UMASS EXTENSION

Vegetable Notes

For Vegetable Farmers in Massachusetts

Volume 22, Number 11 July 7, 2011

IN THIS ISSUE:

CROP CONDITIONS

The heat of summer has arrived in force. Crops seem to be growing well, with the sweet corn harvest underway in some areas. Sales are up at farm stands, which are now offering a variety of summer favorites. Squash vine borer have been caught in record numbers in New Hampshire, so keep an eye on your cucurbit crops – see article below for details. Both late blight and cucurbit downy mildew are within striking distance, so make sure your crops are protected. Downy mildew of basil has also been confirmed in central MA, see the article below for more details.

DISEASE UPDATES

Late Blight. Late blight has been confirmed in Hartford County, CT. It is increasingly likely that we will be seeing this disease in MA soon. We recommend using protectant materials until the disease is found locally, and then switching to a spray rotation including late blight specific materials. See June 30 Vegetable Notes for current evaluations of spray materials – archived on our webpage at umassvegetable.org, under publications. Refer to the severity values table in this newsletter for recommended spray schedules. If you suspect you have late blight in your field, please contact us at umassvegetable@umext.umass.edu or 413-577-3976 so that we can bring a sample to the diagnostic lab for confirmation.

Cumulative GDD starting Jan 1, 2001. Base 40 and 50 ºF

Base temp 40 ºF is for maggot flies; base temp 50 ºF is for most other insects.

Cumulative GDD are higher when base temp is 40 ºF.

Date	Location	GDD since Jan 1	GDD since Jan 1	Rainfall 7 days	7-day SV	SV -Season total
		Base 40 ºF	Base 50 ºF	(inches)		
7-Jul	Pittsfield	1676	853.5	0.4	6	48
7-Jul	Ashfield	1707.5	851.3	0.2	8	45
7-Jul	Belchertown	1949.6	1060.5	0.0	3	44
7-Jul	Dracut	1860.5	960	0.0	3	39
7-Jul	Tyngsboro	1821.5	986.5	0.3	6	43
7-Jul	Bolton	1840.5	939.5	0.0	2	54
7-Jul	Stow	1804.5	1014	0.0	3	45
7-Jul	New Bedford	2083.1	1099.1	0.0	3	36

	Total severity values during last 7 days					
	<3	3	4	5	6	>6
Total rain/irrigation for past 10 days	Spray Interval for late blight control (in number of days)					
>1.2 inches	10-14	10	7	5	5	5
<1.2 inches	10-14	10-14	10	7	5	5

Cucurbit Downy Mildew. Downy mildew has been confirmed on vine crops in NJ. Weather patterns have been favorable for transportation of this disease to our area. We recommend that crops not already in a spray program be treated with protectant materials now, with downy mildew specific materials added to the program when the disease

is closer or first discovered within the field. Early detection of this disease is critical, as materials specific to Downy Mildew should only be used when disease severity is low; once the pathogen is widespread they should not be used because it significantly increases the chance of fungicide insensitivity. If you suspect you have downy mildew in your field, please contact us at umassvegetable@umext.umass.edu or 413-577-3976 so that we can bring a sample to the diagnostic lab for confirmation.

Materials effective specifically for downy mildew include Revus, Presidio, Tanos, Ranman, Gavel, Aliette, Forum, and Previcur Flex.

SQUASH VINE BORER AND SQUASH BUGS

Squash vine borer are showing up in traps in NH at their highest level in 5 years, and squash bugs have been seen colonizing cucurbit crops. Many vine crops are in bloom, and care should be taken during bloom to avoid insecticides which are toxic to pollinators.

Squash vine borer moths are day-flying moths with a 1.0 to 1.5 inch wingspan and bright orange markings. In flight, they look like wasps. There is one generation each year and adults emerge in late June/early July. They lay eggs at the base of squash plants, and upon hatching, larvae bore into stems (where they are protected from insecticides). Thick-stemmed squashes are preferred. Unless you use traps or scout fields for evidence of eggs or larvae, the first sign of squash vine borer infestation can be wilting vines in July and August. By that time, it is too late to do anything.

