

SLIDE 1:

This is Steve Johnson, University of Maine Cooperative Extension, bringing you this information on Growing Healthy Garlic: Curing and Disease Issues. It is possible to receive a Maine Board of Pesticides Control recertification credit for this presentation. As this presentation is approximately a half hour, another presentation would also have to be viewed. Additionally, a test must be passed with a minimum of 80 percent correct answers on each presentation. While there is no charge for viewing this information, there is charge for taking each test, whether the tests are passed or not.

SLIDE 2:

About four weeks after planting, the garlic should be covered with a two to four inch layer of weed free straw. This is to moderate soil temperatures and minimize the fluctuating temperatures in the winter and early spring. Mulch helps improve winter survival, suppress weeds, conserve soil moisture and prevent soil erosion. The following spring, when the threat of hard freeze is past, the mulch may be removed from the struggling plants. Replacing this mulch after it's removed minimizes weeds and conserves moisture.

Some people take the mulch off and leave it off. Some people take the mulch off and put it back on. Some people leave the mulch alone.

SLIDE 3:

The garlic root and shoots can tolerate freezing conditions provided that sudden drops in temperature do not occur. Mulch can be removed in the spring after threat of hard freeze is over. Garlic shoots can tolerate air temperatures as low as 20 degrees Fahrenheit without any damage. Some growers remove mulch completely in the spring to allow the soil to warm faster and then return the mulch after the shoots are about six inches tall. Others will leave the mulch in place to minimize weed pressure and conserve moisture.

SLIDE 4:

Mulch can go a long way to stabilizing the temperature. The snow cover can do the same thing but it's not to be counted on. In a recent February, Aroostook County was 50 degrees Fahrenheit. There was standing water in all my garlic plots, as the snow had all melted. The next day it was 10 below zero and many of the garlic bulbs that had been planted and were frost heaved out of the soil, thus killing the roots and such. Yes, they were mulched as well too. The idea behind planting garlic

in the fall and mulching it is to get the roots started to grow but not have the plants emerge and thus stabilizing the soil temperature under the mulch.

SLIDE 5:

Garlic has a dormancy period which must be satisfied for normal garlic growth. Certainly, putting it in the refrigerator in the fall after harvest and then replanting them will produce shoots and not roots and that's not really what the growers are looking for. This slide is soil temperature for Presque Isle, Maine October 2009. The red lines are 32 and 40 degrees Fahrenheit. That is the period that the garlic growth slows down but will actually grow a little bit. The soil temperature dropped below 40 degrees Fahrenheit in mid-October 2009 as seen with the blue line. The black line is air temperature. The soil temperature or the blue line is lagging behind the air temperature, or the black line.

The period of time where soil temperature is less than 40 degrees Fahrenheit and above 32 degrees Fahrenheit, the plant is not going to grow very much. The idea with fall planting of garlic is to get the plant growth happening before the soil temperature falls below 40 degrees Fahrenheit. From this graph, mid-October garlic planting in Presque Isle, Maine is not the best approach, as there would be very limited plant growth. Yes, the soil temperature did warm up later at the end of the month but the conditions did not remain for long and these conditions are not something that can be counted on regularly.

SLIDE 6:

This is a photograph of a garlic plot where the plants emerged between April 15 and April 23, 2010. This plot is well mulched to help with soil temperature stabilization.

SLIDE 7:

This is a slide of the soil temperature from Presque Isle, Maine the following April 2010. Here, the blue line is air temperature and the black line is soil temperature. You can see from the slide that after the first of April, the soil temperature started going above 40 degrees Fahrenheit. At this temperature, the planted garlic clove starts to grow again. These data are from the plot that emerged between April 15th and 23rd. You can see that that is the time when the soil temperature rose above 40 degrees Fahrenheit and stayed there for the period of time.

Again, the soil temperature tends to lag the air temperature as it did in the fall. Different areas in the state of Maine have different air and soil temperatures but the relationships are similar what has been shown. Generally, the southern parts of Maine are warmer the northern areas. Garlic will emerge in the spring at different time, depending on latitude. Generally, garlic emergence occurs later in the northern Maine than in southern Maine. Once the soil warms up, garlic starts to grow and will continue to grow from that point on.

SLIDE 8:

Bulb growth garlic like many alliums is dependent on the lengthening of the day and accumulation of heat units.

