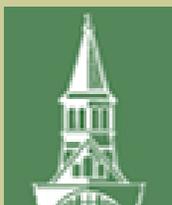


## VERMONT WORKING LANDS ENTERPRISE INITIATIVE

# UVM Extension

Brattleboro, VT



Vermont maintains a long tradition of quality agricultural practices and pursuits. Whether you're a large-scale commercial farmer, a berry farmer or someone raising horses, UVM Extension serves as a needed resource to Vermont farmers/breeders by providing relevant and timely resources.



UVM Extension's project will provide storage education, ongoing technical support and partial funding for environmental monitoring and control equipment to 20 vegetable farms. These farms will learn how to monitor and maintain optimal temperature and humidity levels while using electricity more efficiently. The farms will increase their aggregate sales of winter produce by \$500,000 over the prior two year sales average. An additional 100 farms will gain knowledge about vegetable storage and make improvements to their facilities and/or practices.

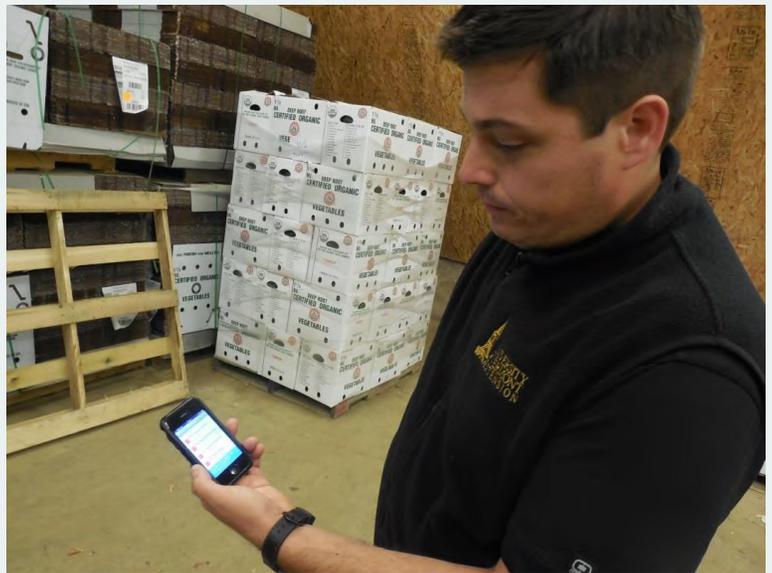
Total Working Lands Grant—\$40,000.00

Total Match provided by the UVM Extension —\$37,890.00

The monitoring systems use temperature and humidity sensors in the storage rooms to measure and record conditions every 5 minutes. Each farm might have between four and six different storage rooms where a specific set of temperature and humidity conditions are maintained consistent with the best practice for the crops stored there. Carrots, for example, are best stored at 32 degrees F and 98% relative humidity while onions do best at lower humidity around 80%. The monitoring networks send the data to a sever in California which allows the farmers and researchers to check in on the rooms from anywhere using their desktop computers or smartphones.

Sensor ID	Name	Type	Last Update	Last Value	Battery Signal
1 29DD4C4001000006-H	1 Cooler 2 Closest to Door - Humidity	Humidity	Feb 25, 2014, 11:38:00 AM	84%	
2 29DD4C4001000006-T	1 Cooler 2 Closest to Door - Temperature	Temperature	Feb 25, 2014, 11:38:00 AM	38.52 F	
3 291EBC400100000C1-H	2 Cooler 2 Midway to Door - Humidity	Humidity	Feb 25, 2014, 11:38:00 AM	95%	
4 291EBC400100000C1-T	2 Cooler 2 Midway to Door - Temperature	Temperature	Feb 25, 2014, 11:38:00 AM	35.33 F	
5 29E5BC4001000006-H	3 Cooler 2 At Evaporator - Humidity	Humidity	Feb 25, 2014, 11:38:00 AM	84%	
6 29E5BC4001000006-T	3 Cooler 2 At Evaporator - Temperature	Temperature	Feb 25, 2014, 11:38:00 AM	35.88 F	
7 2979994001000000-H	4 Cooler 1 Closest to Door - Humidity	Humidity	Mar 19, 2014, 11:30:00 AM	99%	
8 2979994001000000-T	4 Cooler 1 Closest to Door - Temperature	Temperature	Mar 19, 2014, 11:30:00 AM	35.60 F	
9 29E5A4001000000-H	5 Cooler 1 Far Wall from Door - Humidity	Humidity	Mar 19, 2014, 11:30:00 AM	87%	
10 29E5A4001000000-T	5 Cooler 1 Far Wall from Door - Temperature	Temperature	Mar 19, 2014, 11:30:00 AM	35.11 F	
11 2940B1400100000B	AUTO_ADDED_SENSOR		Oct 5, 2013, 2:41:00 AM	0.00 @ 77.00 F	
12 2993B94001000003	1-1-Wire Current		Oct 5, 2013, 2:41:00 AM	0.00 @ 79.89 F	

Example Farm Dash Board (Harlow Farm) Showing each Sensor's Status



Chris Callahan demonstrates checking in on the storage room conditions using a smart phone app