DAY AND NIGHT pH CYCLING OF ALGAL CULTURES;

WHAT OUR ALGAE ARE DOING WHILE WE SLEEP.

Barry C. Smith & Alison Tamsett

E-mail: Barry.smith@noaa.gov

U.S. Department of Commerce, NOAA, National Marine Fisheries Service, Northeast Fisheries Science Center, Milford Laboratory, 212 Rogers Ave., Milford, CT 06460.

The “Cell Cycle”

“Day”

Light

$$6\ CO_{2\ (aq)} + 6\ H_2O \rightarrow C_6H_{12}O_6 + 6\ O_2$$

pH ↑

photosynthesis

“Dark”

Energy (Work)

$$C_6H_{12}O_6 + 6\ O_2 \rightarrow 6\ CO_{2\ (aq)} + 6\ H_2O$$

pH ↓

Catabolism

So: pH changes day & night due to cell metabolism

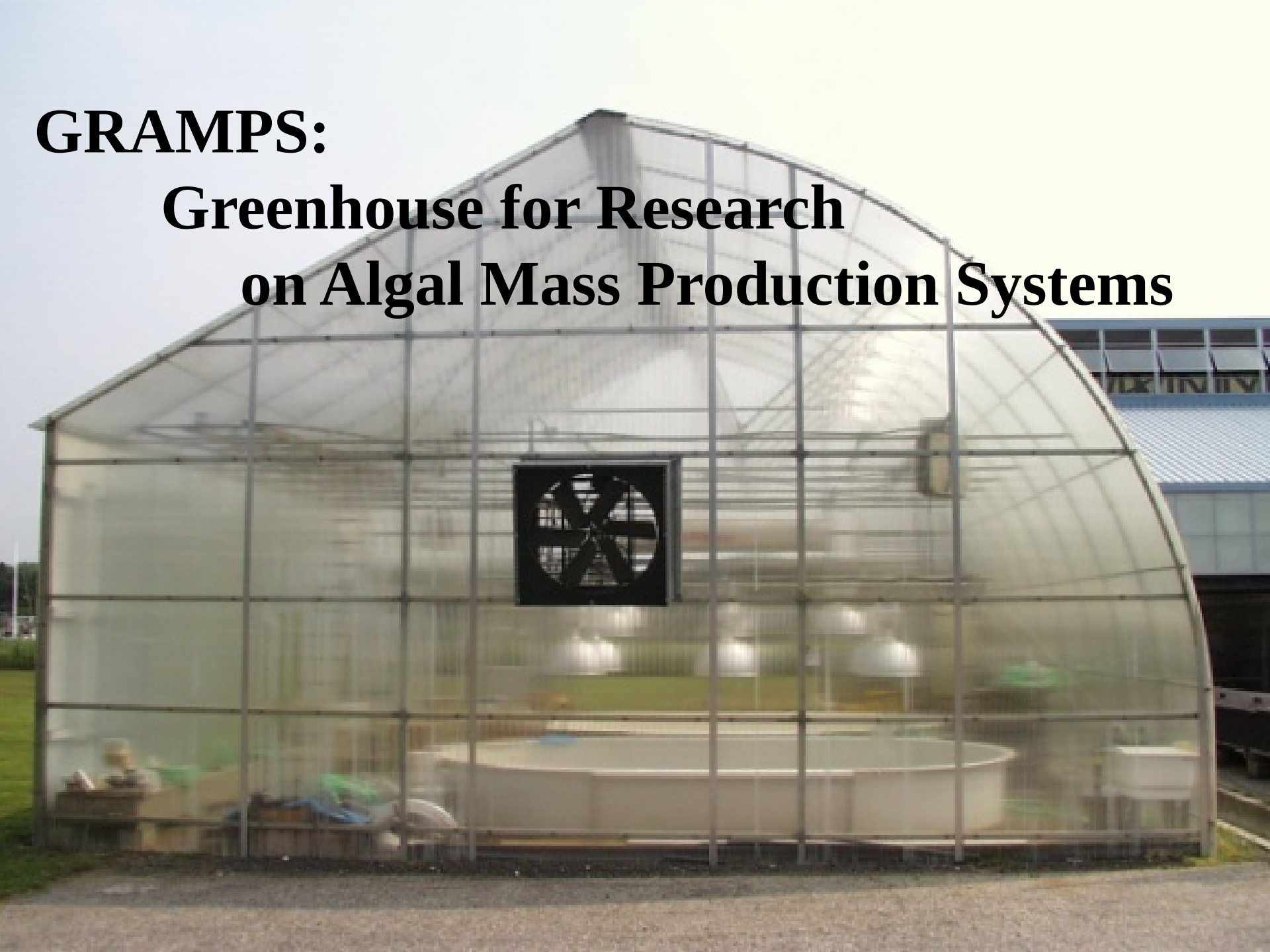
We Can: Add CO_2 as a carbon source & pH control

