



Cranberry Station Newsletter

DECEMBER 15, 2016

UMass Cranberry Station

1 State Bog Road

P.O. Box 569

East Wareham, MA 02538

ag.umass.edu/cranberry

(508) 295-2212

It was Another Hot, Dry Summer with Some Reduction in Yield but Good Fruit Quality Overall - Notes from the Fourteenth Annual Crop Summit

On December 6th a group of 46 growers, researchers, handler reps, and association staff gathered in the Station library to discuss the 2016 season. Impacts of heat and drought and possible ways to deal with heat; the gypsy moth outbreak along with the ongoing challenges of winter moth, scale, and cranberry weevil; fruit rots and fruit size; poverty grass management; the use of Late Water; and nutrient management choices were among the topics discussed.

Overall crop volume and quality

Most in attendance commented on small berry size that contributed to lower than hoped for yield. However, the same hot, dry conditions that likely affected yield also led to better than expected fruit quality at harvest for many, especially considering the poor keeping quality forecast. However, there was some indication that fruit did not hold up well in storage, with some growers reporting declining quality late in the season (see section on weather below). Current crop estimates for MA are around 2 million barrels, down from 2015, but with some growers having record crops. Parker Mauck of Decas Cranberry reported that their deliveries were up from 2015. He also noted that their pre-harvest crop estimates were off and that there was need for better estimating tools both at the farm and industry levels. Harvest started late this fall due to poor color and for many, lack of harvest water. The dry weather provided good conditions for dry harvest and enough rain finally came to allow wet harvest to go forward.

Industry wide we are looking at a record crop by a large margin with large increases over 2015 in Wisconsin, New Jersey, and Eastern Canada (Quebec and Maritime Provinces). Quebec set a new record at 2.76 million barrels, up 32% from 2015 on a production area that increased by 255 acres.

On the next page is an updated table of Joe DeVerna's data for Ocean Spray MA growers (yield in bbl/a). The last column shows that 2016 MA yield (based on Ocean Spray deliveries) was down about 10% compared to 2015 and that all varieties were down by varying amounts. Interestingly, the 2016 numbers for MA are very similar to those from 2014.

Starting in 2015, there were enough Rutgers variety beds in full production to split out their average yields, in previous years they were lumped into 'other cultivars'. Ocean Spray collects these data for all of the US growing regions. When comparing across regions *within* a cultivar, MA crops have been similar to those in WI and NJ on a per acre basis over the past 5 years. MA has a lower total average compared to other regions due to the many acres of Early Black and

Howes compared to other regions that have fewer natives left in the ground. In 2016, WI crops were up 25% and their per acre production was up on all cultivars, some in the 30-40% range of increase compared to 2015.

Massachusetts	2009	2010	2011	2012	2013	2014	2015	2016
All cultivars	142	146	193	177	161	174	192	174
Early Black	126	130	171	144	138	135	156	137
Howes	117	129	168	148	132	133	141	133
Stevens	197	209	233	245	205	216	248	206
Ben Lear	202	225	281	255	232	237	267	244
Other cultivars	95	121	164	152	171	247		
Mullica Queen							348	280
Demoranville							310	279
Crimson Queen							269	256

Quality attributes. Ocean Spray reported that percent poor was down by 0.1% compared to 2015 (very little change) and that color was 3 TAcY points less than last year. Parker Mauck also reported a decrease in rot, compared to 2015, in deliveries to the Decas facility. He noted that quality was generally very good in their fresh fruit deliveries. Berry size, especially on the natives, was small. This led to decreased yield on Early Black and for many, this was compounded with declining fruit quality on that variety if beds had to be harvested late due to lack of water or color. Fruit size was also down on Howes, but many reported that this was overcome due to a large number of berries. In addition, it seemed to be the general experience that quality and firmness of Howes was exceptional in 2016. Due to the late start to harvest, many growers finished later than usual resulting in some soft fruit, maybe damaged by frost, by the end of the season.

Weather

[Please note that monthly [weather summaries](#) for East Wareham are posted to the Station's website with a link to the most recent one on the homepage.]

