

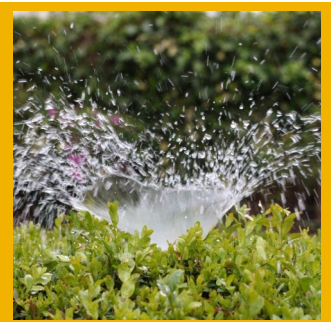


**EASTERN IDAHO**

# PEST ALERT

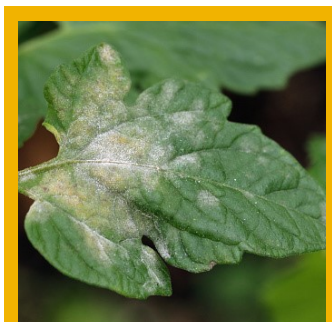
BANNOCK, BINGHAM, BONNEVILLE, CASSIA, FREMONT, JEFFERSON, AND MADISON COUNTIES

## INSIDE THE ISSUE



**GOOD**

PG 2



**BAD**

PG 4



**PHOTO OF THE WEEK**

PG 11



**CODLING MOTH**

PG 6



**FIREBLIGHT**

PG 10

# Watering practices for the vegetable garden

By Ron Patterson, Extension Educator

People will often tell me they water their garden when the soil looks dry. If the roots of the plant were all at the soil surface level, I might agree with them. However, vegetable plant roots can be from 6 to 36 inches deep. Combine this information with different soil types and different irrigation systems and the question of how much and when to irrigate becomes somewhat complicated.

Stop looking at the soil surface to determine when you need to irrigate. Use the following information to help you become better irrigators.

## Root depth

While not always practical, for irrigation purposes it is nice to group your vegetables by their effective rooting depth (top 50% of root zone). Since your summer vegetables are already planted, this is just information.



Shallow roots (12" – 18")	Medium roots (18" – 24")	Deep roots (24" – 36" +)
Arugula (6")	Bean	Asparagus
Celery	Beet	Corn
Chives (6")	Broccoli	Melons
Endive (6")	Cabbage	Parsnip
Escarole (6")	Carrot	Pumpkin
Fennel (6")	Cauliflower	Squash
Garlic	Collard	Tomato
Kohlrabi	Cucumber	Watermelon
Lettuce (6")	Kale	
Onions	Okra	
Radish	Pea	
Shallots	Pepper	
Spinach (6")	Potato	
Swiss chard	Turnip	

As a general rule, the height of the plant (or length of the vine) will indicate the relative depth of the root. However, because vegetables are all grown together, you will need focus on the plants with the greatest need.



### Water holding capacity

The water holding capacity of your soil will depend on the soil texture and the soil organic matter (SOM). The texture is what it is, and is based on the percent of sand, silt and clay. Sandy soils will only hold 1" or less of plant available water per foot of soil depth—consider that to be the water "fuel tank". Loamy soils, (nearly equal parts of sand, silt and clay) can hold up to 2.5" of plant available water. Every one percent increase in SOM in the top six inches of the soil will increase the water holding capacity by another 0.75 inches of plant available water.

When you are working on the bottom half of the fuel tank, you won't see plant wilting, but you will likely experience reduced yields. So, ideally, use one half of the plant available water then replace it. If you have a sandy soil with high SOM you would be using and replacing over 0.75 inches of water  $((1.0 + 0.75)/2)$  for every foot of root depth. A loamy soil with high SOM will be closer to 1.6 inches of water  $((2.5 + .75)/2)$  for every foot of root depth.

### Delivery system

Most gardeners have moved away from **flood irrigation** in the vegetable garden. There is still a lot of sprinkler irrigation, but many people are moving to drip irrigation.

**Sprinklers** are quite easy to measure. Place a few soup cans in the garden area and turn on the sprinklers. Run them for a given amount of time and average the depth of the water in the cans.

**Drip irrigation** can be a little more complicated. The first thing is to understand the application rate of your emitters. They can range anywhere from 0.2 gallons per hour (gph) to 1.5 gph. The most common are 0.6, 0.9 and 1.0 gph.

So, what does a gallon per hour mean? Here is the magic number to help understand:

0.623 gallons = 1" x 12" x 12"

In other words, 0.623 gallons is one inch of water over one square foot. So, all you need to do is figure out how long to run the system to supply 0.623 gallons of water at each emitter.