We could: Monitor these day/night cycles as a measure of culture stability

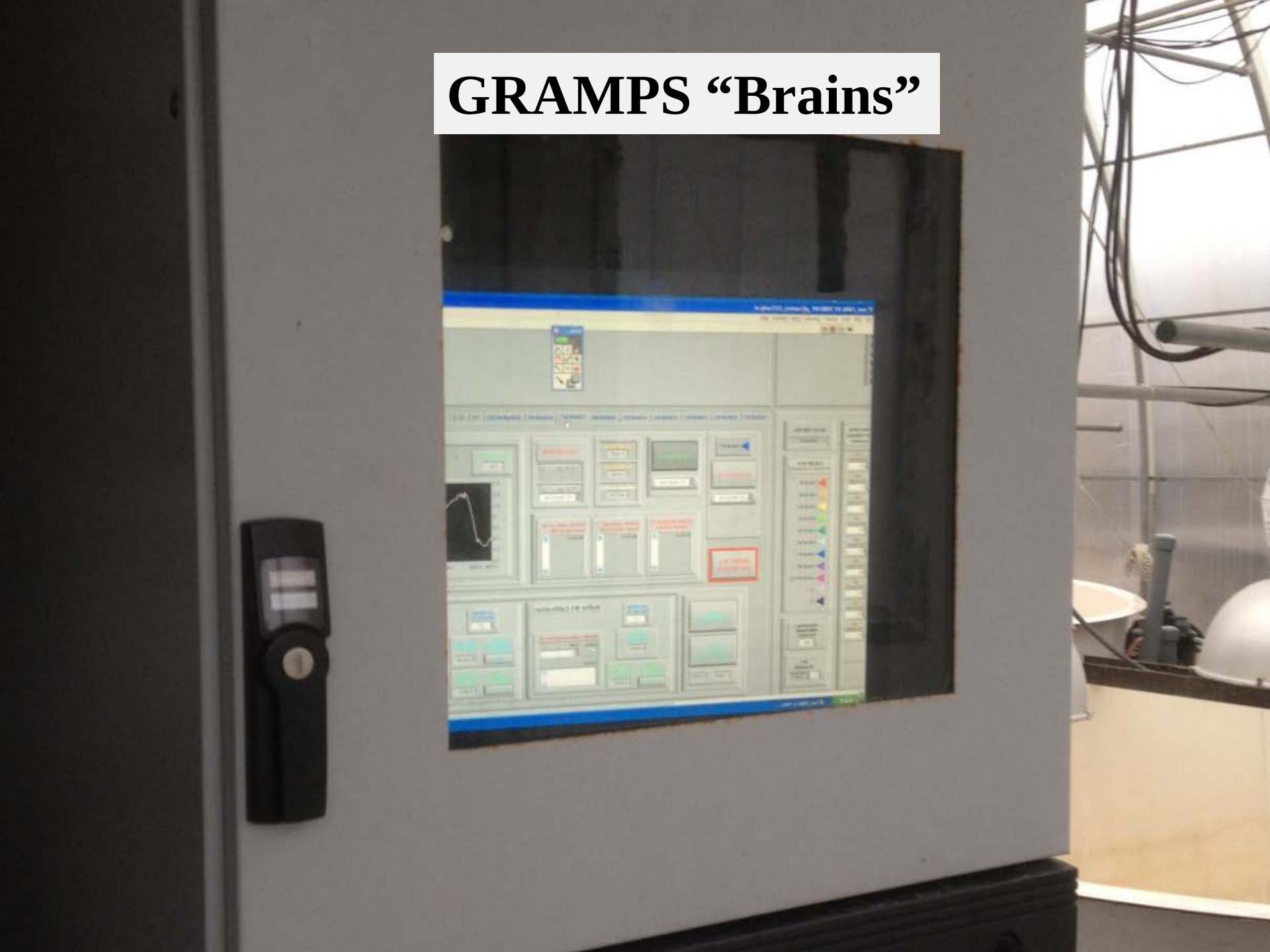
It is: A lot of work monitoring pH around the clock and adding CO_2 etc.