Our weather is getting warmer. In 2016, we shifted from using the 1961-1990 30-year average as a comparator for current weather, to using the 30-year average from 1981-2010, as is the current practice of NOAA. An examination of this more recent 30-year period shows that the average daily temperature for each month is warmer than the corresponding month in the 1961-1990 period. Ten of the 11 months (through November) in 2016 have been warmer than the 30-year average. December 2015 and August 2016 set heat records for East Wareham. Due to lack of ice, little sanding was accomplished in the 2015-2016 winter.

After very warm conditions in the early winter, February saw record or near-record low temperatures. Fortunately most bogs were protected by flood or snow. Dormancy broke early in the spring followed by cool temperatures, resulting in a long frost season. There was some discussion about how to determine when to start protecting in the spring. This remains an issue with varied opinions and a need for more science, including an examination of potential growing degree day models. The mild winter may have also contributed to the prolonged bloom period in 2016. This phenomenon increased the difficulty of timing fungicide and fruitworm sprays as well as fertilizer applications.

A hot, dry summer was particularly extreme in August, when 15 days with the maximum temperature at 85° F or greater and only 6 nights with temperature below 60° F were recorded. Since previous research has shown that optimum weight gain in cranberry fruit occurs at maximum temperatures between 68° and 85° F, this hot weather in August may have contributed to small berry size in 2016. Research by Vincent Pelletier, Laval University, showed that the ideal temperature range for photosynthesis was 77-84° F, declining rapidly when air temperature exceeded 90° F. Stevens were more impacted by heat compared to the Rutgers hybrids in his study. Since the dry matter in the berries is predominantly made up of carbon compounds, the products of photosynthesis, a reduction in photosynthesis at high temperatures would directly impact berry size and weight. The question was raised: Does it matter when the heat event occurs and is any damage cumulative? The answers remain unknown.

September continued warm with the average minimum temperature more than 4° F above average. The lack of cool nights may have also contributed to poor color development in the fruit. This is the second year in a row of slow color development and overall poor color, with both summers being hot and dry. This year, late color development impacted handler operations as deliveries were delayed and many growers were still harvesting in November. On the positive side, there were few frost nights in the fall.

Of course, the major climate issue this year was drought. After the extreme snowfall to start the year, from April 2015 through the end of 2015, rainfall deficit amounted to almost 7 inches in East Wareham. Because the water table was high to start the year (due to the snow), water supplies held up well last year. However, 2016 saw less than average snow and by the end of November, the cumulative rainfall deficit (since April 2015) had reached 14.81 inches. Despite getting some rain in the fall to allow for harvest operations, the off-Cape production region remains in a drought warning status; Cape Cod is in a drought watch. This may have implications for winter flooding. On the positive side, more normal temperatures this fall compared to those in 2015, should favor deep dormancy in the plants.

As mentioned above, the dry conditions may have favored fruit quality. Certainly, the predicted poor Keeping Quality Forecast did not pan out in terms of overall quality at harvest. Dry conditions have a negative impact on the fungal pathogens that cause fruit rot. And in a year of stressed water supplies, many growers had to irrigate very frugally. This along with increased use of sensors and tensiometers has resulted in conditions favorable to cranberry but less favorable to fungi. Some growers specifically attributed improved crop and quality to the drier conditions on their bogs. However, the plant stress suffered during hot conditions in August may have been related to the late season decline in field quality and poor storage quality experienced by other growers.

Water management, including in-day cooling

The prolonged frost season in the spring led to saturated conditions in the root zone. Saturation also favored *Phytophthora* infections. Later in June when temperatures rose, many growers saw brown spots on the bogs, and some had areas of burned vines. Areas of beds that stay saturated are often susceptible to drought damage later as the water table drops, due to shallow rooting.

There was some discussion of the value of tile drains not only in reducing saturation but also as a way to supply water via sub-irrigation. As saturated conditions subside at the end of spring frost season, tiles allow a grower to control the depth to water table, lowering gradually to encourage

deeper rooting or raising water levels in response to dry conditions. Tiles were compared to interior ditches for this purpose. On one hand, fewer interior ditches with tiles means less cornering of harvesters and less picking damage. On the other hand, tiles could clog and fail over time. Several growers pointed out the value of tiles in managing new plantings: fewer puddles and the ability to subirrigate, but there was indication that subirrigation was used less once the tiled beds became well established. Still there was some consensus that having tiles in a bed was related to improved fruit quality.