Growers should scout their pumpkin and squash fields weekly for squash vine borer from late June through early August. Examine the base of vines for evidence of larval feeding (sawdust-like frass near entrance holes) and then split open the stem to confirm the presence of larvae, which suggests more eggs are being laid. Two insecticide sprays, ideally applied to the base of the plants and timed five to seven days apart, will control newly hatching larvae before they are able to bore into the stem. Alternatively, you can monitor with a Scentry Heliothis pheromone trap from early June through early August. Make 2 to 4 weekly applications if more than 5 moths per week are captured. Timing is very important. Treat base of stems thoroughly to target hatching larvae. Some selective materials, such as spinosad (Entrust) or spinetoram (Radiant), provide excellent control of hatching SVB larvae.

Squash bugs (Anasis tristis) are serious pests of pumpkins and squash throughout North America. Damage and survival are low on watermelon, very low on cucumber and muskmelon, and highest on squash and pumpkin. Both adults and nymphs feed by inserting their beak and sucking juices from plant tissue. Toxic saliva injected during feeding causes foliage to wilt, turn black and die; the severity of this damage is directly related to density of squash bugs on each plant. Later in the season, squash bugs may feed on the fruit, causing them to collapse or become unmarketable.

Adults are 0.5 to 0.75 of an inch long, flattened and grayish-brown. Wingless nymphs are similar in appearance to adults, and are whitish when small, with a brown head, and grayish white when larger with black legs. Eggs are laid in clusters usually on the underside of leaves and are orange when first laid, but turn bronze-colored before they hatch. There is one generation per year in the Northeast.

Squash bugs are reduced by clean cultivation and crop rotation and delayed by row covers. If possible, rotate cucurbit crops between fields as far apart as possible. Keep headlands mowed and free of trash to reduce overwintering sites. Squash or pumpkin, especially certain winter squash (Hubbard or marrow), have been used effectively as perimeter trap crops to protect the less attractive melons and cucumbers from incoming adult bugs. Plant the perimeter 1 or 2 weeks before the main crop, and treat the trap crop just prior to main crop emergence or prior to transplanting. Treat again 5 to 10 days later. Black plastic, straw mulch, and reduced tillage systems encourage higher populations, probably by providing good hiding places.

Squash bugs are unusually difficult to control with insecticides. Scout undersides of leaves for squash bug adults and eggs and treat if the copper-colored egg masses exceed one per plant. Time squash bug sprays to kill young nymphs just after hatch, because this stage is the easiest to control. Treat late in the day when the flowers are closed to reduce risk to bees. For adult bug control, insecticides applied to the base of the plant are most effective, possibly because bugs tend to cluster there. Sprays for cucumber beetle may reduce squash bugs. See http://www.nevegetable.org/index.php/crops/pumpkin-squash-and-gourds?start=2 for labeled products. Squash bugs are virtually impossible to control later in the season when

nymphs are large and the canopy is dense.

- Source material from New England Vegetable Management Guide; Handbook of Vegetable Pests, A Capinera; ATTRA. Adapted by Andy Cavanagh & R Hazzard, UMass Extension.

DOWNY MILDEW OF BASIL

Downy mildew was first reported in Uganda in 1930. The disease did not attract international attention until it recently appeared in several new locations; Italy (2004), France (2005) South Africa (2006), Iran (2007) United States, in Florida (2007) and Argentina (2008). During 2008 and 2009, the disease occurred throughout the east coast in epidemic proportions both in the field and in greenhouses. Considerable economic losses occurred in Massachusetts during that time and we anticipate basil downy mildew will be a major disease of basil in the US in the foreseeable future. Long distance transport from FL to MA might be explained by aerial dispersal of spores but rapid transcontinental transport probably occurred via infested seed sold internationally. Although the downy mildew pathogen has been detected in basil seed; seed transmission is probably a rare event. Air-borne dissemination from infected plants is more likely.

Infected leaves develop diffuse yellowing on the top of the leaf but distinctly vein-bounded patches on the bottom. When spores are produced, a characteristic gray, fuzzy growth on the underside of the leaves is evident. Symptoms of downy mildew on basil can easily be mistaken for a nutritional deficiency. The fuzzy growth of spores on the underside of the leaf looks as if soil had been splashed onto the leaf under-surface.

