

November 27, 2023

*County Offices*

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603.527.-5475

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**Education Center**  
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877.398.4769 (Toll Free)

**UNH Cooperative Extension  
State Office**  
603.862.1520

To whom it may concern,

Please accept this informational package outlining the extreme challenges faced by the fruit and vegetable producers of New Hampshire during the 2023 growing season.

**2023 New Hampshire Fruit and Vegetable Crop Loss Estimates**

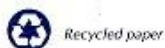
The frost event occurring on the night of May 18th and into the morning hours of May 19th caused significant damage to fruit crops throughout New Hampshire. To summarize the damage, which is not easy to do given the variation from one site to another, I would estimate that losses to apples, pears European plums and sweet cherries ranged from 50% to nearly 100% because of the frost event. A handful of orchards at higher elevations fared better than most others. Those orchards hovered around 33F while others were several degrees colder. Many growers in the state face a total apple crop loss this year. For some, this is the first time in over forty years they have had no apple crop to sell.

UNH Extension conducted a survey to understand the financial impacts of the frost events on fruit producers this year. Growers were asked to report their estimated financial loss as a result of the cold events. The survey does not take into account lost revenue from associated farm sales, which often accounts for as much or more value than the crop itself for many farms. When customers come to pick fruit, they visit the farm stands and purchase many other items during their visit. If they aren't coming to pick fruit, sales will likely suffer significantly.

**70 fruit growers representing over 1000 acres participated in the UNH Extension survey with crop loss totals estimated at \$9,982,810.**

Ken Merrill, a 5<sup>th</sup> generation apple farmer in Londonderry, NH, describes the situation: "We have never taken loans for the business. Projects around the farm are funded through retained earnings and hard work. We now face an extended period of time with little or no income, from January 2023 when we finished selling the 2022 crop, until August 2024, when we will be selling next year's crop, if there is one. If there is no income stream coming in, there is no value to a loan, since there is no money coming in to repay the loan.

Clearly these events were a disaster to the farm and the owners and employees. These events affect the long-term viability of the orchard and its contributions to the local food supply. New Hampshire does not grow nearly enough food to satisfy the needs and demands of its citizens. It is in the interests of the state to promote and protect the farms that work so hard to provide food sustainability.



Please consider direct grants and aid payments to farms affected by these weather events to ensure their viability in the future and their ability to survive the financial effects of this disaster. These monies on our part would be used to properly maintain the orchard and farm this fall, hire people to do pruning and orchard clean up next spring, hire people to help with summer work and harvest next fall. Grants would also indirectly benefit the farm services sector such as the farm supply stores, farm machinery dealers, and jobs associated in those sectors.”

Vegetable producers were impacted by the May frost event, with some crops lost all together and others delayed with reduced yields and increased susceptibility to diseases as the wet weather ensued.

**Vegetable producers representing over 1000 acres reported crop loss values over \$3,000,000 for 2023.**

The real impact on vegetable producers in 2023 came from excessive rainfall and constant moisture, with flooding in some areas as well. NH vegetable production is highly diversified, with many different crops grown on an annual basis. Some of our largest acreage and economically important crops are sweet corn, pumpkins, winter squash, summer squashes, cucumbers, tomatoes and peppers. While the harvest season is still underway for many vegetable crops, early estimates from growers across the state have been collected through direct outreach by UNH Extension Field Specialists who cover all ten counties in the state.

UNH Extension Field Specialists collected comments from vegetable growers as part of our recent phone survey. One highly diversified clearly describes how the impacts of excessive wet weather are impacting her farm and will likely continue to have implications next season as well:

“We will continue to see the negative impacts of the wet weather through the remainder of this year's harvest season, as we continue to watch new succession plantings fail to germinate, or rot in the fields. Overall crop health and yields have been impacted by many factors, including foliar diseases, plants' inability to take up nutrients, and lack of nitrogen in the soil after heavy rains. Several successions of direct seeded crops like baby greens, carrots, and radishes washed away after seeding, or rotted shortly after germinating. We were only able to plant half of the seed potatoes we purchased due to wet conditions that prevented us from getting into our fields with equipment to prepare beds. Tomato harvest season was delayed by 3 weeks (tomatoes would not ripen!), and the harvest is now winding down due to foliar diseases on tomatoes in both hoopouses and fields, making for a dramatically shortened tomato harvest season. Leafy greens are of particular economic importance to our farm, and we experienced heavy losses of lettuce heads, baby greens, kale, and other greens throughout the summer. We also anticipate below normal yields of fall crops including potatoes and fall plantings of carrots, cabbage, and daikon (all yet to be harvested).

Looking ahead to next year and beyond, we expect to see longer term impacts of this season's saturated soils and intense rain events including soil compaction and erosion, weeds going to seed in areas we couldn't access with equipment, and a reduction in cover cropping due to overly wet soil conditions. There have only been a few windows of time when soil conditions were dry enough to get into the fields with tillage equipment, compost spreaders, mowers, and other equipment we would normally use to manage our fields.

Thank you for the opportunity to share our experience in this challenging year.”

**From an Extension perspective, the negative impacts of excess moisture, rainfall and flooding on vegetable farms include:**

- Poor seed germination requiring extra succession plantings and additional input costs.
- Increased incidence of foliar and root related diseases.
- Field accessibility issues due to saturated ground resulting in delayed timing of critical field operations, extra labor

required to hand harvest, and delayed ripening of produce.

- Nutrient leaching beyond the root zone resulting in reduced soil fertility and crop yields, along with increased costs to replace required fertility.
- Soil compaction and erosion ranging from minor to extreme.
- Poor weed control due to inaccessibility with equipment, which will result in increased weed pressure and control costs in future years.
- Incomplete late field operations including crop residue incorporation or cover cropping.

**A note on fertility in saturated or flooded soils:**

In flooded soils, denitrification becomes the dominant process for nitrogen transformation. Denitrification converts nitrate (NO<sub>3</sub><sup>-</sup>) into gaseous forms such as nitrous oxide (N<sub>2</sub>O) and nitrogen gas (N<sub>2</sub>), which are lost to the atmosphere. This can result in nitrogen loss from the soil, leading to reduced nitrogen availability for crops and decreased growth and yield. The solubility and availability of reduced compounds such as iron (Fe), manganese (Mn), and sulfur (S) increases and can potentially become toxic to plants. These reduced forms can adversely affect plant roots, inhibiting nutrient uptake and causing nutrient imbalances in crops.

Beekeepers have also been impacted this year by the wet weather. Impact is regional, with producers along the CT river valley affected more than those to the east. Most were feeding out pollen, especially in spring when pollen (protein) was getting washed away with heavy rains. This resulted in increased expenses in pollen feeding. All those producing queens had a lower % take this year than in past, resulting in diminished income from queen sales. Queens need ~2 weeks of good weather to properly mate, with almost no breaks of rain, so their ability to make mating flights was greatly diminished. If they can't properly mate, they won't make strong queens. They mate in flight, so clear weather is important.

In some regions, beekeepers were feeding out 1:1 sugar syrup in May and June, at least \$1.25 a hive.

Fall honey harvest is underway, and harvest is looking okay to good. Some report improvement over past years droughts. One producer spent an extra \$4500 in sugar and pollen patties to keep production going. Another had 90 fewer queens this year. At \$50 a queen, that's a loss of \$4,500 in income, plus feeding costs were up.