Several growers commented on the fact that the drought forced more discipline in decisions regarding when to irrigate. Many are using tensiometers, including those provided by Hortau, in order to provide an objective way to decide when to irrigate. However, there are also alternative ways to monitor soil moisture, including the use of volumetric water sensors. Tensiometers mimic the plant root's ability to draw water from the soil, while water sensors estimate the percent saturation in the soil. Both can be effective if properly placed and calibrated. Both can be problematic if you use a single device in a bed where the soil moisture is not uniform, for example, a bed with non-uniform or uneven subgrade. Water level floats ('lampinometers') are also a useful tool if the bed maintains a water table. There was discussion of a device called 'Flower Power' that was found by John Porter of the Makepeace Company and tried out by their employees and other growers in 2016. This inexpensive device, among other functions, senses soil saturation and records data that can then be downloaded with a phone app as long as you are within range of the device, for example from a truck on the dike next to the bed. Such inexpensive devices are especially useful in getting a sense of how uniform moisture conditions are across a bed. [Please note that the 'Flower Power' device is currently difficult to find. John Porter is working with the manufacturer to try to convince them to increase availability in 2017.]

Beside 'regular' irrigation, there was also discussion of how to use irrigation to cool fruit during hot weather. The question of temperature vs. humidity was raised. Peter Jeranyama explained that when plants cool themselves using transpiration, the water that moves from the roots, through the plant, and out through the leaves must evaporate at the leaf surface. Water vapor that is diffusing out of the leaf can form a boundary layer that impedes further outward movement of water vapor. If there is low humidity or if there is wind, the boundary layer stays thin and transpiration rates can be high. But if a thick layer forms in humid, still conditions, transpiration can be halted and the plant can overheat. Lower humidity on many days last summer could have favored the plant's ability to cool as well as keeping the canopy from staying too wet after irrigation events.

Some growers did use in-day irrigation for cooling purposes. One method was to trigger at 94-95° F shielded temperature (usually associated with about 110° F unshielded) and run for 8-10 minutes. A grower that implemented this method in 2016 saw fruit rot on Mullica Queen decline to <5% from 25% the previous year. He noted that he did not begin this protocol until after his bees were gone. Since it is only as the fruit begin to size that they are subject to overheating, this makes sense. This also explains why this technique is often not needed on small-fruited cultivars where there is less fruit mass to cool. However, some growers were concerned based on bad experiences with in-day cooling and had returned to depending on early morning watering ahead of hot days. One concern was that on humid days, the canopy stays too wet after the brief irrigation. This points out the need to incorporate good canopy management with irrigation since for large-fruited cultivars, plant cooling through transpiration may need to be supplemented with

in-day cooling but it is important not to make the canopy into a 'moisture chamber' for fungal growth.

Other experiences with Stevens: 1) irrigation triggered at canopy temperature of 107° F and run for 20 minutes lowered the temperature to 86-87° F; 2) irrigation triggered at 90-95° F air temperature and run for 20-25 minutes was associated with much less rot than prior to the practice (4-5% vs. as much as 40%). One grower noted that we should look to New Jersey experiences as we become more like them due to changing climate. Erika Saalau Rojas noted that she has been collaborating with Peter Oudemans in New Jersey and Peter Jeranyama here to look at issues around heat stress on fruit. One approach that Peter J. is taking is to look at heat mapping within beds.

NOTE: For further information on this topic, see the July 22, 2016 edition of the [Cranberry Station newsletter](#).

Fruit quality and fungicides

Most growers reported good fruit quality. Exceptions generally were on beds where quality declined rapidly late in the season with rot coming on in September after the extreme heat in late August and early September. These were often beds with large fruit, subject to heat stress late in the summer. Any quality problems on Early Black were generally attributed to having to hold for later harvest due to water supply issues. There was a discussion regarding how these late-appearing infections occur. Is there a physiological component due to pectin breakdown with over maturity or is it some factor (maybe heat) that causes latent fungal infections to become active? Most likely it is a combination of factors. Erika pointed out that some of these latent infections can become active after harvest (storage rot). This led to a question regarding rot in storage: Can a rotted berry 'infect' adjacent berries in a bin, causing them to rot? Erika's answer was no - the same conditions that cause one berry to rot in storage may cause others to do the same, but the infections occurred earlier in the season and are already in the berries, not spreading from one to another.