Management: The most important environmental factors favoring disease development are high humidity and extended leaf wetness. These factors can be reduced by:

- Toward evening, heat and vent the greenhouse, especially when warm days are followed by cool nights.
- Improve horizontal air flow by the use of fans.
- Reduce plant canopy density by spacing to speed leaf drying.
- Water in the morning, if practical, or water subirrigation rather than overhead.
- In the field, plant in well drained sites with good air drainage and orient rows with the prevailing winds.
- Control weeds and space plants to enhance leaf drying.

Relative susceptibility of basil types:

Field trials conducted in southern New Jersey in 2009 determined that commonly-grown sweet basil (Ocimum basilicum) cultivars such as 'Poppy Joe' and 'Nufar' were the most susceptible to downy mildew. The least susceptible basils included the lemon and spice types such as O. x citriodorum and O. americanum cultivars , 'Lemon Std', 'Lemon', 'Lime', 'Spice', 'Blue Spice' and 'Blue Spice Fil'.

Chemical control:

Few fungicides are labeled for herb plants and there are differences in registrations for field grown plants versus greenhouse plants. Copper products, phosphites, azoxystrobin, and mancozeb are labeled for use on basil. It is the grower's responsibility to read and follow label instructions. The label is the law and any recommendations made here are superseded by the label.

At the University of Massachusetts, we are investigating methods to control this disease with biological control agents. We are interested in collecting live, infected plants from residential gardens, greenhouses and field grown basil. If you think your basil plants are infected, please call or email Rob Wick, Department of Plant Soil and Insect Sciences; tel. 413.545.1045, rwick@pltpath.umass.edu.

- Robert L. Wick and M. Bess Dicklow, University of Massachusetts, Amherst

CUCURBIT DISEASE MANAGEMENT OVERVIEW

The list of diseases affecting cucurbit crops is long, and management of these diseases is complicated by the presence of different types of pathogens which require different classes of materials for effective control, and the danger of fungicide resistance developing in pathogen populations. The dry weather we've been experiencing has helped to slow the onset and development of many of these diseases, but as the season progresses they will certainly become more prevalent. This article will help you prepare for the challenge of managing these diseases effectively.

If Plectosporium, black rot, or scab, are detected before powdery mildew, apply a recommended contact fungicide on a weekly basis until powdery mildew is found. In unusually wet weather, in unrotated fields, you may want to start your disease program at fruit set even if disease symptoms are not yet present. Apply a recommended contact fungicide every 7-10 days until powdery mildew is found during weekly scouting trips. Then follow the powdery mildew program detailed below.

If powdery mildew is detected first, begin your spray schedule with a systemic that is effective against powdery mildew. Remember to mix this systemic material with a contact fungicide. Follow this with another systemic or single mode of action material from another FRAC group, also mixed with a contact fungicide. Fungicide applications should be applied on a 7-10 day schedule and systemic or single mode of action fungicides should be limited to a single application per season for each FRAC group.

Downy mildew overwinters in the deep south and is carried north each year on storm fronts. In recent years it has also overwintered in greenhouses in Ontario, which means it can also reach us from the north or west. The progress of downy mildew epidemics can be monitored on-line at http://www.cdm.ipmpipe.org/ or through the University of Massachusetts Vegetable Notes Newsletter to better time scouting. A contact fungicide can be used alone when the forecasted risk of downy mildew is moderate and before downy mildew has been found in the area. By the time downy mildew arrives this far north, you may already be applying a contact fungicide to control other diseases. Systemic and single mode of action fungicides specific for downy mildew should be reserved for when risk is high or when the disease has been reported in your area or found in your field. For organic growers, the options are more limited. Copper and Sulfur are traditionally the most effective materials available to organic growers for managing the diseases that occur on cucurbit crops. There are also numerous biological and biorational materials allowed for organic production, though their efficacy may be more variable. Check with your certifier or state extension service for information about which formulations are currently approved for organic production.

The roster of effective systemic and single mode of action fungicides is always changing as older materials are lost to fungicide resistance and new products are developed. Here is a partial list of materials, see the New England Vegetable Management Guide (www.nevegetable.org) for a more comprehensive list of fungicides that are registered for use on these diseases.

Contact or multi-site general fungicides:

chlorothalonil (Bravo Weather Stik): 2.0-3.0 pt/A (0 dh, REI 12h, Group M5). Powdery mildew will not become resistant to Bravo but it is not systemic so coverage is critical.

sulfur (Microthiol D): 5-10 lb/A. (0 dh, REI 24h, Group M2). Sulfur can injure plants, especially when temperatures reach 90° F. Do not apply to sulfur sensitive varieties.

