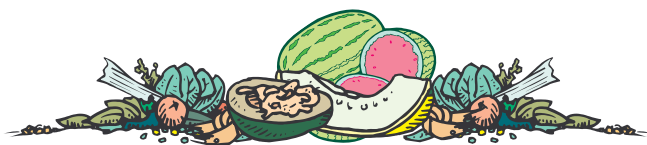


# VEGETABLE CROPS HOTLINE

A newsletter for commercial vegetable growers prepared by the  
Purdue University Cooperative Extension Service

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**NEW CHLOROTHALONIL REI** - (Dan Egel and Fred Whitford) - Fungicides which contain the active ingredient chlorothalonil include Bravo, Echo, Equus and Terranil. The Restricted Entry Interval (REI) for all chlorothalonil products has recently changed from 48 hours to 12 hours with some special provisions. This article will detail those special provisions. Remember the REI is the amount of time that workers need to stay out of the field.

The new chlorothalonil label states that "This product is a severe eye irritant". Therefore, although the new REI is 12 hours, for 6 1/2 days after the chlorothalonil application, entry into the treated area is permitted only when, "At least one container designed specifically for flushing eyes," is available at the "Worker Protection Standard (WPS) - required decontamination site".

In addition, workers must be informed, "in a manner they can understand,": 1) that residues may be highly irritating; 2) that they should avoid rubbing their eyes, etc.; 3) if the workers get residues in their eyes, they should flush their eyes immediately; 4) how to operate the eye flush container.

The new 12-hour REI information for chlorothalonil can be found on the pesticide label under the heading Agricultural Use Requirements. This section is under the Direction of Use and is marked off in a box. Please consult the label for details.

A WPS-required decontamination site is not a new provision of the chlorothalonil label. Each decontamination site must have: 1) enough water for routine and whole body washing as well as eye flushing; 2) soap; 3) single use towels; 4) a clean coverall for use by handlers. The decontamination site should be within 1/4 mile of the employee work site.

WPS standards also require a provision for emergency assistance to workers. This includes providing prompt transportation to workers who have been exposed to pesticides.

WPS training is required of workers and handlers. This can be accomplished through borrowing a video from

Purdue University Cooperative Extension or purchasing it from a commercial supplier.

The change in the REI for chlorothalonil from 48 to 12 hours came about in part due to the work of many individuals within Purdue University Cooperative Extension, letters written by producers to the manufacturers and EPA, and the willingness of the manufacturers to support such a change in the label. The EPA weighed the risks and benefits of a 12-hour REI and decided that the product could be used safely without harm to workers, if the special precautions described were undertaken by growers and their employees. This decision indicates clearly that EPA listens to differing points of view and is willing to compromise. Let's make certain that we justify EPA's confidence in us and obtain the benefits of using products such as chlorothalonil while simultaneously protecting ourselves and our employees against illness and injury.



## SEASON EXTENSION TECHNIQUES -

(Roy Ballard, Floyd County Extension Educator) - Home and market gardeners alike are aware of the climatic limitations and uncertainties that occur in the early spring and late fall. Farmers who try to derive part of their income by growing vegetables for local markets appreciate the importance of extending the growing season to secure a premium price and establish an early market "presence".

Sheltering tender plants from cold spring (or fall) conditions offers significant benefits for extending the growing season and there are many tools and techniques to help them do so. The use of modern horticultural plastics - often referred to as Plasticulture - makes possible the production of warm season crops (tomatoes, squash, peppers etc.) up to a month earlier in the spring (or later into the fall). The choice of which season extension system is most appropriate depends not only on the crop but also on the amount of time, energy and money that one cares to invest in the venture.

Each system has in common the potential of using inexpensive plastic products to make them successful. Horticultural plastics have evolved from the translucent, impervious sheet goods that readily deteriorated in sun and wind to a diverse array of products that vary in color, light transmission, durability and porosity (ability to "breathe"). Producers will quickly realize that there is no *one* best system or product and that each will have its own merits for different applications.

### Cloches and Hot Caps -

Evolved from bell-shaped glass jars once placed over individual plants, modern cloches may look more like a wax paper cone or a water filled plastic tee-pee. In some cases they may cover an entire row when a sheet of semi-rigid fiberglass is bent into an arch and fastened to the ground on two sides. A less expensive cloche may be made by simply cutting away the bottom of a common milk jug to be placed over a single plant. To avoid overheating through the day the cap may be removed to create a vent.