Again, many growers attributed good quality to less over-watering along with a rigorous fungicide schedule. Many returned to using Bravo in 2016, but others did not. There were reports of decreased dodder problems after getting away from using Bravo, perhaps due to allowing natural fungal pathogens of the dodder to help control the population.

In the past, the standard fungicide protocol was 3 applications. This seems to have moved to 4 applications being the norm, with some growers using 5 applications. The Station had good fruit quality on Rocky Bog (4 applications, 2 each of Proline and Bravo) and at State Bog (4 applications on hybrid sections, 2 Proline, 1 Bravo, 1 Abound/Indar; Section 1 - mostly Howes, skipped the 1st Proline for 3 total applications). Erika reported that in her experiments, a 4-application protocol gave zero rot.

Canopy management, including sanding, was mentioned as important to achieving good fruit quality. This can come from several factors, including improved air circulation, less wetness in the canopy, and better penetration of sprays.

Weeds - Herbicides

Poverty grass took center stage in the weed discussions this year. Select Max at 16 oz./a with 8 oz./a non-ionic surfactant applied aerially after fruit set was reported to give good control. Application at a similar timing with a 165-foot, PTO-driven air blaster was also reported to be effective. Earlier applications of Select Max seemed less effective and are associated with deformity in the flower pods, especially on Howes. Since this is a grass that does most of its growing later in the season, spring application of any grass herbicide are unlikely to persist long enough to impact poverty grass in the summer. With the advent of a chemigation option in 2016, it will be possible to apply more than one post-set application against this weed. Hilary Sandler noted that Intensity, a generic form of this product, will be labeled for chemigation in 2017. While this method may not be as effective as the others, it will facilitate the option of multiple applications.

Poison ivy control with Callisto was discussed. Katie Ghantous pointed out that it is important to hit the weed multiple times as it regrows. The idea is to force the weed to use its carbon reserves to regrow after top-kill, thus impacting reserves in the roots. After multiple applications over more than one year, even severe infestations can be managed but it does take time and persistence. Hilary recommended timing in late June and early July with 3 weeks rather than 14 days between applications and two applications per year in successive years. Carolyn noted that poison ivy is a plant that thrives in higher carbon dioxide conditions and that this gas is increasing in the atmosphere.

Katie reported on experiences in using iron sulfate for **moss** management. We tried chemigating the material at State Bog and managed to apply about 50 lb/acre of the intended 100 lb/acre target rate. Even at this half rate, we still managed to blacken the moss. It remains to be seen how often this treatment will be necessary to really bring the infestation under control.

Hilary and Katie are hoping that growers will continue to communicate to them about weed problems. They are also seeking information regarding experiences with the use of Evital in the fall, particularly rates on large-fruited cultivars. Forty pounds per acre have been reported effective in the spring. Hilary also pointed out that in general, weeds are more impacted by herbicides when the weed is healthy. Applying herbicides to stressed weeds is generally ineffective.

Insects and insecticides

Most growers had to manage for both winter moth and/or gypsy moth, relying on Avaunt, Delegate, or the cheaper option of Sevin, which is effective when the larvae are small. Late water suppresses both winter moth and gypsy moth larvae that hatch from egg masses laid on the bog.

Winter moth. Most growers reported controlling winter moth as long as they sprayed early. So far this fall, the moth flight does not seem to be as heavy as at this time last year. There has been a parasitic fly released at several sites in MA to combat winter moth. It appears to be establishing near some release points, for example in Falmouth, and may be slowly spreading over our entire region. The lower flight this fall may be related to parasitism by the bio-control agent and very likely owing to the very cold spring weather following hatch.