As always, we here at UNH Extension are happy to help with additional information. Please do not hesitate to reach out if we can be of service. This year has been a very difficult one for our agricultural community. We thank you in advance for any assistance that you can provide to bring some relief as we look ahead to 2024.

Sincerely,



Jeremy DeLisle

UNH Extension Field Specialist

Food and Agriculture

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# New Hampshire Vegetable Grower Crop Loss Report

## 2023



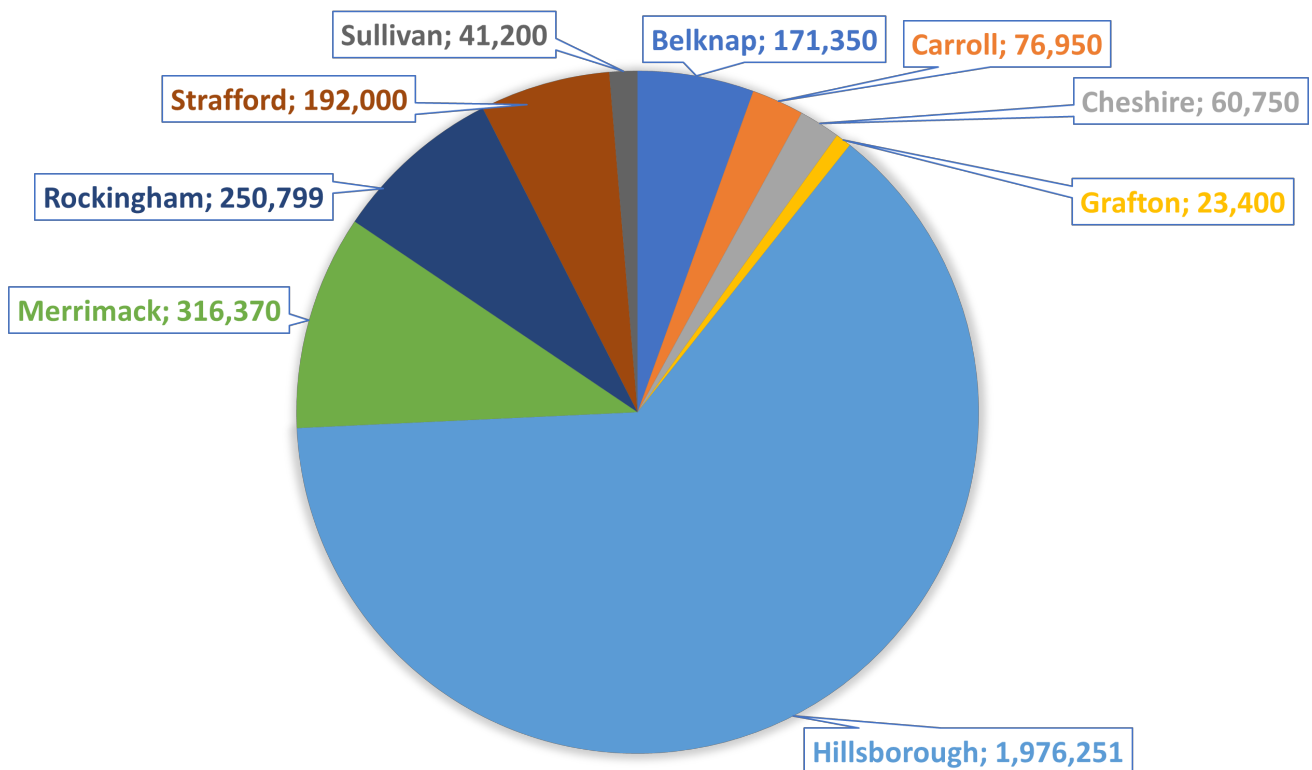
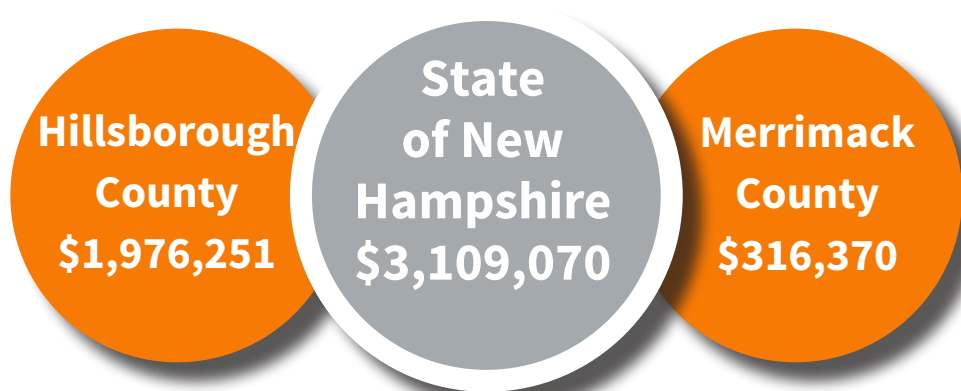
“We had significant crop losses across the board this year. Due to not having enough consistent product we were unable to supply all our customers, which greatly affected sales on other items.”  
NH Vegetable Producer



