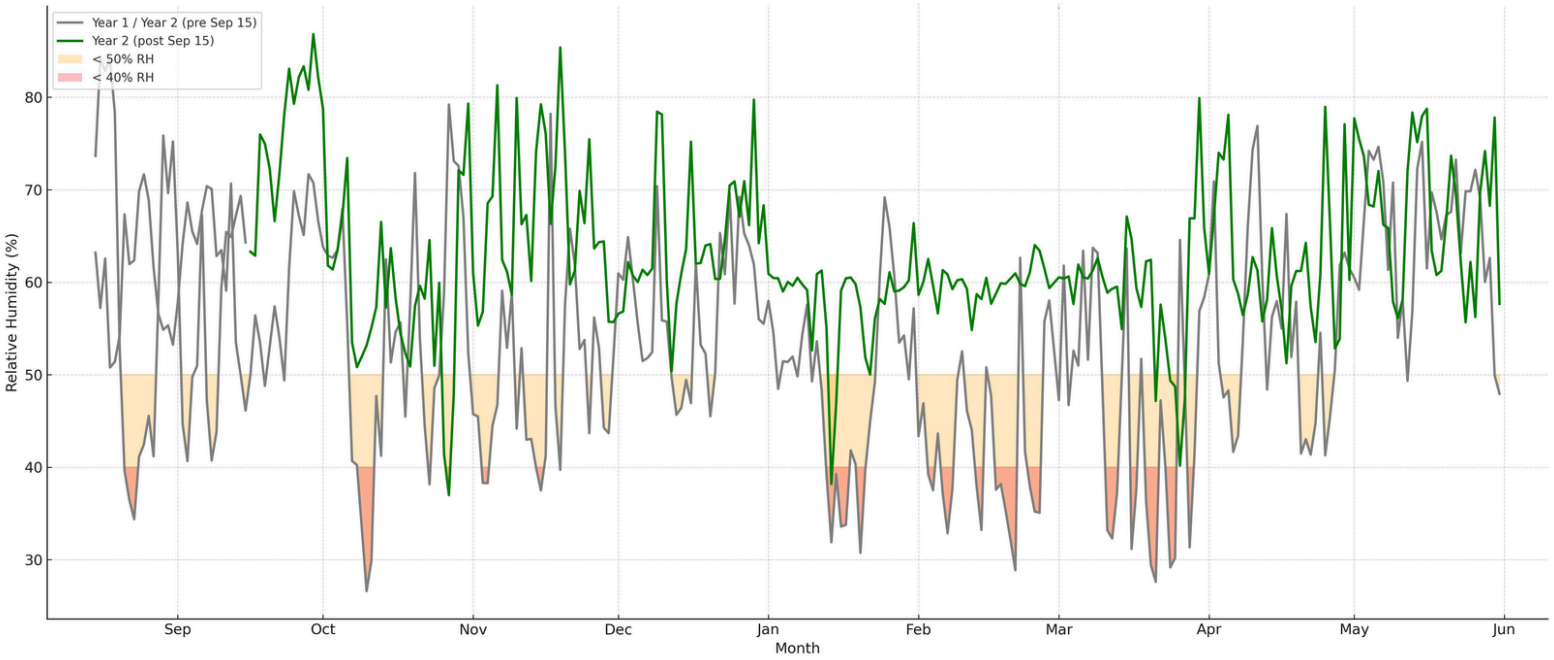
RELATIVE HUMIDITY: YEAR 1 VS YEAR 2 WITH THRESHOLD HIGHLIGHTS



- **Before Dry Fog installation (Year 1), humidity was unstable with frequent drops below 40–50% RH**
  - Large, rapid swings in RH.
  - Extended low-humidity events—some dropping into the 20–30% range.
  - Conditions that would increase plant stress, worsen VPD control, and limit transpiration.
- **After Dry Fog installation (Year 2), RH becomes consistently higher and more stable**
  - Tighter humidity band, staying mostly between 60–75% RH.
  - Fewer dangerous low-humidity dips (rarely below 50% RH).
  - Smooth, predictable environmental conditions ideal for plant growth.

Professors Dr. Chieri Kubota (Left) and Mark Kroggel (Right)

Dry Fog Humidifier AKIMist®E at OSU's CEARC

INTERVIEW HIGHLIGHTS

- **HOW DOES THE AKIMIST®E COMPARE TO THE MISTING SYSTEM YOU WERE PREVIOUSLY RUNNING OVERNIGHT?**

"Dry Fog produces finer droplets than misting or fogging, allowing humidity to cover more surface area per volume. Because the droplets evaporate almost instantly, the environment is also more comfortable for workers."

- **WHY IS THE NON-WETTING CHARACTERISTIC OF DRY FOG IMPORTANT FOR PLANT HEALTH?**

"When water accumulates in the canopy, humidity inside the foliage can become much higher than the surrounding air. This creates conditions that promote foliar diseases such as botrytis, making canopy wetness a major concern."

- **HAVE YOU OBSERVED ANY MEASURABLE CHANGES IN ENVIRONMENTAL CONDITIONS OR CROP PERFORMANCE SINCE IMPLEMENTING DRY FOG?**

"Dry Fog allows us to promote plant productivity without increasing foliar disease risk. With other humidification methods, increasing humidity often means introducing canopy wetness, which can promote disease. Dry Fog helps avoid that tradeoff."

- **FROM A COMMERCIAL GROWER'S PERSPECTIVE, DO YOU SEE DRY FOG AS A WORTHWHILE INVESTMENT? WHY?**

"When growing soft fruits like strawberries, maintaining proper humidity is essential. Being able to control humidity while minimizing disease risk makes systems like Dry Fog a worthwhile investment, especially when you also consider the long service life of the humidifiers."

- **IF YOU WERE BUILDING CEARC AGAIN FROM THE GROUND UP, WOULD YOU CHOOSE TO IMPLEMENT THE AKIMIST SYSTEM? WOULD YOU EXPAND IT TO OTHER CHAMBERS?**

"Yes. In fact, we currently have other chambers designed for high-wire crops where I would like to implement Dry Fog as well."

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