Gypsy moth. Populations were huge again in 2016. Anne Averill pointed out that outbreaks of this insect are usually prevented by a pathogenic fungus. However, since 2014, drought

conditions in May and June each year have prevented the fungus from germinating and infecting larvae to hold the gypsy moth population in check. Given the huge numbers of egg masses left by the outbreak population in 2016, the infestation in 2017 will be as bad or worse if we have dry conditions again in May and June. Both gypsy moth and winter moth larvae can balloon onto the bog from nearby trees, so treatment of bog populations may only be partially effective. Trimming back trees from bog edges was mentioned. Such trimming could also eliminate shading on the bog that could affect yield.

Cranberry Weevil. Some growers reported little weevil while others had bad infestations. The highest infestations were reported in the Wareham-Rochester area. There was some discussion as to whether Avaunt has become less effective against the overwintering spring population. This is an open question since some of the less successful applications were applied at the start of June, when some of these weevils might have been newly emerged from blueberry buds, and these are harder to kill than the overwintering weevils.

Scale and flea beetle. More scale samples came into the Entomology lab in 2016 compared to 2015, according to Marty Sylvia. There were also reports of high infestations of flea beetle late in the season. Growers have been able to manage scale with diazinon. Diazinon is also the only choice for flea beetle since Sevin use is restricted by handlers after early August.

Cranberry fruitworm and Sparganothis. Most growers have been following Anne's recommendation of two, well-timed applications of Altacor for cranberry fruitworm. Over time, this reduces the overall population enough so that many growers report that they do not need a third cranberry fruitworm spray. This has been our experience for several years now at Rocky Pond.

Although growers commented that they saw few first generation Sparganothis, some reported large late flights in September. This means that we should be vigilant in looking for first generation larvae in spring 2017. First generation Spag should be managed with Intrepid.

The question was asked: Can resistance to Altacor develop with this regimen of two sequential applications yearly? Anne feels that this was unlikely for cranberry fruitworm due to the fact that we have never seen resistance in cranberry fruitworm, no doubt owing to its life cycle and behavior, with many individuals being off-bog at any given spray (aimed at hatching eggs). However, resistance is a real possibility for Sparganothis. Intrepid and Delegate, are effective against Sparganothis and can be used to manage the spring and summer populations of that insect. However, heavy and repeated usage of Delegate may result in loss of this compound through resistance.

Bees. Several growers commented that they saw good pollination in 2016.

Nutrition

Brian Wick reported that the Nutrient Management regulation was reopened in 2016 and that comments were submitted. The resulting draft has substantial changes compared to the regulation that we were looking at this time last year. Once the draft is finalized, Brian and Carolyn will report to the grower community at the Station and CCCGA winter meetings regarding new requirements. At this point it appears that following UMass Extension recommendations (in the case of cranberry, the Chart Book), conducting periodic soil and tissue testing, and keeping records of test results and applications will assure compliance. Stay tuned!

There was some discussion of fertilizer forms. Many growers are using liquid fertilizers, mostly the Loveland products available at CPS. Many have used liquids in place of spring applications, some are using them to 'tweak' nutrition after set, and some are going all liquid, including on new plantings. In general, interest is high and most experiences have been positive. As Mike Utley noted, we are all learning as we go. He reported that in 2017, there will be additional faster-acting nitrogen forms available to include in liquid mixes. He also responded to a question about 'sprinkler circles' (rings of excess growth around heads) when going all liquid. Some have been seen but usually in situations where the liquid material was applied in an inadequate volume of water. These products are taken up by the roots and should be chemigated over a 30 to 60 minute period with wash-in, not injected quickly with minimal rinse-off as you would do when applying a pesticide.

We used a liquid program on part of State Bog in 2016. Carolyn will report on the outcomes, including soil and tissue test results, at the Station's January 2017 meeting. As part of the comparison at State Bog, one section was treated with controlled release fertilizer since these products have also been reported to have been used successfully by growers.

NOTE: All of the common fertilizer types currently in use - fast-acting granular, controlled release, and liquids - are available in low phosphorus formulations. Therefore, no matter what fertilizers are best suited to your situation, you should be able to formulate a plan that conforms with our recommendations for minimizing phosphorus use.

Late Water

Several growers reported that they have been using late water primarily to promote better fruit quality but also to 'even' out growth (for example synchronizing bloom) to aid in management. Some started and ended early in 2016 due to the early cold snap in April. There was speculation that this led to less synchronization than is common with late water. The warm winter may also have been a contributing factor as noted above. If climate continues to shift, the recommended start time for initiating Late Water may need to be revisited.