University of  
New Hampshire  
Extension

# Reported Loss in Revenue Per County

## Vegetable Crops





# Reported Loss in Revenue Per Crop

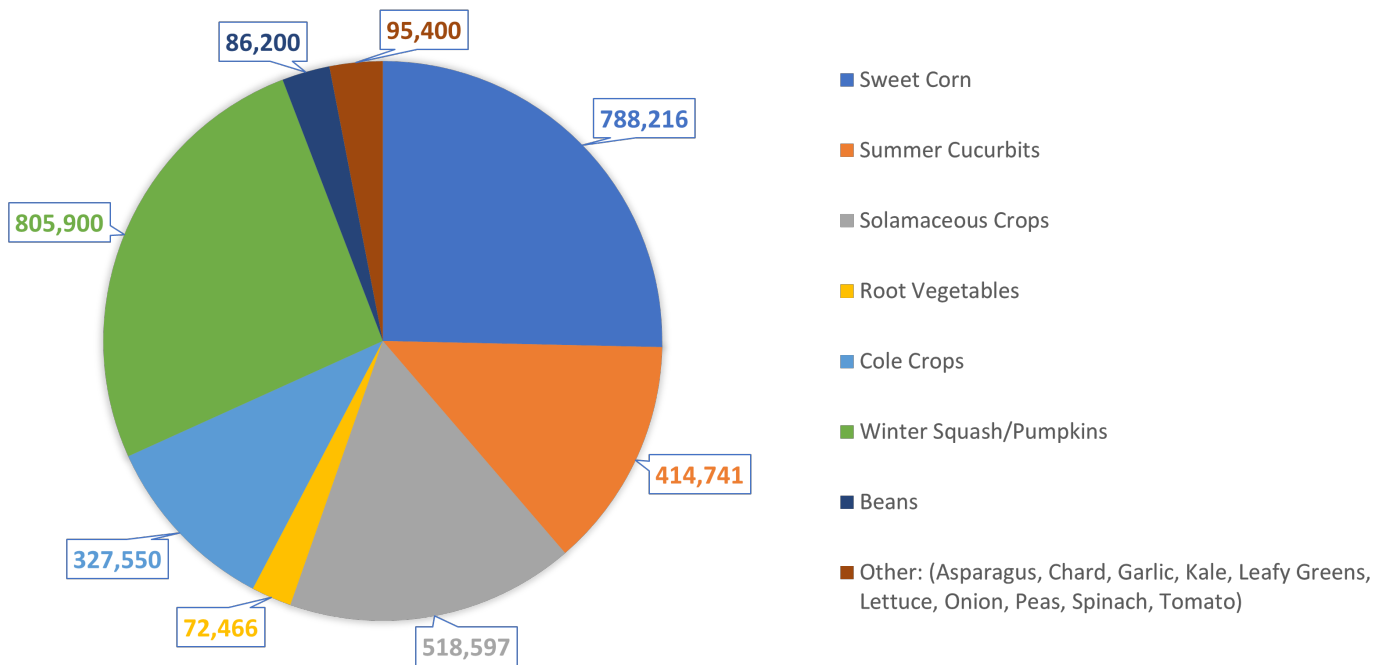
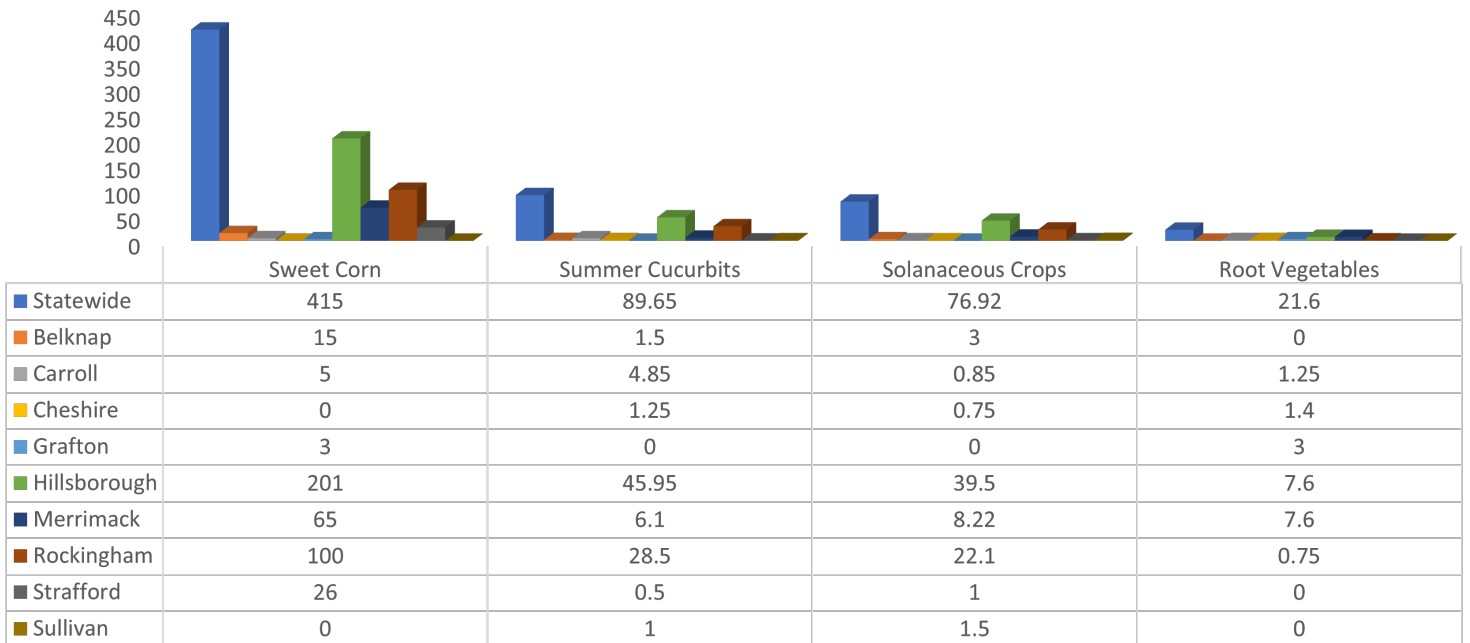


Photo Credit: Anonymous, NH Vegetable Producer

# Estimate of Impacted Acres of Vegetable Crops

## Reported Impacted Acres Statewide vs Per County





**“Across the board, this has been the worst year for crop loss in my farming career of 60 years.”  
NH Vegetable Producer**

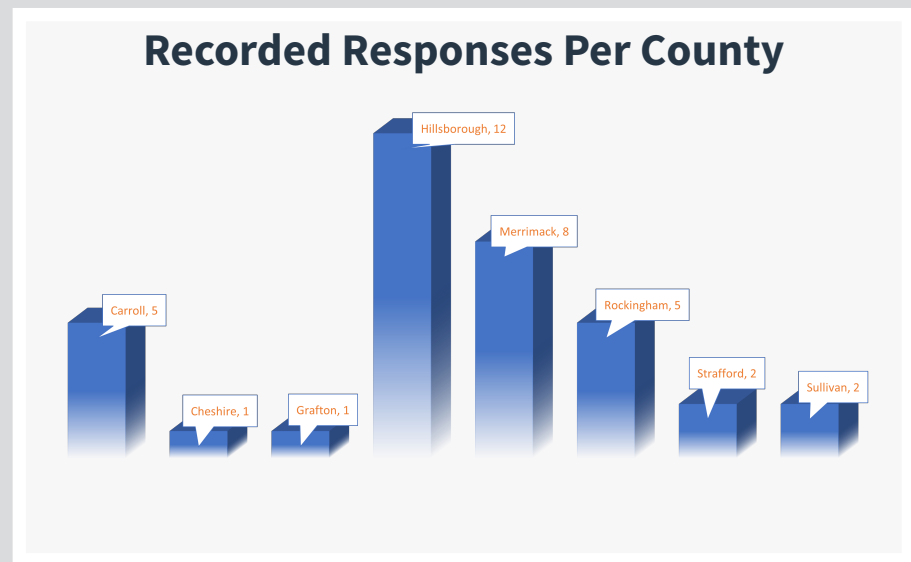


## Reported Impacted Acres Statewide vs Per County



	Cole Crops	Winter Squash/Pumpkins	Beans	Other: (Asparagus, Chard, Garlic, Kale, Leafy Greens, Lettuce, Onion, Peas, Spinach, Tomato)
Statewide	50.44	217.99	54.72	17.25
Belknap	0	4	3	1.5
Carroll	1.75	5.8	2	3.35
Cheshire	0.25	9.75	0.5	4
Grafton	0.5	0	0	0
Hillsborough	33.9	117.2	38.95	5.25
Merrimack	1.29	13.24	4.27	2.05
Rockingham	10.75	53	5	1.1
Strafford	0	10	0	0
Sullivan	2	5	1	0

# What growers had to say about conditions experienced this season:



**“We even mounded most crop rows this year, but it didn’t help with tomatoes, peppers, and cukes! Squash wasn’t pollinated well - we think the weather affected the pollinators a lot!”**