Lets: Get GRAMPS to do it!

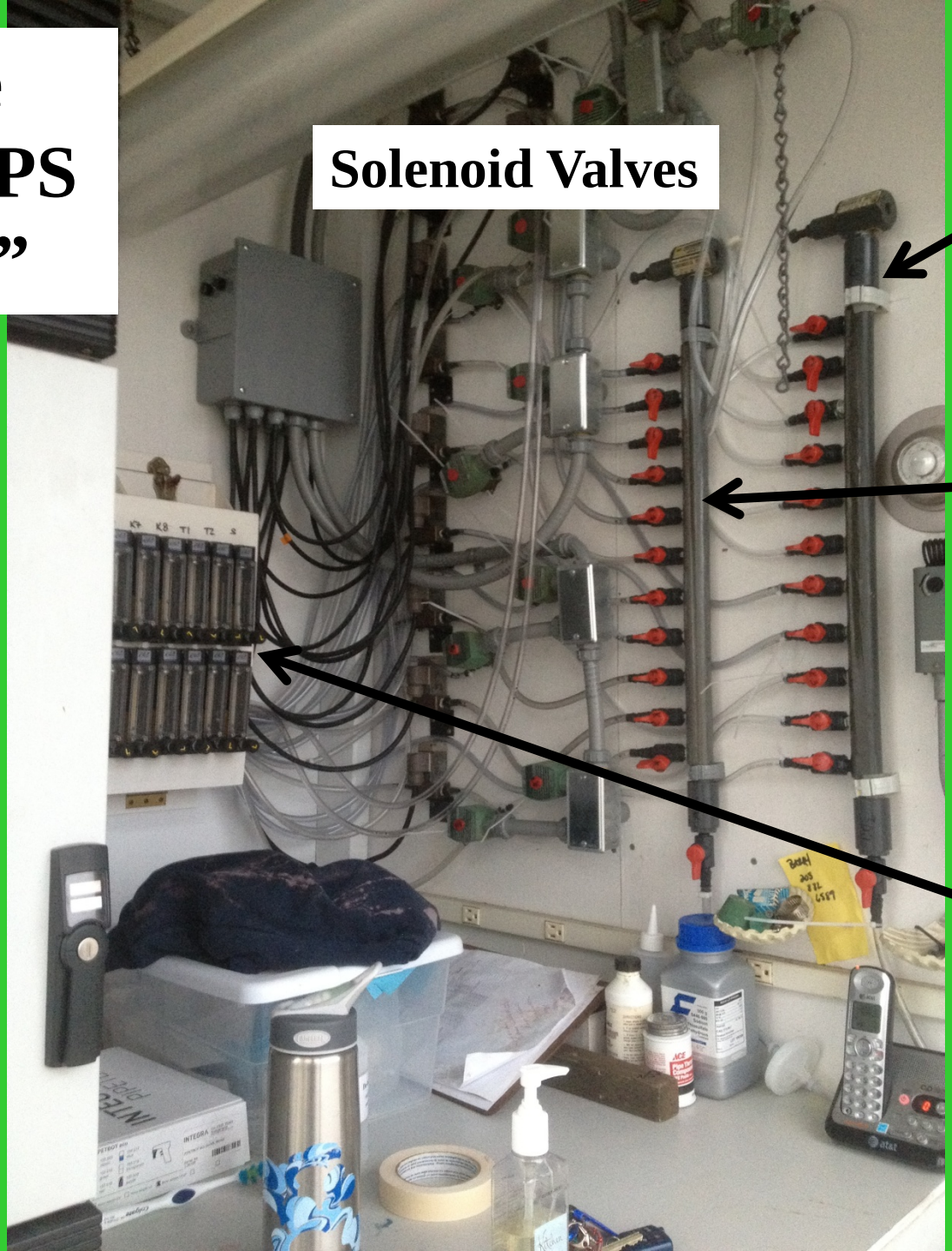
GRAMPS:
Greenhouse for Research on Algal Mass Production Systems



GRAMPS “Brains”



Some GRAMPS "Guts"