### Low Tunnels and Floating Row

**Covers** - These systems employ a spun bond polyester fabric which is laid over an entire row or rows of a crop and sealed along the edges to trap heat and avoid its loss to the wind. Often used in conjunction with a plastic mulch and drip irrigation, these systems differ only in that the "tunnels" in the low tunnel system are created with the use of wire hoops to avoid contact of the fabric with plant foliage. Both can offer 4-5 degrees of frost protection and have the added benefits of screening damaging



insects and diseases so that yields are not only earlier and larger but often of better quality. For those crops that are sensitive to heat or require pollination care must be taken to remove these in a timely manner.

**Cold Frames and Hot Beds** - Also referred to as “sun boxes” or “solar pods” these rather simple structures provide a favorable growing environment, for some crops, well into the winter months. These can be large and elaborate like a small greenhouse (hotbeds) or quite simple with the only source of heat being the sun (cold frame). Either can be permanent or mobile to satisfy changing needs. Newer designs incorporate a means of passive collection of solar heat through the day to be released as needed at night when temperatures plunge. These systems excel as a place to start young seedlings for later transplanting or for starting sweet potato “slips”. Either may be covered with a single or double layer of polyethylene or fiberglass.

**High Tunnels** - Also referred to as “hoop houses”, high tunnels are a compromise between the unheated low tunnel or row cover and the conventional heated greenhouse. While they are large enough to walk into with a roto-tiller they typically are unheated except on extremely cold nights and are narrow enough to ventilate naturally through roll up sides. In their simplest of designs high tunnels are constructed of PVC or light metal bows and are covered with one or 2 sheets of polyethylene. They can yield high quality, clean, and disease free tomatoes up to a month early but will require twice daily care to ventilate even on cool sunny days.

There are several ways to extend the growing season, though none are without expense. Each type will require significant planning and preparation and each will be most successful where they are complimented by proper site selection and soil drainage, windbreaks and appropriate variety selection.

Plasticulture should be viewed as an integrated system that includes plastic mulch, appropriate structures and coverings and drip irrigation. If you are considering ways to extend your growing season at home or on the farm, you can contact the Floyd County Office of the Purdue Cooperative Extension Service at 948-5470 for help in choosing the system that is right for you.



**CORN FLEA BEETLES AND STEWART’S WILT** - (*Rick Foster and Dan Egel*) - One of the few insects for which we can predict the effects of winter temperatures on their survival is the corn flea beetle. In general, the warmer the winter, the more beetles we would expect to survive. Corn flea beetles are particularly important to sweet corn growers, because the beetles carry a bacterium that causes the disease, Stewart’s bacterial wilt. Greater flea beetle survival means an increased threat of Stewart’s wilt.

You can figure the potential for Stewart’s wilt on your farm by adding the average monthly temperature (in degrees Fahrenheit) for December, January, and February. If the sum of these averages is less than 90, the disease is not expected to be serious. If the sum is between 90 and 100, then epidemics of moderate severity are expected. Sums greater than 100 indicate that the disease is expected to be severe and destructive. Given the weather we experienced this winter, it doesn’t take a rocket scientist (or even an entomologist) to realize that flea beetle survival is likely to be quite good and, therefore, there is good potential for Stewart’s wilt this year. The table below summarizes the disease potential for several locations in the state.

Site	Dec.	Jan.	Feb.	Sum	Disease Threat
Wanatah	33.7	31.7	30.9	96.3	Mod.
Wheatfield	34.0	31.8	31.6	97.4	Mod.
Young America	35.0	32.5	33.1	100.6	High
W. Lafayette	35.0	32.3	32.3	99.6	High
Tipton	35.4	32.5	32.7	100.6	High
Greenfield	36.6	32.3	34.3	103.2	High
Greencastle	35.9	32.8	32.5	101.2	High
Terre Haute	37.2	36.9	33.7	107.8	High
Bloomington	38.1	34.4	35.0	107.5	High
Milan	37.7	34.3	33.9	105.9	High
Freelandville	38.6	35.7	36.2	110.5	High
Dubois	39.9	36.3	38.9	115.1	High

We should issue one word of caution regarding these predictions. The temperature model only takes into account the survival of the flea beetles during the winter. It does not consider the number of beetles present going into the winter. Last year, flea beetle populations were extremely low. Even though survival may have been high, there still may not be enough flea beetles present to cause the high amounts of Stewart’s wilt that the model predicts. It would be prudent to select a sweet corn variety that is resistant to Stewart’s wilt if possible, but regular scouting during the early season will be necessary to determine if the predicted high flea beetle populations actually occur. Sweet corn varieties and their relative resistance to Stewart’s wilt were listed in the December issue of the *Vegetable Crops Hotline* (Issue # 399).

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