SLIDE 9:

Bulb formation in alliums and garlic, as well, is triggered by the long days. Good-sized garlic bulbs are produced by having healthy large tops without scapes during the long days. The longest day length of the year is the summer solstice, which would be on or around June 21, depending on the year. Garlic bulbs size up the last seven weeks of their growth. This reinforces the need for season-long weed control, but especially in July when it is easy to get distracted by the demands of other crops.

Slide 10:

This slide shows a series of photographs of garlic bulb development over time. On May 29th, you can see a swelling at the base of the garlic plant can be seen. On June 1st, while there is still only a small swelling at the base of the plant, you can see some of the leaves and outer wrappers have already died. On June 15th, the base of the garlic plant has distinct swelling at the base of the garlic plant. Remember, the summer solstice will occur in about another week. Here's two weeks later, June 29th. This is July 13th, and July 27th, which is approaching harvest.

Again, the bulb is near full size for my area. You can see that the brown leaves of the outer wrappers have started to die.

Slide 11:

If garlic bulbs are harvested too soon, they will not be fully developed and may not store well. Garlic plants typically have seven to nine leaves, variety dependent, with the bottom leaves being the outer wrappers and the upper leaves being the inner wrappers on the bulb.

SLIDE 12:

Cut the tops off the harvested plants and dry the bulbs in a dark, well-ventilated area. After about three to four weeks of curing, the shoots and roots should have dried down. Trim the tops to about a half inch above the main bulb and trim the roots close to the base of the bulb. This gives the typical retail appearance for a garlic bulb. I do not bring my garlic tops into the drying area. I cut them off and leave them in the field. That eliminates the need to dry down a great deal of plant matter.

SLIDE 13:

This is a photograph of the drying rack that I built and use. It is a positive pressure drying rack where the air is moved from the bottom to the top. I do not depend only on the ambient air to dry the harvested garlic. A box fan is placed on top of the drying rack and air is introduced into the bottom. The unit is covered with blue tarp to form a plenum for air movement from the bottom to the top.

SLIDE 14:

My goal in doing so is to have more air coming out of the top then going into the bottom. That will pull a better column of air through. In this photograph, the sides of the blue tarp are pulled as I try to pull more air out from the top than is entered from the bottom.

If conditions warrant, just a little heat can be introduced into the bottom or the room, and blown through the garlic to help dry the harvested bulbs. This added heat will reduce the humidity of the air going through the harvested garlic bulbs.

SLIDE 15:

Most of the garlic problems that come to my office are typically result of poor drying. The cloves seen in this photograph are a result of improper drying. Simply not getting the bulb cured and dried quickly enough and properly for long-term storage can render the bulb unusable. If the bulb is not dried properly it will not store properly. The growth seen on these cloves are more opportunists than pathogens to be concerned about. What is seen here is the result of cloves as a food source because the garlic bulb was not properly dried.

SLIDE 16:

Here's another example of a poorly dried garlic bulb. The pseudostem is on the right that was cut off when the plant was descaped. I bent the pseudostem with my fingers where you can see the crease. The pseudostem should not bend if it is properly dried. If you can bend the pseudostem with your fingers, the garlic bulb is not adequately dried. Again, this garlic bulb will not store in this condition. Pathogens that arise on it may well spread to the rest of the garlic crop.

SLIDE 17:

This is a photograph of a psychrometric chart. There are lots of lines on it but it really isn't all that confusing. This is a chart of the relationship of a wet bulb temperature and a dry bulb temperature and relative humidity. The dry bulb temperature in degrees Celsius is on the bottom axis. Green lines which go directly up from the bottom axis are associated with the dry bulb temperature. These green lines go up from -10 to +55 degrees Celsius. These green dry-bulb temperature lines intersect aqua-blue lines which are the wet-bulb temperature lines. The wet-bulb temperature lines are roughly at a 45 degree angle. The relative humidity is the red curving lines that are read at the intersection of the wet-bulb and dry bulb temperature lines.

For example, a dry-bulb temperature and wet bulb temperature of 20 degrees Celsius, which is 68 degrees Fahrenheit, intersect at the 100% relative humidity red line. This means that under those wet-bulb and dry-bulb conditions, the relative humidity is 100%. When the wet-bulb temperature and the dry-bulb temperature are the same, the humidity is 100%.