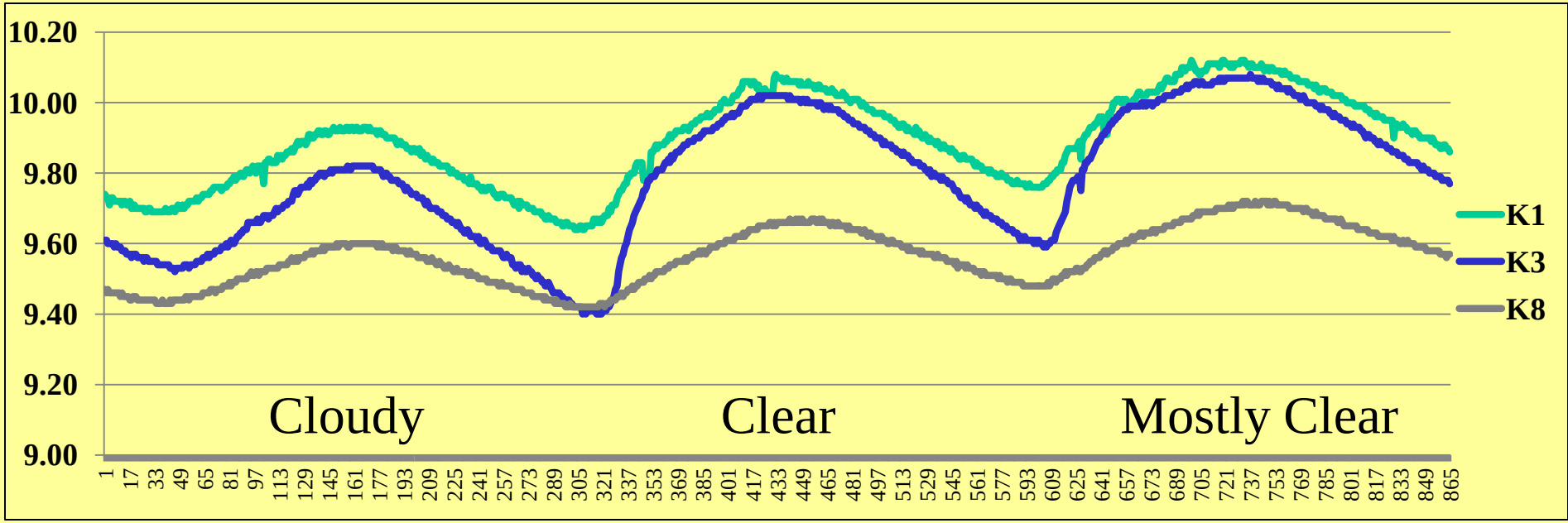


PLY 429 from the Milford Mass Culture Room

To Production Mode

Production Cultures

Uncontrolled Algal Culture

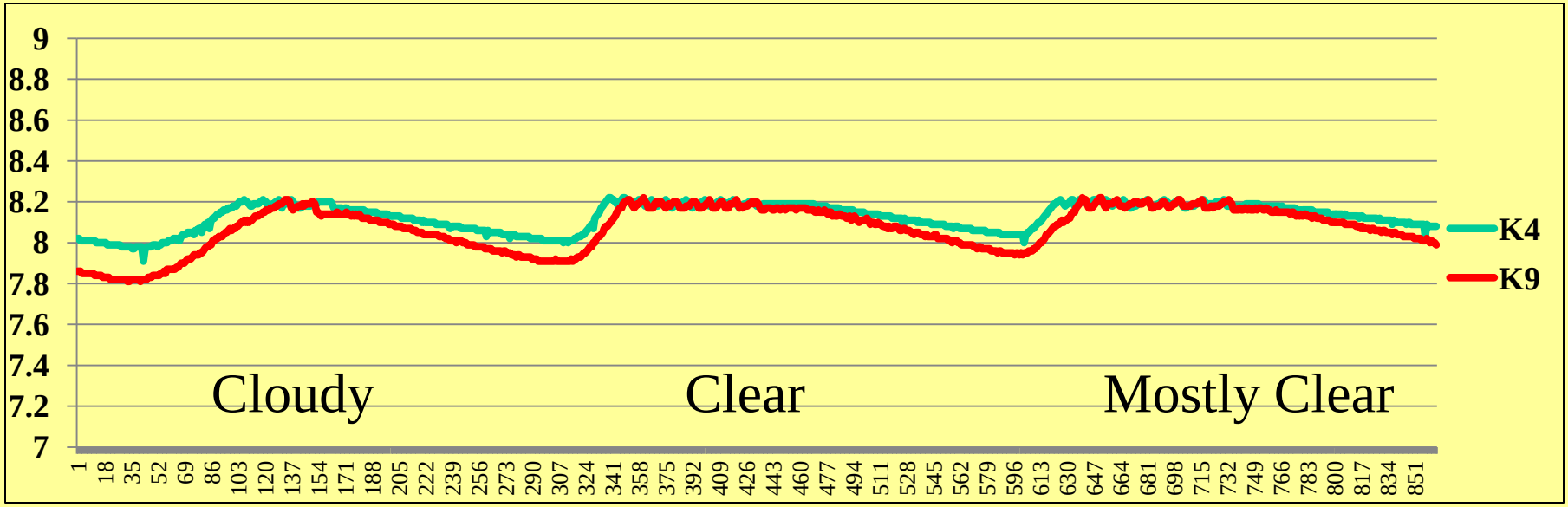


22 to 25 May 2012 Start & end at 5:02 am

Sampled every 5 minutes

Low 60 F (15.5C) at night, High 68F (20C) during the day

Algal Culture Controlled to 8.2

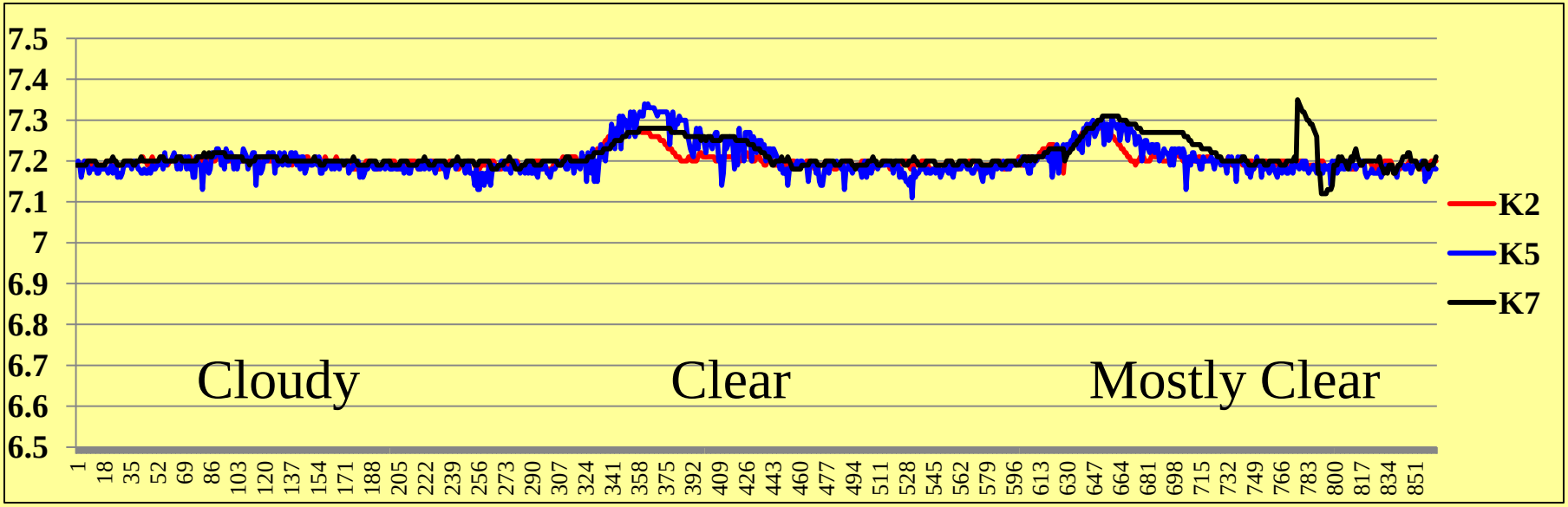


22 to 25 May 2012 Start & end at 5:02 am

Sampled every 5 minutes

Low 60 F (15.5C) at night, High 68F (20C) during the day

Algal Culture Controlled to 7.2



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Please Help Algal Culture!

What do you Need to Culture Algae Better?

Barry C. Smith

Barry.smith@noaa.gov

203-882-6589

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