Drip Photos: Ron Patterson



There are different emitter spacings, but the most common is 12 inches.

1 gph emitter  $(60 \text{ minutes} \times 0.623)/1 \text{ gph} = 37.38 \text{ minutes}$  (37 minutes 23 seconds)

0.9 gph emitter  $(60 \text{ minutes} \times 0.623)/0.9 \text{ gph} = 41.53 \text{ minutes}$  (41 minutes 32 seconds)

0.6 gph emitter  $(60 \text{ minutes} \times 0.623)/0.6 \text{ gph} = 62.3 \text{ minutes}$  (1 hour 2 minutes 18 seconds)

You can use this formula for any emitter rating.

The other concern about using drip irrigation is that you are essentially reducing the spread of the root zone. The depth will be there, but because you are not watering between the rows the roots will not spread out. This means you will need to water more frequently with drip irrigation.

As an example, I have one-gallon emitters, spaced 12 inches apart. During the hot part of the summer, I will water every other day for 45 minutes. This helps the shallow-rooted crops. Every third time, I will water an extra 45 minutes for the deep-rooted crops.

### Irrigation frequency

How do you know when to irrigate if the top of the soil is dry? The easiest way is to take a long screwdriver and poke it into the soil. If it goes in easily, you do not need to water. If it is difficult to push in, you should probably water soon. Watch your crops, they will tell you if you are being too slow to give them a drink.

Improper irrigation is one of the most common causes for the plant problems that come in to the office.

Watering practices for the vegetable garden



## Powdery Mildew

By Ron Patterson, Extension Educator

Powdery mildew in eastern Idaho is most common in the cucurbits—cucumbers, squash, pumpkins, melons, and gourds. This past year was the first time I had a significant infestation of powdery mildew in my tomato plants. You will often see it in roses, lilacs, and apples. A couple of years ago I had powdery mildew on the grass beneath a spruce tree. There is a species that infects field bindweed—I like that one.

It usually shows up in ornamental and vegetable plants in late summer and fall. So why worry about it now? Because it's best to be prepared for prompt action as soon as it shows up, and I have seen it on

pansies in late spring.

There are many different powdery mildew

species, and the individual species are specific to a limited family of plants. For example, the powdery mildew that infects cucurbits, does not infect tomatoes. However, the spores and overwintering bodies of various species are pretty much everywhere. So, when conditions promote one powdery mildew species, they will also promote species that infect other plants as well.



## Conditions

Powdery mildew requires live tissue to grow and develop, but unlike most fungal infections it does not require free liquid. Conditions that favor powdery mildew are:

- High humidity at night
- Low humidity during the day
- 70 – 80F temperatures

It is most common to experience powdery mildew in late-summer and fall growing conditions when plant canopies are large and air flow is limited, increasing humidity.



garden refuse, be sure the temperature gets above 140F for several days, turn the pile and increase the temperature again. Plant material that has not been properly composted can host the spores that will reinfect your garden the next season.

**Air flow**—allow more space between your plants for better air flow to reduce canopy humidity.

**Irrigation**—sprinkler irrigation should be done in the morning so canopy humidity will be less by evening. Drip irrigation will reduce canopy humidity.

**Fungicide**—apply an appropriate fungicide as a preventive method, or as soon as the first symptoms show up to reduce the spread to new leaves and plants. Be sure to rotate between fungicides with different modes of action to reduce the risk of resistance.

Powdery mildew in trees and shrubs is not usually fatal, but heavy infestation every year will reduce plant vigor. Apple fruit quality is often affected by this disease.

So, select resistant plants and be prepared to act when powdery mildew shows up in your yard and garden.



## Signs and symptoms

Powdery mildew starts as small (less than ¼ inch) white spots on the leaves. It is most common on the upper leaf surface but will often move to the underside as well. As the fungal spots become larger, photosynthesis is reduced, yield is reduced, and fruit quality may also be affected. A heavily infested plant will have a white, powdery substance covering the leaves, and perhaps the petioles, stems, and fruits (tomatoes have distinct yellow spots).

## Control options

**Cultivar selection**—plant resistant cultivars. If you have consistent powdery mildew infections every year, consider selecting a different cultivar when you shop in your seed catalogues. The descriptions will usually indicate resistant to various diseases, including powdery mildew. This is especially true of cucumbers, squash, and melons.