**“Across the board, this has been the worst year for crop loss in my farming career of 60 years.”**

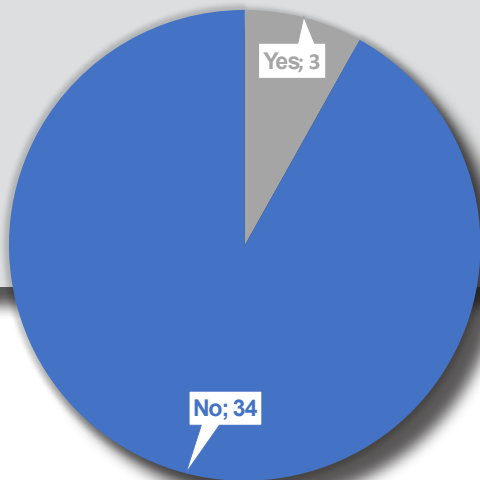
**“Continual rain events made pesticide applications ineffective resulting in higher losses from insect damage and diseases. Continuously wet leaf surfaces allowed fungal diseases a foothold and once established, continued to be uncontrollable by fungicide applications. Saturated fields killed young plants and made succession plantings delayed until the fields dried out creating a gap in harvest. Mechanical weed control was hindered by muddy fields and weeds that were disturbed, re-rooted due to not drying out in the saturated soils.”**

**“The year started with the loss of the peach crop in the winter and massive damages to the apple crop with the late freeze in the spring. The relentless rain through June and July saturated the land leading to dozens of acres going unplanted and dozens more acres of complete loss on our farm. We did our best to work around and mitigate the effects of rain which led to increased input costs while seeing decreased yields. Nearly all crops were affected to varying degrees even in the best circumstances. We are grateful to have found some success through our planting and land use strategies but it was a very difficult year in all areas of the farm.”**

“Such a small farm!  
Live on a shoestring.”

# What growers had to say about their decision whether or not to purchase

Do you have crop insurance?



“We are not sure if crop insurance is an economically appropriate option for a farm of our size. We are unaware of options and how the program works.”

“We do not understand how the crop insurance program works. Always assumed this was for much larger growers rather than small scale farms.”

“As a small, diversified fruit and vegetable farm, crop insurance is not a cost effective option. Instead, we have to self-insure by growing a wide variety of different crops in order to spread our risk across multiple fields and crops. This type of self-insurance has done well for us in the past but the 2023 growing season certainly proved that it isn’t always enough with widespread crop losses and reduced yields on almost every crop. After a season like this, it would be really nice to see a crop insurance program that is tailored to small diversified fruit and vegetable farms that is affordable.”

“It has not been a high priority for our operation. It seems crop insurance is often more directed at larger acreages, and for commodity crops. Also paperwork, etc. seems another hurdle.”

“We feel that the premiums together with the minimal likelihood of a carrier deeming a loss a “covered claim” outweigh the risk of loss.”

“Due to our diversity we have not insured crops. It was recommended by professionals not to insure due to the cost and our diversity.”

“Planting all of the different varieties of crops with such a small workforce is difficult for us to properly document, and this is the information we believe the insurance would like to see for payouts.”

“As a small diversified small fruit and produce farm, purchasing crop insurance for our wide range of small acreage plantings has never seemed to be a worthwhile option.”

# Common Impacts of Excess Moisture and Grower Testimonials

**Negative impacts of excess moisture, rainfall and flooding on vegetable farms submitted by UNH Extension:**

- **Poor seed germination requiring extra succession plantings and additional input costs**
- **Increased incidence of foliar and root related diseases**
- **Field accessibility issues due to saturated ground resulting in delayed timing of critical field operations, extra labor required to hand harvest, and delayed ripening of produce**
- **Nutrient leaching beyond the root zone resulting in reduced soil fertility and crop yields, along with increased costs to replace required fertility**
- **Soil compaction and erosion ranging from minor to extreme**
- **Poor weed control due to inaccessibility with equipment, which will result in increased weed pressure and control costs in future years**
- **Incomplete late field operations including crop residue incorporation or cover cropping**

**A note on fertility in saturated or flooded soils:**

**In flooded soils, denitrification becomes the dominant process for nitrogen transformation. Denitrification converts nitrate (NO<sub>3</sub><sup>-</sup>) into gaseous forms such as nitrous oxide (N<sub>2</sub>O) and nitrogen gas (N<sub>2</sub>), which are lost to the atmosphere. This can result in nitrogen loss from the soil, leading to reduced nitrogen availability for crops and decreased growth and yield. The solubility and availability of reduced compounds such as iron (Fe), manganese (Mn), and sulfur (S) increases and can potentially become toxic to plants. These reduced forms can adversely affect plant roots, inhibiting nutrient uptake and causing nutrient imbalances in crops.**



Photo Credit: Anonymous, NH Vegetable Producer



**“These are crop loss estimates and reflect the amount of sales revenue we lost this season. However, these estimates may not be inclusive of associated losses we may have occurred due to the detrimental weather. Which would include a reduction in sales of many value added products we sell in the farm market. Other such losses would include:**

- Increased cost of fertilizer usage due to nutrient loss**
- Increased cost of crop protection sprays due to disease pressure**
- Decreased quality of produce in farm market**
- Increased labor cost due to poor field conditions (i.e. having to carry product out of fields instead of driving to the product.)**
- Increased labor due to pest pressure in crops due to missed crop protection applications (360 hrs in labor at \$21/hr)**
- Infrastructure damage to roads and fields**
- Much more hand labor required to complete cultural tasks which under normal conditions could have been mechanized.” NH Vegetable Producer**





**“I believe that it is worth explaining that while looking at sales and yield data for this season versus previous seasons does show some of the struggles growers faced in 2023, it is only a small piece of the puzzle. Looking at sales and yield data over simplifies the struggles faced by NH growers in 2023. It does not take into account the immense additional costs that went into pretty much every crop due to the terrible growing conditions. While most crops were not a total loss/failure, the inputs required to get crops to market were far greater than any prior season. Every crop required almost double the amount of fungicide applications to keep them protected which is a huge expense due to the cost of pesticide products and the additional labor needed to do the spraying. Fertilizer expenses were up a lot due to the constant rain continuing to leach nutrients from the soil which required growers to make many additional fertilizer applications to try to maintain good crop growth. Crops required a lot more time/labor to harvest out of the fields due to wet/muddy conditions making field access slow and inefficient, poor crop quality and low marketable yield due to disease and rot required extra time to sort through crops during harvest in order to find marketable produce, weedy harvest conditions because we couldn’t get into fields to perform regular mechanical cultivation slowed harvest speed, and lastly wear and tear on crews having to carry heavy loads of harvested produce over long distances because vehicles could not access the fields due to wet and muddy field conditions. Also worth mentioning, these working conditions seriously affected crew morale and motivation which certainly slowed the speed of work at times. I would strongly urge the state to seriously consider these hardships/additional costs I have explained above rather than simply looking at yield and sales data. The struggles growers faced this season are more complicated than simply reduced yields or sales. Thank you to UNHCE for organizing this survey and compiling the data. Your efforts are greatly appreciated!” NH Vegetable Producer**







**“We had significant crop losses across the board this year. Due to not having enough consistent product we were unable to supply all of our customers, which greatly affected sales on all of our other items, cider, applesauce etc. and affected repeat business for the fall items. We had a huge loss in sales at our pick your own operations due to the excessive moisture. Specifically the rain on the weekends affected our tomato pick your own patch, which typically brings in customers throughout the area as we are one of the few farmers to offer pyo veggies, this then impacted sales with other items since the customers never came out to our location.**