Fungicides for Powdery Mildew:

myclobutanil (Rally): 5 oz/A (0 dh, REI 12h, Group 3). Begin application at the first sign of disease development and alternate with a fungicide with a different mode of action. Observe a 30-day plant back interval.

pyraclostrobin plus boscalid (Pristine): 12.5-18.5 oz/A. (0 dh, REI 12h, Groups 11 plus 7). Use caution when applying Pristine in a tank mix (see label). Do not rotate with other Group 11 fungicides such as Quadris, Cabrio, or Flint.

difenoconazole plus cyprodinil (Inspire Super): 16-20 fl oz/A. (7 dh, REI 12h, Group 3 & 9).Apply in sufficient volume to achieve thorough coverage.

quinoxyfen (Quintec): 4-6 fl oz/A. (10-14 dh, REI 12h, Group 13). Tank mix with a multi-site contact fungicide. Alter-

nate with a non-Group 13 fungicide.

triflumizole (Procure 50WS): 8 oz/A. (0 dh, REI 12 h, Group 3).See label for restrictions on rotational crops.

Fungicides for Downy Mildew:

azoxystrobin (Quadris): 11 to 15.5 oz/A. (1 dh, REI 4h, Group 11). Alternate with another fungicide other than Cabrio after 5-7 days.

cyazofamid (Ranman): 2.1-2.75 fl oz/A. (0 dh, REI 12h, Group 21). Tank mix with an organosilicone surfactant or non-ionic surfactant. Alternate sprays of Ranman with a fungicide with a different mode of action.

cymoxanil (Curzate 60 DF): 3.2-5.0 oz/A. (3 dh, REI 12h, Group 27). Use only in combination of a labeled rate of a protectant fungicide (copper, chlorothalonil).

dimethomorph (Forum): 6 oz/A. (0 dh, REI 12h, Group 15). Apply only in combination with a labeled rate of another non-group 15 fungicide. Do not make more than two sequential applications of Forum before alternating to a fungicide with a different mode of action.

famoxadone plus cymoxanil (Tanos): 8 oz/A (3 dh, REI 12h, Groups 11 & 27).Tank mix with an appropriate contact fungicide (chlorothalonil or copper).

fenamidone (Reason 500 SC): 5.5 fl oz/A. (14 dh, REI 12h, Group 11). Do not rotate with other Group 11 fungicides such as Quadris, Cabrio, or Headline.

fluopicolide (Presidio): 3-4 fl oz/A. (2 dh, REI12h, Group 43). Must be tank mixed with another fungicide with a different mode of action.

fosetyl Al (Aliette WDG): 2 to 5 lb/A. (0 dh, REI 12h, Group 33). Do not tank mix with copper.

mefenoxam plus chlorothalonil (Ridomil Gold/Bravo WP): 2 lb/A. (2 dh, REI 48 h, Groups 4 & M5). Avoid late season applications when plants reach full maturity and begin senescence. Do not plant any crop which is not registered for use with Ridomil Gold active ingredient in treated soil for a period of 12 months.

potassium salts of phosphorous acid (ProPhyt, Agri-Fos, Fosphite): Rates vary with formulation. (0 dh, REI 4h, Group 33). Do not apply to plants that are heat or moisture stressed. Copper phytotoxicity may occur if applied in alteration with copper.

propamocarb HCl (Previcur Flex): 1.2 pt/A. (2 dh, REI 12 h, Group 28). Alternate with a contact fungicide (copper, chlorothalonil, sulfur).

pyraclostrobin (Cabrio EG): 8 to 12 oz/A. (0 dh, REI 12h, Group 11). Do not make more than one application before alternating with a non-Group 11 fungicide.

pyraclostrobin plus boscalid (Pristine): 12.5 -18.5 oz/A. (0 dh, REI 12h, Groups 11 plus 7). Do not make more than one application of Pristine before alternating to another non-strobilurin (Group 11) fungicide.

Where trade names or commercial products are used, no company or product endorsement is implied or intended. Always read the label before using any pesticide. The label is the legal document for product use. Disregard any information in this newsletter if it is in conflict with the label. For a more complete list of fungicide recommendations, see the New England Vegetable Management Guide (www.nevegetable.org).