SLIDE 18:

This is similar information from the psychrometric chart in table form. The relative humidity is on the top row across the table and corresponding data are in the columns under the relative humidity heading. The rows across the table are different air temperatures. The upper half of each row is the grams of water per cubic meter of air is held at that temperature and relative humidity column; similarly, the lower half of each row is the dew point.

For example, the first row is 77 degrees Fahrenheit, which is a pleasant August drying day. If the relative humidity is 100%, which is the far right column, the dew point is 77 degrees Fahrenheit. More than likely, there is condensation on the garlic bulbs you are trying to dry. At the best, there is no condensate, but there is no drying either. Generally, if the difference between the air temperature and the dew point is less than 3 degrees

Fahrenheit, condensate will occur. If the difference is greater than 4 degrees Fahrenheit, usually there will not be condensate.

Continuing at 77 degrees Fahrenheit but with 90% relative humidity, the dew point is 73 and reading across the chart, 80, 70, 60, and 50% relative humidity, the dew points are 70, 66, and 61 and 55 degrees Fahrenheit for a dew point. Said differently at 77 degrees Fahrenheit with 70% humidity the dew point is 66, which tells you it is good drying weather and there will be no condensate on the garlic bulbs.

The upper part of each is the row is the water in grams per cubic meter that is actually present in the air at each temperature and relative humidity. This is known as the absolute humidity. For example, at 77 degrees Fahrenheit and 100% relative humidity, the air will hold 23 grams of water per cubic meter. Warm air holds more moisture than cold air. If warm air cools, like when the sun sets, the moisture in the air stays the same. As the air cools, the relative humidity will increase as a result. This is when condensate occurs and this is when poor drying is going to occur on the garlic.

For example, at 80% relative humidity and 77 degrees Fahrenheit, the air will hold 18.4 grams of water per cubic meter. When the air cools to 68 degrees Fahrenheit, it can only hold 17.3 grams of water. The remaining 1.1 grams of water per cubic meter of air will precipitate out as condensate.

Typical evenings that it cools down a great deal there will frequently be dew on the ground which means that the temperature has reached below the dew point for a period and some of the moisture has precipitated out. When these conditions occur, humid air is being moved pushing through the garlic crop. The crop is not going to dry with humid air moving through it. This is a situation where raising the temperature a few degrees would be a positive approach. This has to be done very carefully.

SLIDE 19:

This is a chart of the temperature, relative humidity, and dew point for August 2010. The air temperature is in red, the relative humidity is in the aqua and dew point is shown in green.

In a typical evening that cools down, the dew point approaches the air temperature as seen by the red and green lines. When the humidity or the aqua line goes down, there is a separation between the dew point and the air

temperature. This results in drying conditions. There were many hours of good drying conditions during August 2010.

If the air temperature and the dew point are within three degrees, there will likely be condensation. If the difference is more than four degrees there probably not be any condensation. In between the two, it could go either way. August 2010 looked like a good drying year.

SLIDE 20:

This is a chart of the temperature, relative humidity, and dew point for August 2011. The air temperature is in red, the relative humidity is in the aqua and dew point is shown in green. Compared to August 2010, there were fewer hours of drying conditions. In fact, August 2011 was not a good drying month. The temperature and the dew point are very close for most of the first week or two of the month, as well as from the 8th through the 17th.

Many garlic crops in 2011 weren't dried properly and resulted in a great deal of loss from rot. The humidity was very high and the dew point was close to the air temperature for extended periods. Stated differently, there may have been air movement through the garlic, there but the air was too humid for good drying.

SLIDE 21:

This is a chart of the temperature, relative humidity, and dew point for the first week of August 2010. The air temperature is in red, the relative humidity is in the aqua and dew point is shown in green. The temperature is above the dew point for many hours.

There is good separation between the temperature and dew point and drying conditions occurred virtually every day. Wednesday wasn't great drying conditions but the next day improved as did the days after that. It is important to realizing that air temperature within 3 degrees of the dew point temperature indicates humid air that isn't going to dry garlic well. Again, the first week of August 2010 had pretty good drying conditions. Typically, this is what is expected in August.

SLIDE 22:

This is a chart of the temperature, relative humidity, and dew point for the first week of August 2011. The air temperature is in red, the relative humidity is in aqua and dew point is shown in green.

