

VEGETABLE CROPS HOTLINE

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

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From The Editor's Desk

(Petrus Langenhoven, plangenh@purdue.edu, (765) 496-7955)

Welcome to the [Vegetable Crops Hotline](#) (VCH), Purdue Extension's exclusive newsletter for people in the business of growing vegetables.

This issue features articles on potato insect pests and includes an insect spotlight article on Syrphid flies. We also examine the weather and get updates on auction prices from the Clearspring Produce Auction.

Website Links

Frequently, we include links to websites or publications available online. If you can't access these resources, don't hesitate to contact your local Extension office or us to request a hard copy of the information.

Midwest Vegetable Production Guide

The *Midwest Vegetable Production Guide* is now available for growers to visit online at mwveguide.org. You can also download a free copy of the guide from your computer at mwveguide.org/guide. You may also purchase a hard copy for \$12 from Stephen Meyers, slmeyers@purdue.edu.

Do not hesitate to contact me at plangenh@purdue.edu if you have any questions or suggestions for improving the newsletter. Let me know if there are specific topics you

would like to see more of in the newsletter. Also, let us know if things are not working for you. We want to improve the newsletter, and your input is valuable.

We hope you enjoy the newsletter. Happy reading!

Potato Pests Abundant in Northern Indiana in late May

(Laura Ingwell, lingwell@purdue.edu, (765) 494-6167)

During a recent visit to some potato fields by an Extension Educator in LaGrange County, it was evident that growers need to be on the lookout and take action against some of our major pests in this cropping system. These recent observations revealed cutworms present and impacting every 5th plant in the field, as well as an abundance of all life stages of the Colorado potato beetle, evidence of feal beetle damage, and potato leafhoppers bouncing about, leaving minor traces of hopper burn on some plants. Regardless of where you are in the state, if you haven't done so in a while, go out and scout your potatoes! Below I will review the diagnosis and recommendations of each of these pests.

Cutworms

This is a common name for caterpillars from the Lepidopteran family Noctuidae. The adult moths and larvae are active at night. To diagnose the damage in potatoes, you should dig at the base of plants that display chewing damage on the leaves or stems. Buried in the soil, you may find a drab-looking caterpillar that will curl into a 'c' shape when disturbed (Figure 1). In this particular potato field, you could see the cut stem of the plant, sap or wet spots on the soil, and loose disturbed soil at the base of affected plants. During the night these caterpillars will dig out of the soil and feed on the plant material.



Figure 1. Cutworm damage and caterpillar from a potato field (Photo by Jeff Burbrink).



Figure 2. Colorado potato beetle adult (Photo by John Obermeyer).



Figure 3. Colorado potato beetle eggs (Photo by John Obermeyer).



Figure 4. Colorado potato beetle larvae (Photo by John Obermeyer).

Colorado Potato Beetle (CPB)

This Chrysomelid, or leaf-feeding beetle, overwinters in the soil near the previous year's crop, emerges in the spring, and migrates to the new potato planting. The adults will then feed on the foliage (Figure 2), deposit yellow egg masses (Figure 3; similar to ladybeetle egg masses) on the leaves, and eventually die. The larva hatch from the egg, feed on foliage and they transition through several larval stages (Figure 4), then drop to the soil to pupate. The best way to manage this pest is to scout for emerging adults in the spring and treat the plants when the eggs are present and beginning to hatch. This will minimize their impact on the crop and reduce the second generation. Despite the name, CPB can feed on a variety of solanaceous crops, including eggplant, pepper, and tomato, however potato is preferred. For potatoes, prior to flowering, the plants can withstand up to 30% defoliation while retaining yields. After flowering, the damage level reduces to 6-8% defoliation, beyond that you will experience reductions in yield.

