MICHIGAN STATE
UNIVERSITY

Plant Science Research Greenhouse (PSRG) Facility
Faculty Oversight Committee Meeting
September 19, 2022, 1:00 pm

Attendees: Hannah Burrack (ENT), Jeremy Johnson (ENT), Linda Hansen (USDA), Mary Hausbeck (PSM), Roberto Lopez (HRT), Carolyn Malmstrom (PLB), Eric Olson (PSM), Chrislyn Particka (PSRG)(Director), Erik Runkle (HRT)(Co-Chair), Thomas Sharkey (BMB, PRL)(CoChair)
Absent: Bjoern Hamberger (BMB)
Visitor: Cody Keilen, MSU Plant Growth Chamber Director

The meeting was started at 1:00 PM

1. Website: Chrislyn described the facility's web site and some of the useful information found there. It is easily reached by a Google search for "MSU Research Greenhouses" https://rtsf.natsci.msu.edu/research-greenhouse-complex/

2. Chrislyn described improvements that have been made as a result of MSU funding provided when State of Michigan funding of significant renovations was postponed because of COVID. Floors in houses 47 to 52 were fixed to eliminate pooling of water and to improve drainage. Light-emitting diodes were installed in 47 greenhouse sections, replacing less efficient lamps that were approaching or beyond the end of their useful life. Wadsworth SEED controllers were installed in 24 greenhouse sections. These are essential to allow differential day-night temperature and to rationalize temperature measurement and responses of fans and vents. Installation of these controllers also included installation of a weather station so that greenhouse control could be optimized based on outside weather. For example, when there is bright sun, supplemental lighting can be automatically turned off. These changes are expected to provide both better environments for plant growth and significant energy savings.

3. Chrislyn reported on a fertilizer study undertaken to determine effective methods for minimizing the negative impact of the very high alkalinity of MSU water. A report on the study will be circulated with the minutes

4. There was discussion of the recently appropriated State of Michigan funds for the greenhouses and dairy. Chrislyn and the Co-Chairs indicated that there is little information as of the time of the meeting of how much investment will be made in the greenhouses.

5. There was significant discussion of how to develop a comprehensive vision for how best to modernize the greenhouses. The external study done in 2019 was judged to be out of date and the committee agreed that a new plan should be developed from the ground up.

A. The starting point needs to be a new headhouse. The current headhouse is the same vintage as the south headhouse that collapsed in 2020. There are many issues of concern with the current headhouse. A new headhouse would have at least these functions:

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Director

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https://rtsf.natsci.msu.edu/about/directory/research-greenhouse-complex/

i. A significant work area for researchers to process plants, including potting areas, a root washing sink, and drying ovens. Other equipment could be accommodated including a leaf area meter, scales etc.
ii. Storage including a properly ventilated pesticide storage and mixing area and miscellaneous storage for greenhouse users.
iii. A reverse osmosis and fertilization system sufficient to feed the entire complex.
v. Allow some "lean-to," air-conditioned greenhouses that would have double door access to follow best practices for research on plant insect pests and pathogens. These greenhouses would also allow high CO_2 research.

B. Many greenhouses should be razed and completely replaced. There are greenhouses without drains allowing runoff from pesticides and fertilizers to enter the soil. Piecemeal replacement would be very expensive because so much work would need to be done by hand, And even then, the facility would still have out-of-date greenhouses. The total amount of complete replacement needs to be studied. New greenhouses would:
i. Be taller to accommodate crops such as corn and fruit trees.
ii. Have better heat management and ventilation
iii. Allow for energy curtains that could keep heat in during winter months and shade cloth to keep heat out during summer days.
iv. Eliminate "walk-through" situations that require investigators to go through active greenhouses, spreading insects and disease.
v. Allow installation of floor drains.
vi. Improve ADA compliance

The committee recommended that the Director and Co-Chairs develop a vision for making the facility commensurate with the strength and reputation of plant sciences at MSU.

The meeting adjourned at 2:10.

Minutes drafted by Tom Sharkey and reviewed by Chrislyn Particka and Erik Runkle