**Sanitation**—till in or clean up plant material that has been infected with powdery mildew. If you compost your



# Codling Moth:

## Conventional production options

- *High fruit damage* in past years:
    - Apply the first application for either Option A (insecticide) or Option B (oil) at the listed date.
    - For Option A, repeat the insecticide spray 14 days later, for a total of 2 applications in the first generation.
    - For Option B, apply the insecticide spray at the listed date once.
    - When the “start date” for the 2nd generation is provided, spray every 10-18 days until Sept. 15.
    - Pick a different product to use for each generation.
  - *Low fruit damage* in past years:
    - Apply the first application for either Option A (insecticide) or Option B (oil) at the listed date.
    - For Option A, do not spray again.
    - For Option B, apply insecticide at the listed date.
    - Wait until the “start date” for the 2nd generation is provided, and spray on that date, and repeat 14 days later, for a total of 2 sprays.
    - Do the same for the 3rd generation.
- Pick a different product to use for each generation.

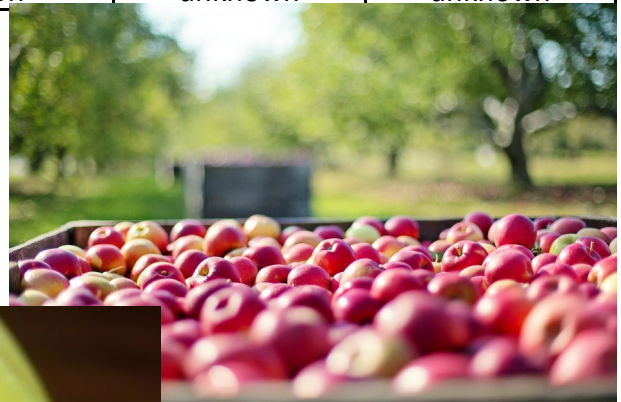
## Organic production options (other than bagging)

- *High fruit damage* in past years:
  - Apply the first application for either Option A (insecticide) or Option B (oil).
  - For Option A, repeat twice, spaced 7-10 apart, for a total of 3 applications in the first generation.
  - For Option B, apply insecticide at the listed date and re-apply 7-10 days later.
  - When the “start date” for the 2nd generation is provided, spray every 7-10 days until Sept. 15.
  - Pick a different product to use for each generation.
- *Low fruit damage* in past years:
  - Apply the first application for either Option A (insecticide) or Option B (oil).
  - When the “start date” for the 2nd generation is provided, spray every 10-14 days until Sept. 15.
  - Pick a different product to use for each generation.





Second Generation				
Location	Start of 2 <sup>nd</sup> Generation hatch	Start of Peak Egg Hatch 2 <sup>nd</sup> Generation	End of Peak Hatch 2 <sup>nd</sup> Generation	End of 2 <sup>nd</sup> Generation
Burley	July 31	unknown	unknown	unknown
Pocatello Airport	August 1	unknown	unknown	unknown
Pocatello East Side	July 24	unknown	unknown	unknown
Fort Hall	unknown	unknown	unknown	unknown
Blackfoot	unknown	unknown	unknown	unknown
South/East Idaho Falls	unknown	unknown	unknown	unknown
Idaho Falls Airport	unknown	unknown	unknown	unknown
Ucon	unknown	unknown	unknown	unknown
Rigby	unknown	unknown	unknown	unknown
Ririe	unknown	unknown	unknown	unknown
Rexburg	unknown	unknown	unknown	unknown
Sugar City	unknown	unknown	unknown	unknown
St Anthony	unknown	unknown	unknown	unknown
Driggs	unknown	unknown	unknown	unknown



UGA5302068

Whitney Cranshaw, Colorado State University, Bugwood.org



Ingredient	Efficacy	Residual length (days)	Comments
<b>Conventional</b>			
Carbaryl (old Sevin prod-	Good	14	
Gamma-cyhalothrin (Spectracide Triazicide)	Good to Excellent	14 – 17	Last application at least 21 days prior to harvest
Malathion (Bonide Malathion, Hi Yield Malathion)	Good	5 – 7	Max 2 applications; some products are pears only
Zeta cypermethrin (Garden Tech Sevin)	Good to Excellent	14 – 17	Last application at least 14 days prior to harvest
<b>Organic</b>			
Azadirachtin (Safer BioNeem)	Fair to Good	7 – 10	
Codling moth virus (Cyd-X)	Good (if populations low)	7	Works best when used at beginning of generation
Kaolin clay (Surround)	Fair	7	Produces protective barrier
Oil (All Seasons Oil, EcoSmart, Neem)	Fair	3	Recommended for the first application of the generation only
Pyrethrin (Ortho Fruit Spray, Fertilome Fruit Tree Spray, Safer End All)	Good	3 – 5	
Spinosad Monterey/ Fertilome Spinosad	Good	7 – 10	Max 6 applications



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**Fire Blight:** At this point, prune out any new fire blight strikes as they happen. Don't wait until the end of the season or winter/spring pruning. Remember to disinfect your tools between each cut.