SAP BEETLES

Sap beetles are usually secondary pests of sweet corn usually associated with damage caused by other pests. Sap beetles overwinter as adults or pupae in crop refuse, decomposing corn ears, or decaying fruit on the ground. Eggs are laid in spring. There are several generations per year. They are more likely to be a problem on farms producing a variety of vegetable and fruit crops. They can also be pests of strawberry.

Dusky sap beetle is black and plain (3.5-4.5mm long), while four-spotted sap beetle (also known as picnic beetle) is black with four irregular yellow spots (5-6mm long). (3 photos; see photos credits for authors)

Adults are first noticed about the time that tassels appear. They may invade corn borer tunnels or areas with other insect or bird damage, feed on pollen or silks, and may lay eggs in these sites or in silks at the tip of ears. Eggs are milky white and resemble tiny grains of rice. The larvae are small, pinkish white or creamy colored grubs about ¼ inch long. They may hollow out kernels of the upper half of the ear.

Monitoring. Sample for sap beetles when silks begin to wilt. Inspect the silk area at the tip of 20 ears at each of five sites and determine the percent of ears infested with adults, eggs, or larvae. Sprays for other ear pests usually control sap beetles, but if other pests are absent and more than 10% of ears are infested with sap beetles, treat for sap beetles. Insecticides used to control ECB and CEW,including synthetic pyrethroids, may reduce sap beetle. Insecticides will not completely control heavy infestations.

Cultural practices. Ears with exposed tips, especially super sweet and Bt varieties are susceptible to infestation. To prevent or reduce damage, select varieties that have good tip cover, use clean cultivation, control ear-infesting caterpillars and remove or bury decomposing fruit on a regular basis. Sanitation is important to prevent successful overwintering and reproduction during the season. Bury corn residue especially decomposing ears; remove or bury of alternate hosts such as rotting tree fruit or discarded vegetables. Burial should be deeper than 10 cm.

CORN REPORT

The first sweet corn of the year hit farm stands this week. This mostly represents the early varieties that were started under plastic. Hand picked ears are full and sweet with nice color. The early corn has brought eager customers into farm stands increasing sales of other vegetable crops as well. Despite the early season setback, harvesting has started.

The first generation of European corn borer flight is over with trap counts at zero or slightly above. We are between ECB flights, expecting the second flight to begin within the next 7-14 days. Scouting of tasseling corn continued this week with many fields below threshold, but "clean up" from the first generation may be needed. We found a few random fourth instar caterpillars feeding inside the stalk of the tassels. Look for feeding damage, frass or ECB larvae, making sure to check the entire stalk of plants to see if borers are starting to move down towards the developing ears. If necessary, drop nozzles can be used to hit silks directly to control borers before they enter the ears.

This is the time of year when sweet corn pest management switches from European corn borer to corn earworm. We should expect trap counts to rise in the next few weeks. Know what you are looking for: Adult moths are light tan with a distinctive dark spot on each forewing. Live moths have bright green eyes. CEW larvae may be brown, tan, green or pink with light and dark longitudinal stripes. The head capsule is always plain golden brown, and the body is rough with small bumps and hairs.

Keep in mind that trap capture thresholds are much lower for CEW than ECB. See table below for thresholds. At 2 or more moths per week, growers need to be on a 6 day schedule in silking corn. Flight monitoring is the best way to protect your fields from an earworm infestation. Place two traps per field in areas where fresh silk is present. Move traps weekly to ensure that they remain in fresh silk in order to attract adult moths as soon as they arrive. Remember to changes lures every two weeks. Growers are beginning to put up traps for fall armyworm though no flight has been captured. A universal moth trap can be used to monitor for FAW. Place traps in whorl stage corn at the height of the plants. Lures for FAW should also be changed every other week and can be purchased from Great Lakes IPM. For details about scouting procedures, pest ID and monitoring, thresholds and other aspects of sweet corn scouting download a copy of the Sweet Corn IPM Scouting Guide from our web site www.umassvegetable.org or call our office for a free copy 413-545-3696.

Corn Earworm Threshold		
Moths/Night	Moths/Week	Spray Interval
0-0.2	0-1.4	no spray
0.3-0.5	1.5-3.5	every 6 days
0.6-1	3.6-7	every 5 days
1.1-13.0	7.1-91	every 4 days
Over 13	Over 91	every 3 days

UPCOMING MEETINGS

Mid New England Grain Conference and Festival: 'Bread, Beer & Biodiversity'

July 14 - 15, 2011 9:00 a.m. – 4:30 p.m.