John Decas gave a strong testimonial for the use of late water, noting that he used it on about 100 acres per year for many years, rotating so that no bed was late water in consecutive years. He is a strong proponent of the benefit of this practice in reducing the need for fungicides and improving field and keeping quality along with other benefits, including the avoidance of early frost events. Another grower noted that even when they had poor yield outcomes after late water (and that wasn't always the case), large crops in the two years after more than made up for any loss.

Note: Product trade names are used for convenience and are not meant as an endorsement of any particular product.

CAROLYN DEMORANVILLE AND STATION FACULTY AND STAFF



Carolyn DeMoranville, Director

Water Conservation Funding Available from MDAR

The Massachusetts Department of Agricultural Resources has announced a special round of Agricultural Environmental Enhancement Program (AEEP) grants in response to the unprecedented drought conditions in 2016. Funding (total available \$250,000) is for water conservation projects to help farms reduce their operational impact on the environment and better prepare for and recover after this years' severe drought. Selected proposals will be reimbursed up to \$25,000 or 85% of total project costs of approved projects.

Agricultural operations interested in applying will need to submit their Request for Response (RFR) by 4:00 pm on January 6, 2017. For a copy of the application, visit the [AEEP website](#) or call 617-626-1739.

Cranberry Management Update

4 contact hours

Wed. January 18th, 2017, 7:30-3:30 p.m.
Rosebrook Event Center, Wareham

- | | | | |
|--------------|--|------|--|
| 7:30 | Registration (with coffee) | 2:25 | Task Force Outcomes - Carolyn DeMoranville and Dawn Gates Allen |
| 8:00 | What's new? - Carolyn DeMoranville | 2:40 | Resistance Management – K. Ghantous |
| 8:15 | Weed Management - Hilary Sandler | 3:10 | MRL Update, WPS and Pesticide Certification Changes - Marty Sylvia |
| 8:45 | Herbicide Research - Katie Ghantous | 3:30 | Wrap-up and Paperwork |
| 9:15 | Irrigation, Frost, and Sun Scald – Peter Jeranyama | | |
| 9:45 | Treating Harvest Flood Water with Alum - Casey Kennedy, USDA | | |
| 10:00 | COFFEE BREAK | | |
| 10:30 | Nutrient Planning Choices - Carolyn | | |
| 11:00 | Observations of Newly Released Cultivars in Commercial Beds
Guest Speaker - Nick Vorsa, Rutgers | | |
| 11:20 | Fruit Rot - Erika Saalau Rojas | | |
| 12:00 | LUNCH BREAK (on your own) | | |
| 1:15 | Scale and CFW - Anne Averill
Spag and Gypsy Moth - Marty Sylvia | | |
| 1:45 | Native Bee Survey - Noel Hahn | | |
| 1:55 | Plant Usage by Bumble Bees in Southeastern MA - Andrea Couto | | |
| 2:05 | Renovation with New Cultivars:
Thoughts on Their Establishment and Management - Nick Vorsa, Rutgers | | |

KC ENTERPRISES LTD

SAVE THE DATE!

Monday, December 19th 10:00 a.m. – 1:00 p.m.
in the Cranberry Station Library

Come and see what is new and exciting regarding Wireless Monitoring and Alerting, Automation and Sensors!

Please RSVP to KC7749@aol.com as lunch is included.

Kevin Connolly (617) 480-8717

**CRANBERRY STATION NEWSLETTER & REVISED 2017 CHART BOOK RENEWAL
YOU MUST RETURN THIS FORM EACH YEAR TO STAY ON OUR MAILING LIST!!**

The Cranberry Station Newsletter is provided **FREE to all MA growers, cranberry researchers and IPM consultants nationwide**. Annual subscription fee of \$15 is required for **out-of-state growers and industry personnel**. All persons wishing to receive this newsletter (whether paying or not) must complete and return this renewal form to maintain a subscription. All out-of-state or industry personnel must include a check (made out to UMass) with the renewal form. All subscriptions sent by email, including out-of-state and/or industry personnel are FREE. * **Please note:** Chart Books will no longer be able to be mailed out for free. Free copies can be picked up at the Station!