**We also had an increase in the cost of labor, the fields were so wet we were often unable to drive a pick up truck or tractor through the field to bring out the harvested product. Many times we had to pick and hand carry out in 5 gallon buckets to the road to get the products out of the field. For example we typically have 10 guys in our squash harvesting crew, this year we ended up needing 16 guys with 6 guys just carrying the buckets out to the road to load the truck. The same issue also occurred with our corn harvest.**

**With the excessive moisture none of our herbicides worked as they needed to, so we had a large increase in labor as we needed to hoe, hand weed and use weed mat to try and keep the weeds under control to avoid a negative impact on our cash crops.” NH Vegetable Producer**





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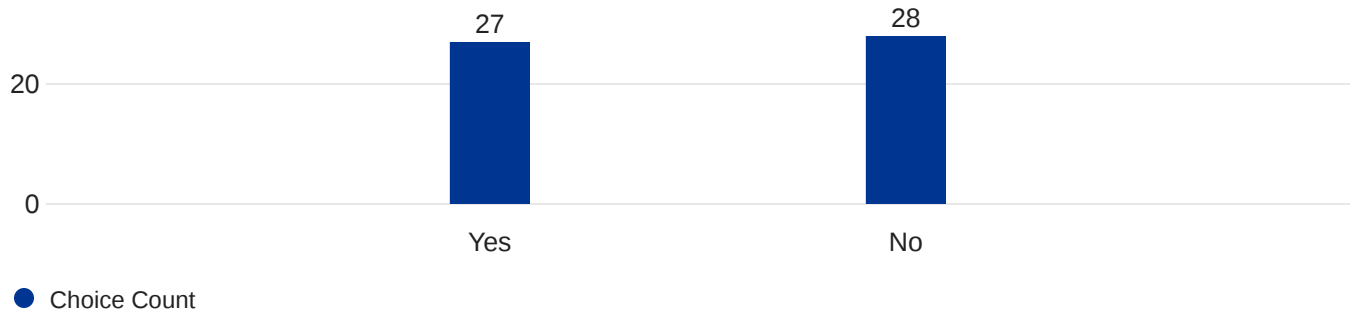
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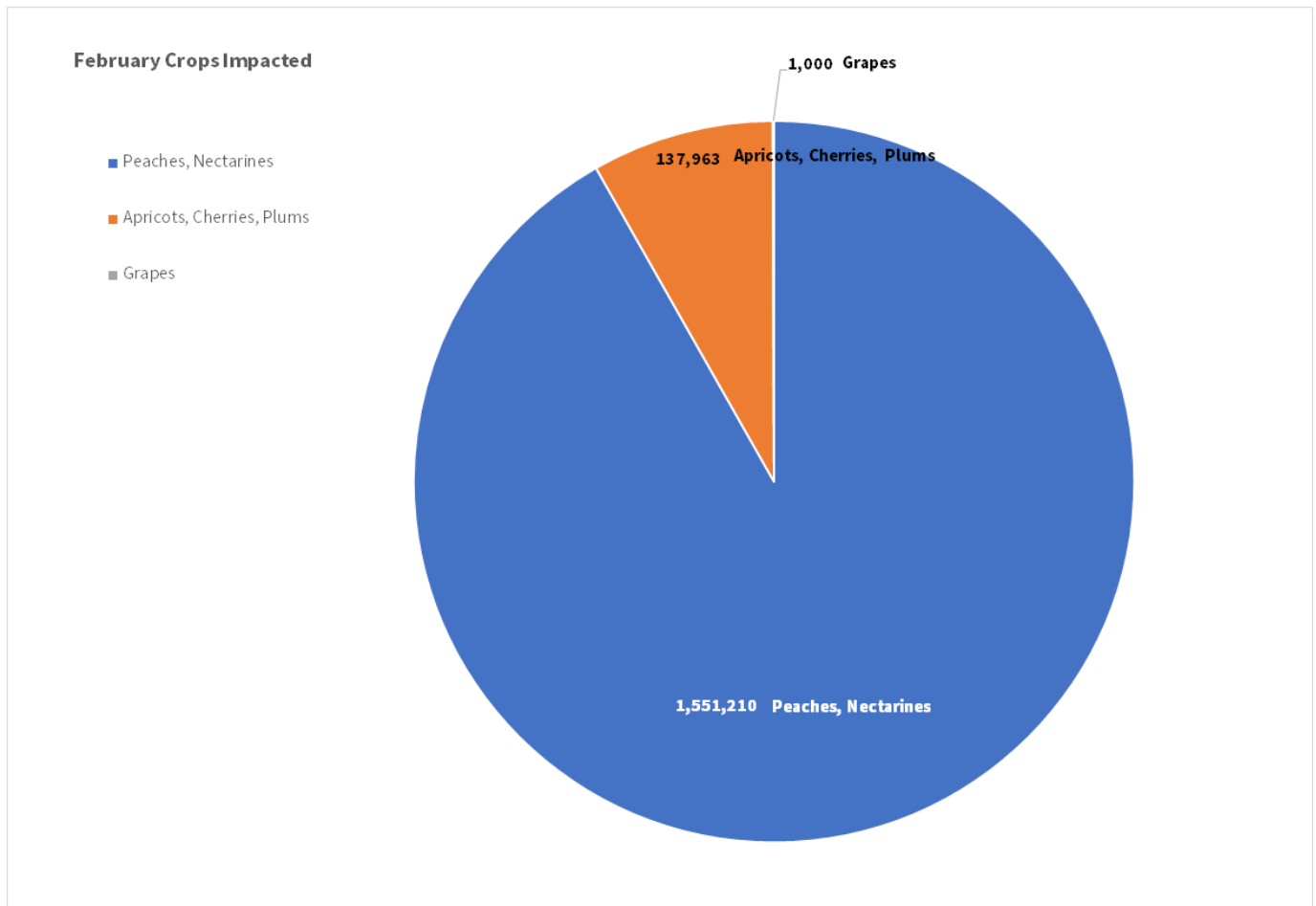
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# 2023 NH Fruit Grower Crop Loss Report

Do you have crop insurance (through USDA or privately)?