The first week of August 2011 was not like the previous year. High relative humidity and cool temperatures yielded a dew point very close to the air temperature for most of the first week as shown. This is a year that a tremendous amount of garlic rotted before or during storage. Improper drying leads to lots of other disease problems. Many of these disease problems can be managed without pesticides. Controlling the environment and exhibiting good crop husbandry during the growing, curing and storing of the garlic crop can go a long way to reducing these sorts of issues. It's really a function of psychometrics, understanding the air temperature, humidity and dew point relationships.

SLIDE 23:

Shown in the photograph is black mold caused by *Aspergillus niger*. This is not uncommon in poorly dried garlic. This pathogen virtually doesn't appear on garlic that's been properly dried, properly cured, properly stored and properly harvested so there's no damage. The pathogen gets its name from the characteristic inky black fungal mass and spores that are on top of the clove as seen in the photograph.

SLIDE 24:

Shown in the photograph is Blue mold caused by *Penicillium hirsutum* other *Penicillium* species. This is not uncommon in poorly dried garlic. This too this is managed not with pesticides but good crop husbandry. Proper harvest, reducing damage, proper curing and storing of the garlic will eliminate this or the majority of this pathogen.

A healthy garlic bulb is seen on the left. You can see where the pseudo stem was cut three to four inches off from the bulb. It has dried well with the pseudo stem sticking out the top and the outer leaves have shrunk down as they've dried. The one on the right has much less of the stem sticking. It didn't dry well. The bulb on the right was intentionally put it under poor drying conditions.

SLIDE 25:

This is another photograph of Blue mold on the inside of an infected bulb. These symptoms are not always on the outside of the bulb. The pathogen often enters through wounds, or poorly dried pseudo stems or the basal plate. Again, this is managed though proper handling.

SLIDE 26:

This is a photograph of Blue mold on a clove. The blue fungus, *Penicillium*, can be seen on the clove and the sort of early damage that can be done. This was only on here because the whole bulb wasn't properly dried.

SLIDE 27:

Embellisia allii is another garlic pathogen. It causes Embellisia skin spot. This is a little harder to deal with. A lot of cloves with this pathogen are planted back into the field each year. This pathogen will survive in the soil for a year or so but when cloves with the *Embellisia* fungus are planted, the problem will likely occur in the following crop. Usually the discoloration as seen can be solved from a retail standpoint by simply taking another wrapper off from the bulb itself.

SLIDE 28:

This is Embellisia skin spot, again, on an onion purchased at a grocery store. This pathogen tends to go to the allium family, not only to garlic. Damage can be seen on the onion and certainly makes it less desirable.

SLIDE 29:

Fusarium is another garlic pathogen. There are a number of different *Fusarium* species that will attack garlic cloves and bulbs. They often will enter the garlic bulb under unfavorable conditions, like when it is too wet. Anyone that's irrigated has probably run into this problem at one time or another. Certainly, *Fusarium* can cause losses. Here the pathogen entered from the stem shown on the bottom. The *Fusarium* came into the basal plate and is running up through the cloves.

SLIDE 30:

Garlic should be stored in the dark at 32 to 40 degrees Fahrenheit with 60 to 70% relative humidity. Not everybody has these conditions. Alternately, garlic can be kept reasonably well at 60 degrees Fahrenheit with 60% relative humidity. Often people will store garlic in a spare room or in a root cellar. Usually in a heated space during our winter conditions the conditions are too dry and never come close to 50 to 60% relative humidity. This results in tremendous loss in the garlic. Storage temperatures between 42 and 52 will cause sprouting and high relative humidities tend to produce rooting.

SLIDE 31:

This is a photograph the garlic variety Music that was stored for 223 days. The group on the left was stored at 60 degrees Fahrenheit and 60% relative humidity. At 223 days, the group on the left has a 20% weight loss when since curing. The group on the right was stored under conditions of 55 degrees Fahrenheit and 95% relative humidity. You can see *Embellisia* and a host of other problems that come along with that. High humidity is not good to store alliums and certainly not garlic.

SLIDE 32:

This photograph shows some of the loss in garlic cloves over time from poor storage conditions compared to good storage conditions.

SLIDE 33:

Roots are starting to form on the variety on the left where they are not starting to form on the variety on the right. The root primordial can be seen about 5:00 on the bulb on the left. Some garlic varieties have different storage characteristics such as longer storage potential.

SLIDE 34:

This is a photograph of a European corn borer that has gone into a garlic plant. This is not a common garlic pest. There are surprisingly few insects that do cause much problem to garlic. Thrips can cause some problems in garlic and there is a leek moth that is to the north of us in Canada but hasn't been found here in Maine.