Everyone must respond to this notice by or your name will be taken off of our mailing list for 2017!

NAME _____
COMPANY _____
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Please check one:

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Employee _____

Researcher _____

Consultant _____

Industry _____

Private sector _____

Return to: UMass Cranberry Station
P.O. Box 569
East Wareham, MA 02538

Please Choose One!!!
Postal delivery _____ or Email _____

**Registration Form for UMass Cranberry Management Update
Wednesday - January 18, 2017, 7:30 AM – 3:30 PM
TownePlace Suites Marriott, Wareham, MA**

Please register for the meeting using this form.
(PLEASE PRINT)

COMPANY NAME _____
COMPANY CONTACT PERSON _____
EMAIL _____
PHONE _____
NUMBER OF ATTENDEES _____
NAMES OF ALL ATTENDEES:

**Return with payment by:
January 9, 2017**

Include check made out to:
UMass

In the amount of:
\$30.00 PER PERSON
IF POSTMARKED BY 1/9/17
AFTER THAT DATE, REGISTRATION
INCREASES TO \$40.00 PER PERSON

PLEASE NOTE: Registration fee is non-refundable after 1/9/17

Return to:
UMass Cranberry Station
P.O. Box 569
East Wareham, MA 02538

*** All persons attending the meeting must register and pay, regardless if receiving pesticide credits or not. ***

Dear Massachusetts Farmer,

The U.S. Department of Agriculture's National Agricultural Statistics Service (NASS) is preparing the mail list for the 2017 Census of Agriculture. The Census of Agriculture is the leading source of facts and figures about American agriculture. Conducted every five years, the Census provides a detailed picture of U.S. farms and ranches and the people who operate them. It is the only source of uniform, comprehensive agricultural data for every state and county in the United States.

I am asking for your help to make the 2017 Census of Agriculture as accurate as possible. A major challenge is having a list of farmers that is as complete as possible, especially with so many new farmers. If you have never received a Census of Agriculture or survey questionnaire from NASS then we may not have you on our farm list. Please take a couple minutes and provide NASS your contact information at <https://www.agcounts.usda.gov/cgi-bin/counts/>.

Even if you do not think of yourself as a farmer or rancher, your operation is a farm if it meets the Census of Agriculture definition – an operation that sold or normally would have sold \$1,000 or more of agricultural products in a year. If you own or rent agricultural land, grow vegetables, grow horticultural or floricultural products, have fruit or nut trees, cattle, horses, poultry, hogs, bees, aquaculture products, or consider yourself a farmer or rancher, we need to hear from you.

All individual information provided to NASS is confidential and only used for statistical purposes. In accordance with the Confidential Information Protection provisions of Title V, Subtitle A, Public Law 107-347 and other applicable Federal laws, your responses will be kept confidential and will not be disclosed in identifiable form to anyone other than employees or agents. By law, every employee and agent has taken an oath and is subject to a jail term, a fine, or both if he or she willfully discloses ANY identifiable information about you or your operation.

If you have previously received a Census of Agriculture or survey questionnaire from NASS then you will be receiving you 2017 Census of Agriculture questionnaire in late December 2017 or January 2018. Your cooperation is appreciated.

Sincerely,



Gary R. Keough, State Statistician

U.S. Department of Agriculture | National Agricultural Statistics Service
Field Operations | New England Field Office
53 Pleasant St. Room 3450
Concord, NH 03301
T: 603-227-3129 | F: 603-225-1434 | M: 603-568-6535
Gary_Keough@nass.usda.gov | www.nass.usda.gov

CHART BOOK NOTICE

Due to the increases in postage and printing costs, starting in 2017 we will no longer be able to mail out Chart Books for free. Free copies of the Chart Book will still be available to pick up at the Station.

If you wish to have it a copy mailed to you, there will be a fee of \$5. Look for an order form in the February newsletter. **Please note:** that a PDF version of the Chart Book will be available on the Station's web page.

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OFFICIAL BUSINESS

EAST WARRENHAM, MA 02538
P.O. BOX 569
UNIVERSITY OF MASSACHUSETTS
UMASS EXTENSION