## February Crops Impacted

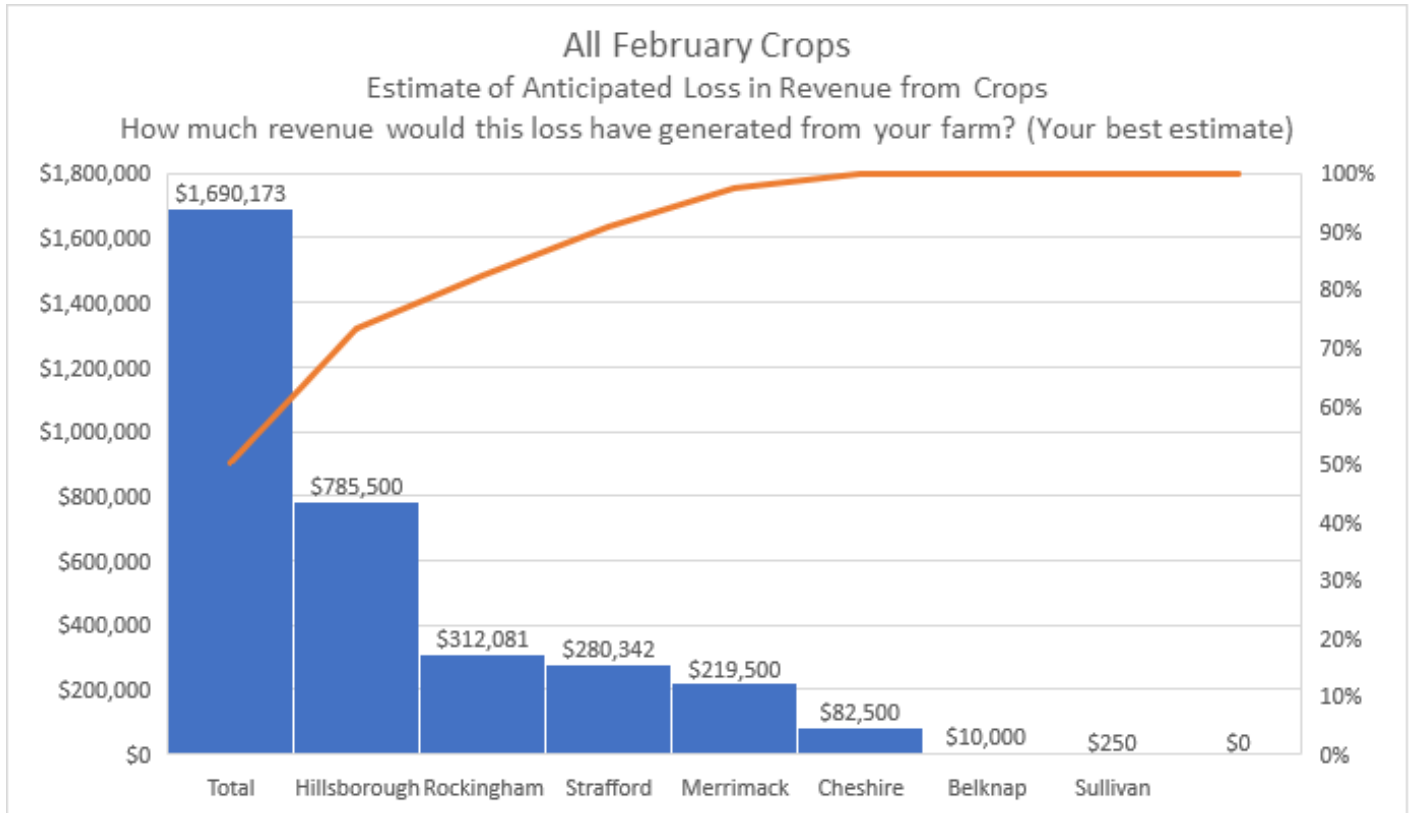


Crop	Crop Value
Peaches, Nectarines	1,551,210
Apricots, Cherries, Plums	137,963
Grapes	1,000
Total	1,690,173



Extension

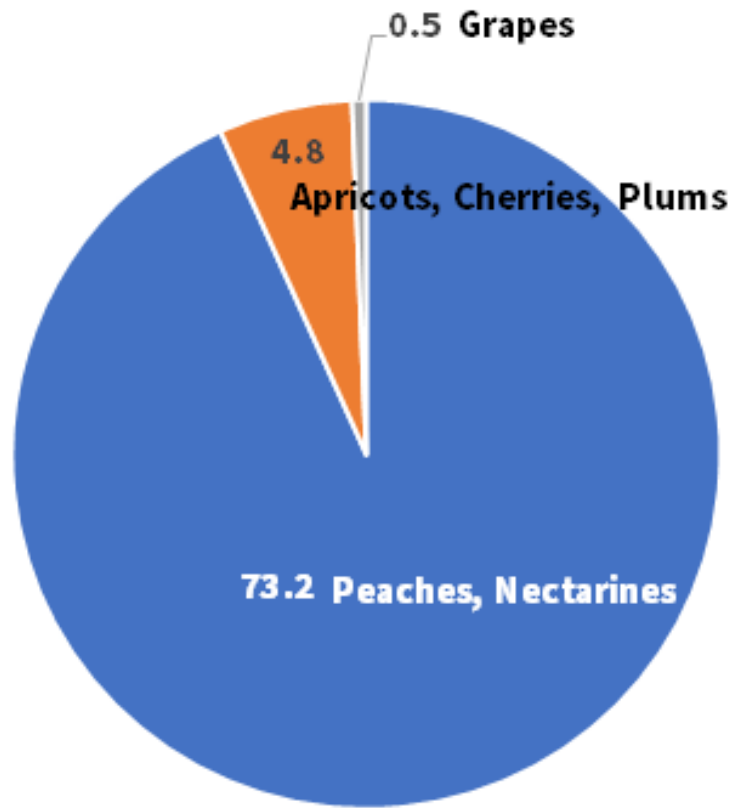
# Estimate of Anticipated Loss in Revenue from Damaged Crops



Estimate of Impacted Acres for Crops - How many acres were affected? (Your best estimate)

### February Crops 78.5 Total Acres Impacted

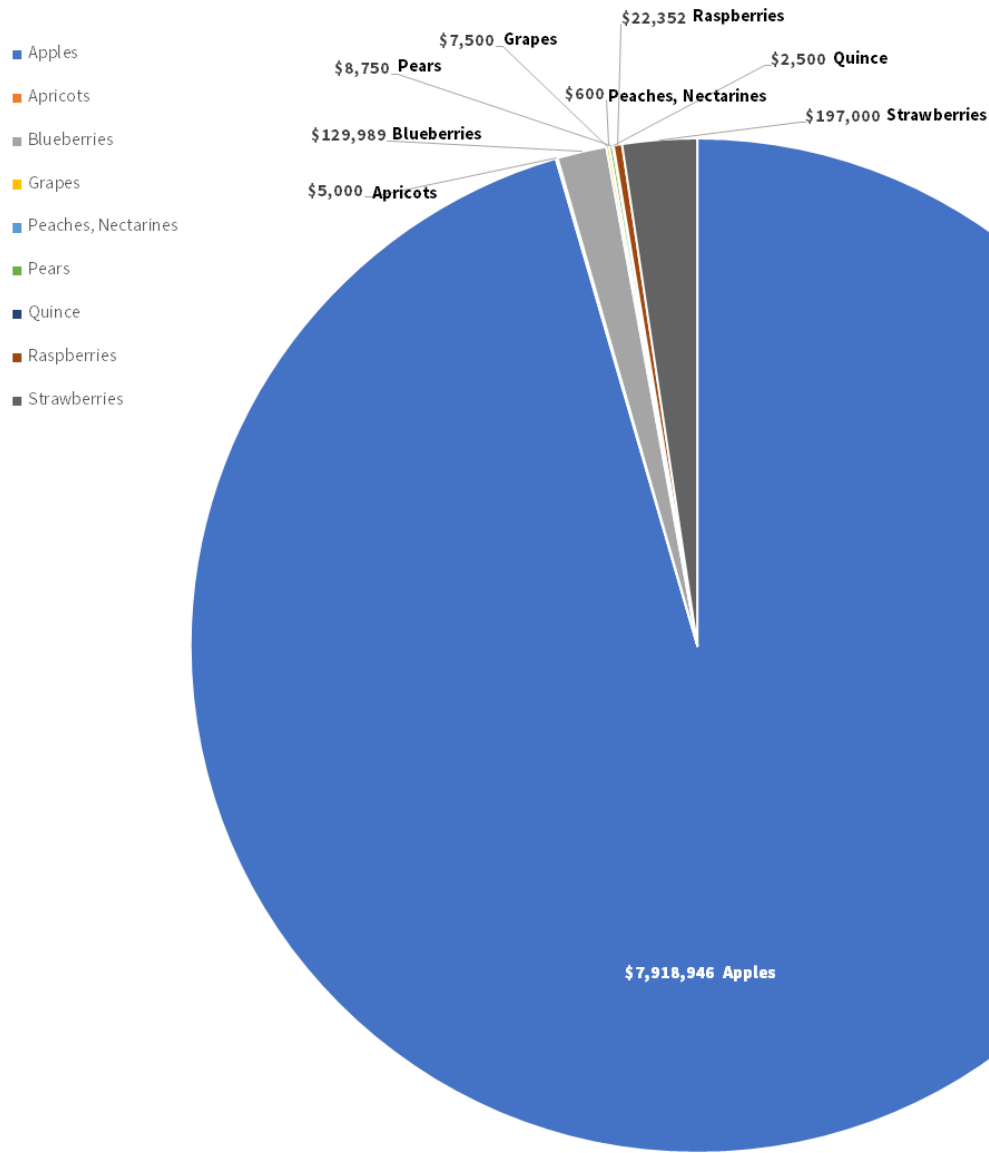
- Peaches, Nectarines
- Apricots, Cherries, Plums
- Grapes