SLIDE 35:

This is a photograph of salt march caterpillars that showed up in my research plots. These are not real garlic pests; they are simply inadvertent pests that were passing through. They did peel off the leaf epidermis but that is all that they did and were quickly gone. This isn't anything that's going to require any sort of action on the part of a garlic grower.

SLIDE 36:

Weed control is important in garlic production. Garlic is a very poor competitor with weeds. Unless the weeds are controlled early they can easily overtake garlic plants causing significant yield losses. Leaving the straw in place will great reduce weed pressure mainly from the broad leaves more than from the grasses as shown here. The grass shown here has penetrated the garlic plant.

Grass also exhibits allelopathy where the metabolic byproducts of the grass will inhibit growth of other plants and can cause additional loss, not just from the loss of sunlight or the loss of water or nutrients.

SLIDE 37:

A new important garlic pest problem is the garlic bloat nematode or the bulb and stem nematode, *Ditylenchus dipsaci*. The nematode is widespread in parts of Canada and recently been identified in New York where it's widely distributed. In fact, a recent garlic festival in New York banned some seed sales as a result of this nematode. It's a destructive pest of alliums and generally introduced to a farm via infested seed bulbs. Maine also has this pest.

SLIDE 38:

This is a photograph the stem and bulb nematode pathogen. This nematode does not only attack garlic, it attacks onions, tulips, and many other bulb crops as well. Garlic plants with bloat will be stunted, will have a premature yellowing of the leaves and die prematurely. The advance symptoms include distinct swelling and some bulb formation. Nematode reproduction damage to bulbs will continue and may increase during storage. They may not look that bad when they go in the storage. They may not look that bad when they're planted but they will look bad after that.

SLIDE 39:

This photograph shows advanced symptoms of garlic bloat. This sample came from a grower in Maine. Certainly the cloves where attached to the basal plate is so destroyed that they're actually no longer attached to the basal plate

SLIDE 40:

This photograph shows advanced symptoms of garlic bloat from a heavy infestation. What should be cloves look like little bell ringers.

SLIDE 41:

This photograph is typical of garlic bloat where you don't see roots. The roots were not pulled off; there simply were no roots at the basal plate. This is a garlic bloat symptom.

SLIDE 42:

The two bulbs in this photograph also have garlic bloat. There are areas on basal plate of these garlic bulbs where there are no roots and there is some damage. This is a very mild infection. Again, the one on the right has very few roots and the one on the left has no roots in an area near on the top. This is another nematode garlic bloat symptom.

SLIDE 43:

The onions in this photograph came into Maine as onion sets that were brought through a catalog. You can see that there is a lot of deformation and these too have garlic bloat. Again, there are missing roots on these onions bulbs. Again, garlic growers need to be aware that it isn't just garlic that can bring in garlic bloat.

SLIDE 44:

This is a photograph of the life cycle of the garlic bloat nematode taken from a textbook by Agrios. Infected cloves are planted, germinate and grow. The nematode will penetrate between the leaf scales where it's residing and then will migrate through that bulb and the lower part of the plant. The nematode will under wet conditions, actually climb up the garlic plant and then move to adjacent plants that are touching. That's one way the nematode spreads in the field. The nematode can produce a nematode wool on roots and leave the bulb under very high nematode populations. The garlic boat nematode does not do particularly well in the soil.

SLIDE 45:

This is a photograph of a field symptom garlic bloat. The plants around the obviously yellow plants are likely infected as well where the nematode has climbed up these leaves and gone to the neighboring plants and migrated back down to it. The neighboring plants do not have the advanced symptoms of the plant in the center.

SLIDE 46:

This is a slide showing where bloat has come into Maine from a couple different areas out of state. The pest has been subsequently moved from one garlic grower to another garlic grower via infested bulbs. This method is how the pest spreads. Knowing your seed source and understanding the situation can go a long ways to reducing the movement of this pest.

SLIDE 47:

Puccinia allii is the causal agent of garlic rust. This disease has shown up in Maine under hot and dry conditions and is a very recent introduction. This is an autoecious rust, which means it goes to garlic and only garlic. This disease has caused tremendous loss in California in a few years back.

SLIDE 48:

Garlic rust was found in this demonstration garden. Speculation is that it may have started with chives and moved to garlic. Some garlic varieties are more susceptible than others. More than likely, there is not the potential for large crop losses from this pest in Maine.