<b>Chemical Controls For Fire Blight</b>	Brand Name	Chemical Name	Application Timing
	<a href="#">Bonide</a>	Fixed-copper	Pre-bloom
	<a href="#">Drexel</a>	Copper Sulfate	When wet weather coincides with flowering
	<a href="#">Kocide</a>	Copper Hydroxide	Note: copper can damage foliage and fruit
	<a href="#">Miller</a>	Lime Sulfur oil	Early bloom, Dormant
	<a href="#">FireLine</a>	Oxytetracycline	Early bloom to petal fall
		Kasugamycin	Early bloom to petal fall
	<a href="#">Actigard</a>	Acibenzolar-S-methyl	Early bloom to petal fall

Table and information from Cornell University Extension

**Read and follow pesticide labels with any product**

To manage fire blight, it is important to remove diseased wood during the dormant time (before buds form in spring). A general antimicrobial can be put on green tips to lessen chance of disease. Defense inducers can be applied before bloom. Protectants can also be applied during blooming. Protectants should be applied with the onset of wetting events (heavy rain or moisture). Sometimes post-bloom applications to blossoms give continued protection to shoots.

**Biological products for Fire Blight:** Cornell University Extension

For more information: <https://blogs.cornell.edu/biocontrolbytes/2019/04/26/battling-fire-blight-with-biologicals/>

Product	Active Ingredient	Mode of Action
Firewall	Streptomycin	antibiotic – kills pathogen
Blossom Protect	<i>Aureobasidium pullulans</i> strains DSM14940 & 14941	competitive with pathogen
Bloomtime Biological	<i>Pantoea agglomerans</i> strain E325	competitive with pathogen
BlightBan	<i>Pseudomonas fluorescens</i> strain A506	competitive with pathogen
Serenade Optimum	<i>Bacillus amyloliquefaciens</i> strain QST713	antibiotic metabolites
Double Nickel	<i>Bacillus amyloliquefaciens</i> strain D747	antibiotic metabolites
Serifel	<i>Bacillus amyloliquefaciens</i> strain MBI600	antibiotic metabolites
Regalia	extract of <i>Reynoutria</i> (giant knotweed)	resistance inducer
LifeGard	<i>Bacillus mycooides</i> isolate J	resistance inducer

## EASTERN IDAHO

# PEST ALERT

## UPCOMING EVENTS

### JULY 12 IDAHO HOME GARDEN TIPS

#### INTEGRATED PEST MANAGEMENT

KIMBERLY TATE, EXTENSION EDUCATOR

July 12 | 7:00pm MT

Join us for a class all about choosing the best methods for controlling pests and diseases in the home landscape. IPM focuses on using the most effective and least damaging techniques first. Learn where you can find these techniques.

### JULY 26 IDAHO HOME GARDEN TIPS

#### HARVESTING VEGETABLES

PLANT TALK

### AUGUST 9 NO GARDEN TIPS CLASS!!

### AUGUST 8-12 BONNEVILLE COUNTY FAIR

### AUGUST 23 IDAHO HOME GARDEN TIPS

CONSERVING WATER IN THE LANDSCAPE

### SEPTEMBER 13 TENDER SUMMER BULBS



PHOTO OF THE WEEK: Photo credit: PixelAnarchy

## PHOTO OF THE WEEK:

These beautiful straw flowers are an example of a unique and not very often used flower in our South East Idaho Landscapes, but one that is very happy here and makes some of the most gorgeous cut bouquets. Consider planting something new and unique in your yard this year!

UNIVERSITY OF IDAHO EXTENSION,

BONNEVILLE COUNTY

1542 E 73rd S

Idaho Falls, ID 83402

Phone: (208)529-1390

Fax: 208-888-8888

Email: Bonneville@uidaho.edu

Web: [uidaho.edu/extension/county/bonneville](http://uidaho.edu/extension/county/bonneville)



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