Crop	Crop Acres
Peaches, Nectarines	73.2
Apricots, Cherries, Plums	4.8
Grapes	0.5
<b>Total</b>	<b>78.5</b>

# May Crops Impacted

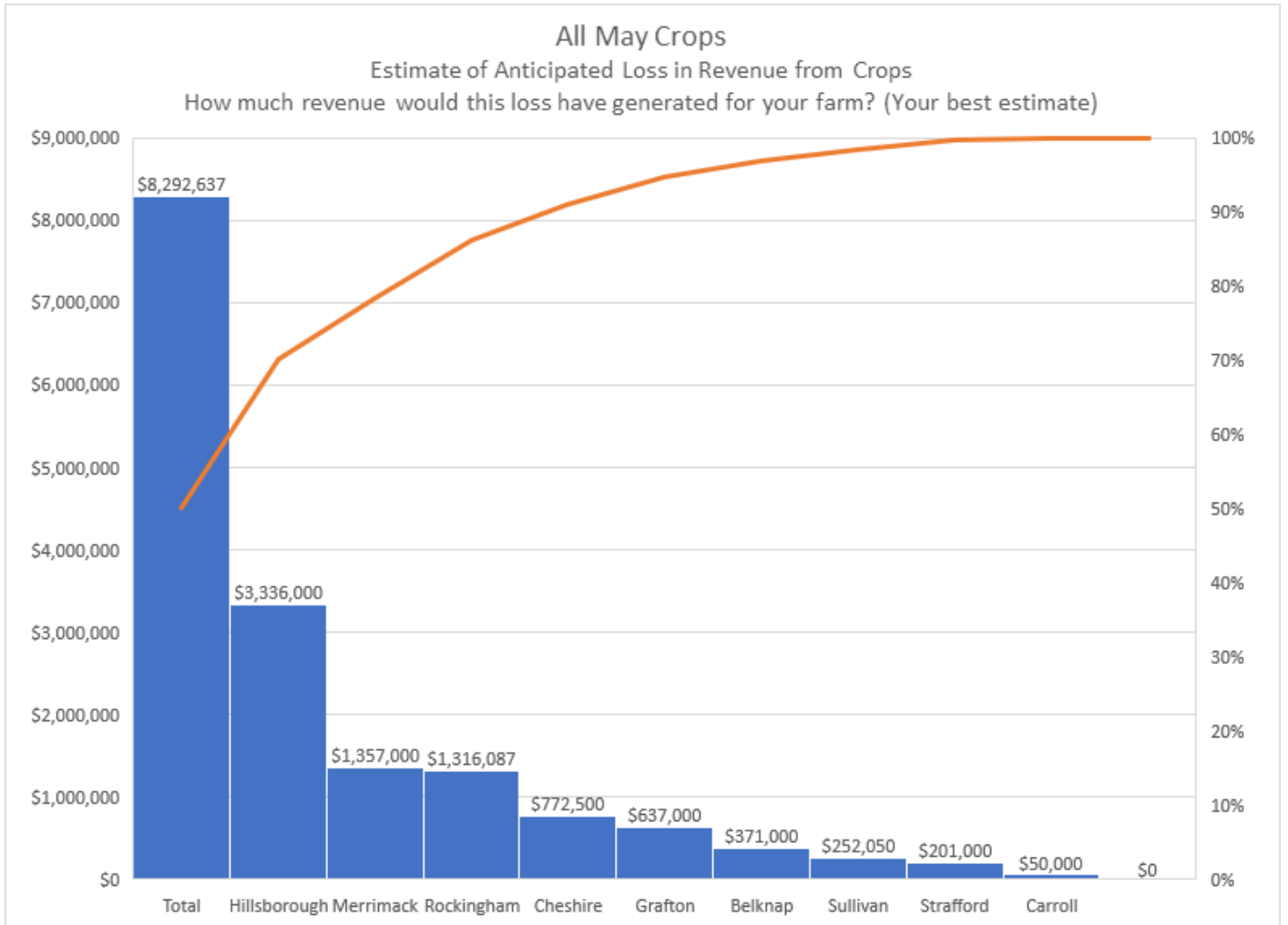
May Crops Impacted



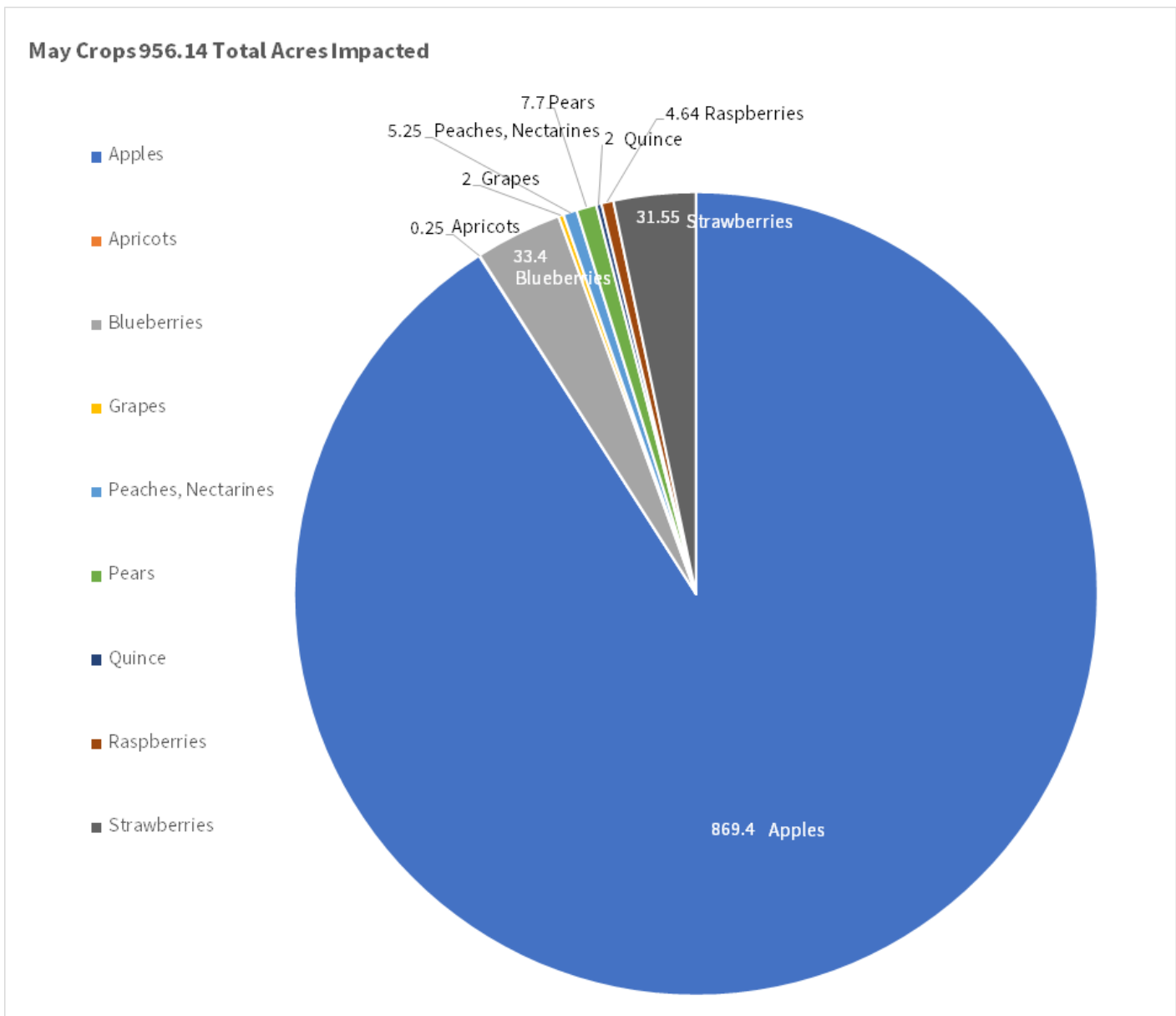
Crop	Crop Value
Apples	\$7,918,946
Strawberries	\$197,000
Blueberries	\$129,989
Raspberries	\$22,352
Pears	\$8,750
Grapes	\$7,500
Apricots	\$5,000
Quince	\$2,500
Peaches, Nectarines	\$600
Total	\$8,292,637



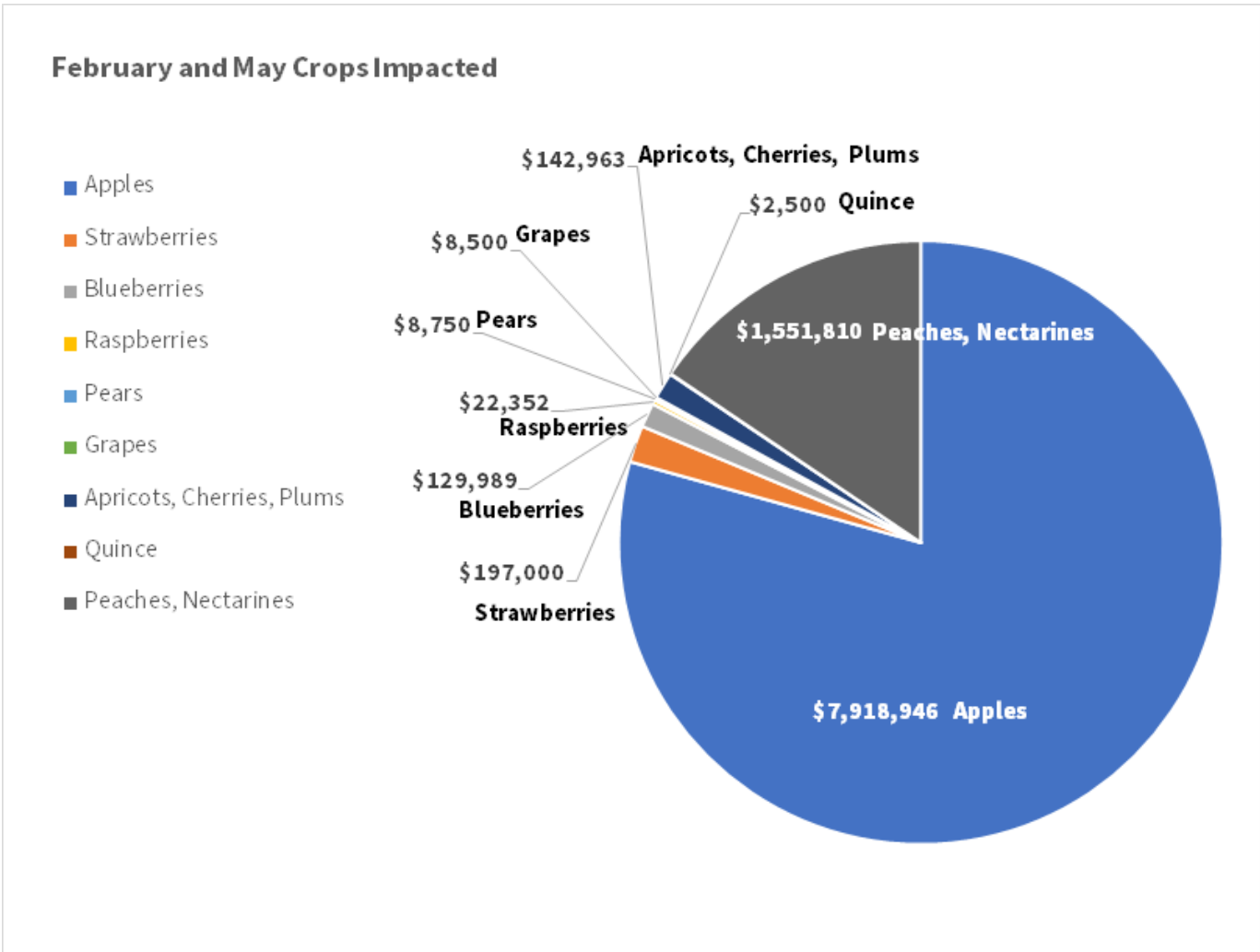
# Estimate of Anticipated Loss in Revenue from Damaged Crops



## Estimate of Impacted Acres for Crops - How many acres were affected? (Your best estimate)



Crop	Crop Acres
Apples	869.4
Blueberries	33.4
Strawberries	31.6
Pears	7.7
Peaches, Nectarines	5.3
Raspberries	4.6
Grapes	2.0
Quince	2.0
Apricots	0.3
<b>Total</b>	<b>956.1</b>



Crop	February and May Value
Apples	\$7,918,946
Peaches, Nectarines	\$1,551,810
Strawberries	\$197,000
Apricots, Cherries, Plums	\$142,963
Blueberries	\$129,989
Raspberries	\$22,352
Pears	\$8,750
Grapes	\$8,500
Quince	\$2,500
Total	\$9,982,810