To monitor the weight during the freeze drying process we developed a tray with a load cell. We measured the water activity using a specialized meter at the end of each experiment. The change in weight was used to calculate the relative moisture content which was then correlated with water activity. To verify the precision of the load cell, we measured a single weight and took 50 samples. We used the weight measurements to confirm the error of the sensor.

CONCLUSIONS

- Our device was able to precisely measure the weight of the product within the prototype
- An empirical relation between water activity and relative moisture content was established for corn
- Estimated savings of $800,000 a year

EXPECTED SAVINGS

Savings based on reducing 8 hours per cycle in 6 machines with a runtime cost of $100/hr

REFERENCES