SLIDE 49:

This is a close up photograph of garlic rust lesions. Orange urediniospores can be seen in the middle of the lesion surrounded by a halo of chlorosis. These orange urediniospores are the repeating stage and will spread from garlic to garlic in the current season and they can be spread long distance by wind.

SLIDE 50:

1998 a devastating outbreak of this rust appeared throughout California where bulb weights decreased by about half and yields dropped by about half as well. This was a tremendous problem and now garlic rust disease control is a regular part of garlic production in California. Again, this pathogen doesn't only got to garlic. It affects many species within the allium group including chives, garlic, leek, onion, shallot. No resistant varieties of garlic are known. In its appearance in Maine the variety of Premium Northern White was particularly hit hard by this disease.

SLIDE 51:

This slide depicts where rust was found in the state of Maine. There may be more cases than are shown here. The source of the movement into Maine is still unknown.

SLIDE 52:

Botrytis porri is a cause of botrytis neck rot. This pathogen attacks only onions and their relatives and overwinters in infected debris, unharvested alliums and cull piles. The pathogen will also spread on infected garlic cloves that were planted. This pathogen produces sclerotia and can survive for many years in the soil and cull piles. Cool, wet conditions favor this pathogen and it produces large sclerotia, or at least large by fungal

standards, around the rotting neck of the garlic. It can become epidemic in a field under very wet conditions.

SLIDE 53:

This is where neck rot has been found in Maine, but the disease may be other places as well. These are just the places that have been confirmed.

SLIDE 54:

This photograph shows some of the sclerotia in a petri plate of the pathogen. You can see they're a fairly good size where the petri plate is about four inches in diameter.

SLIDE 55:

Sclerotinia cepivorum is the cause of White rot. White rot is the most important and destructive disease of onion and garlic. White rot is another serious disease problem in garlic and onions that is present in the state of Maine. If this pathogen enters the farm it cannot be gotten rid of. The seriousness of this makes it a concern for all garlic growers. You basically can assume that if it gets into the soil on the farm it's going to be there forever. It produces very tiny, dormant sclerotia. As little as one sclerotia per pound of soil, which is about a soil box worth, can cause disease resulting in measurable crop loss. The primary control is not chemical, it's exclusion. Keep the pathogen out; know your seed source and practice good sanitation. If it's present in the field, that field will have to be isolated without sharing of equipment or foot traffic.

SLIDE 56:

This is photograph of white rot, where a large number of very small sclerotia can be seen on the garlic bulb. These sclerotia survive for a very, very long time in the soil.

SLIDE 57:

Here is another look at white rot on garlic. Symptoms need microscopic observation. Under close look you can see that the sclerotia are pretty small.

SLIDE 58:

This is under a microscopic view of the pathogen. These are technically signs of the pathogen.

SLIDE 59:

This is a photograph of white rot in the field. About center in the photograph there is an area where the plants look a little yellow and unthrifty. The same can be seen a little farther down the row.

SLIDE 60:

This is a close up view of the disease plants in the previous photograph. Going up and down the row are plants where the leaves just don't look very healthy. Their leaves are either yellow or dead. All of these are white rot-affected plants. The pathogen will be moved with equipment movement up and down the row. That is what appeared to happen in this case. The direction that the field was plowed was the direction of the sclerotia and the disease spread.

SLIDE 61:

Some cases of white rot came in from known sources and in other cases it is basically unknown how or when the pathogen arrived. This is a concern as bulbs from these fields could be distributed as seed which would introduce the pathogen to other fields.

SLIDE 62:

Bloat, rust, white rot, neck rot locations shown in this slide. The distribution does follow the pattern of where garlic growers are and so some of the problems follow garlic growers because the pests and diseases follow the crop. Many of these pathogens were introduced from outside sources. The introduction of garlic bulbs from unknown sources should be questioned.

SLIDE 63:

This is Steve Johnson, University of Maine Cooperative Extension, bringing you this information on Growing Healthy Garlic: Curing and Disease Issues. Thank you for listening to this presentation. Efforts were in part funded by The Maine Agricultural Center Project MAC 120 and The Northeast Sustainable Agriculture Research and Education Program, which is part of USDA's National Institute of Food and Agriculture. Again, this has been Steve Johnson bringing you this presentation.

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