Join us for our two day event to learn about the reintroduction of grains into NE farming systems and to celebrate the harvest with a festival on the second day. Come and listen to a variety of speakers whose expertise in grain breeding, production, marketing, and value-added products will have you planting your own field of grain in no time!

Day 1: July 14 – Growing Local Grains Conference

UMass Crops, Animal, Research and Education Farm, 89-91 River Rd, North of RT. 116, South Deerfield MA (Exit 24 on I-91)

Day 2: July 15 – Community Grain Festival

Colrain Seed Farm, 400 Adamsville Road, Colrain, MA 01340

Cost is $25* per day per person or $40* for both days per person. (* includes lunch)

Please Mail Registration by July 8, 2011 to:

Jacqui Carlevale University of Massachusetts Extension

305 Bowditch Hall, 201 Natural Resources Rd., Amherst, MA 01003-9294

If you have questions or would like to register by phone or email, Phone: 413-545-5221 Email: jcarleva@psis.umass.edu

For further information visit: http://extension.umass.edu/vegetable/

Fruit Growers Summer Meeting

Monday July 18, 9:00 - 2:00pm

Parlee Farm, Tyngsborough MA

For more information contact Fruit Growers Association, Wes Autio 413-545-2963 autio@pssci.umass.edu.

Workshops for Beginning and Established Farmers presented UMass Vegetable Program Extension Educators

Insecticide Application and Pesticide Safety - Ruth Hazzard, UMass Extension

Wednesday July 20 10:00am-12:00pm

Nuestras Raices Farm, 24 Jones Ferry Rd, Holyoke, MA

Vegetable Production Educator Participants will learn how to identify damaging pests, and the basics and safety of choosing an insecticide for application.

To register call Amy at 413-535-1789

UMass Crops Research & Education Center Field Days

August 2nd & 3rd

2pm-6pm dinner & open house to follow

UMass Crops Research and Education Farm, 89 – 91 River Road South Deerfield, MA

Tuesday August 2: Renewable Energy, Biochar, & Pasture Systems

Topics include:

Pasture and grazing management: species composition, corn sylage hybrids evaluation, use of photovoltaics on existing pasture

Energy crops – switchgrass, grain corn, sunflower, & canola

Alternative field crops including Kenaf

Deep zone tillage

Ammonia Volatility, Gas Emisions

Wednesday August 3: Innovations in Vegetable Crops

Topics include:

Crops & systems for winter harvest and sales

Deep zone tillage for vegetable crops

Alternative materials for managing cabbage maggot

Heating your greenhouse with grain corn

World Crops – maxixe, taioba, chipilin, and roasting corn

Alternative vegetable crops including fava bean & edamame

Weather monitoring & pest forecasting services

Nutrient Density Research

Student Farming Enterprise

Hosted by UMass Center for Agriculture, UMass Extension Vegetable and Crops, Dairy, Livestock Programs, and the College of Natural Sciences.

Come and discover innovative ways to diversify your farm and farming practices!

Dinner will be served at 6pm. Informational & vendor booths will be open before & after dinner for more discussion. This event is free and open to the public.

For more information contact the UMass Extension Vegetable Program

Web: www.umass.vegetable.org Email: umassvegetable@umext.umass.edu Phone: 413-545-3696

Northeast Organic Farming Association 2011 Summer Conference

August 12-14, 2011

UMass Amherst

Keynote Speakers: Eric Toensmeier, Perennial Edibles Expert, and Dr. Ignacio Chapela of UC Berkeley, GMO Activist.

Over 200 Workshops on Organic Gardening, Farming, Food Politics, Permaculture, Homesteading, Landscaping, Draft-Animal Power, Alternative Energy, Livestock, Cooking, and more! Hundreds of Vendors and Exhibitors. Live Entertainment. Children's and Teen Conference. Country Fair and Farmer's Market. Silent Auction. This year NOFA is proud to partner with the Draft-Animal Power Network. Spend the weekend or come for the day. Activities for all ages.

To register: www.nofasummerconference.org

Email: info@nofasummerconference.org

Call: 978-355-2853

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