Flea Beetles

There are nine different species of flea beetles in Indiana. This insect was the featured spotlight in the last issue of the hotline. The species that specializes on solanaceous plants is the potato flea beetle, one of the relatively smaller species. They move quickly and jump from the plant when disturbed so you may not see the insect, but their damage to leaf tissue is diagnostic. The adults emerge from the soil in mid-spring and feed on young foliage of potatoes, tomatoes, eggplants, and peppers, along with a variety of common weeds that belong to the solanaceous family. They will not directly damage the fruits or tubers but leave shot holes in

the leaf tissue. High infestations can reduce fruit/tuber yield as the loss of the plant materials decreases the capacity of the plant to photosynthesize. Flea beetle populations rarely reach economically damaging levels in potatoes but can be controlled with foliar insecticide applications. To monitor, use a sweep net and walk in an 'M' shape across the field. Sweep the net back and forth with each step. After 50 steps (sweeps), carefully examine the contents of the net. If you collect 10 or more beetles per 50 sweeps using a 15-inch net, treatment is warranted.



Figure 5. Flea beetles and their associated damage on potatoes (Photo by John Obermeyer).



Figure 6. Potato leafhopper damage on a potato plant (Photo by John Obermeyer).



Figure 7. Various life stages of the potato leafhopper (Photo by John Obermeyer).

Leafhoppers

Leafhoppers are small green insects belonging to the Order Hemiptera, i.e., true bugs. They feed on plants with a piercing-sucking mouthpart, much like aphids, and therefore do not leave holes behind on the plant. However, the saliva that they use to lubricate their mouth parts and facilitate feeding contains toxins that change the appearance of the plant, causing hopper burn (Figure 6). This is a yellowing that occurs around the leaf edges where the insect has fed. These insects are once again small and move quickly, making them difficult to see. However, instead of jumping like flea beetles, they kind of shuffle sideways on the plant. Review images of the larva and adult to aid in scouting recognition (Figure 7). Plants should be treated with a foliar insecticide application when one or more nymphs per 10 leaves are detected. The hopper burn caused by their feeding is diagnostic of their presence in the crop. Waiting for hopper burn to occur may be too late to avoid yield-reducing damage.

Management

To see the latest pest management recommendations for potato insects, refer to the *Midwest Vegetable Production Guide (ID-56)* or check out the potato insect management bulletin (*E-96*). All of these insect pests can be managed with foliar insecticide sprays. Resistance has been documented among several different populations so be sure to monitor the efficacy of products you apply and always rotate the active ingredients, referencing the IRAC (insecticide resistance action committee) code of each product and moving between codes with each application. For organic growers, Spinosad products are best for CPB control and need to be used strategically to maximize the impact and delay resistance. Critical timing of an application when egg masses have hatched and the larvae are young provides excellent control.

Insect Spotlight: Syrphid Flies

(Allison Zablah) & (Laura Ingwell, lingwell@purdue.edu, (765) 494-6167)

The presence of syrphid flies, also called hoverflies, is a welcome sight in agricultural landscapes. Syrphid flies contribute to pollination, pest suppression, and

decomposition. There are four subfamilies of syrphids: Pipizinae, Eristalinae, Microdontinae, and Syrphinae. Larvae from the Eristalinae subfamily act as recyclers, feeding on decaying organic matter. The Pipizinae subfamily includes species whose larvae feed on root aphids, helping with the control of below-ground pests. Microdontinae is unique among syrphids as their larvae are myrmecophilous, living in ant nests and feeding on ant broods. The Syrphinae subfamily, the focus of this article, are natural enemies of soft-bodied insects, particularly aphids, and are the ones mainly encountered in vegetable fields and high tunnels in Indiana!

Although the bright and colorful patterns on the adults may lead to confusion with bees and wasps, syrphid flies are true flies (Order Diptera), possess two wings and short antennae. They undergo complete metamorphosis (Figure 1), transitioning from egg to larva, pupa, and adult. The larvae may sometimes be confused with those belonging to the Cecidomyiidae family, aphid predatory midges. However, syrphid larvae are less brightly colored, appear segmented, and lack chewing mouthparts (Figure 2). Syrphids lay their eggs (Figure 3) near aphid colonies or flowers. Eggs hatch and feed on soft-bodied insects, such as aphids, as they progress through several larval stages. When they are done feeding, they pupate either in the soil or on the plant (Figure 4).

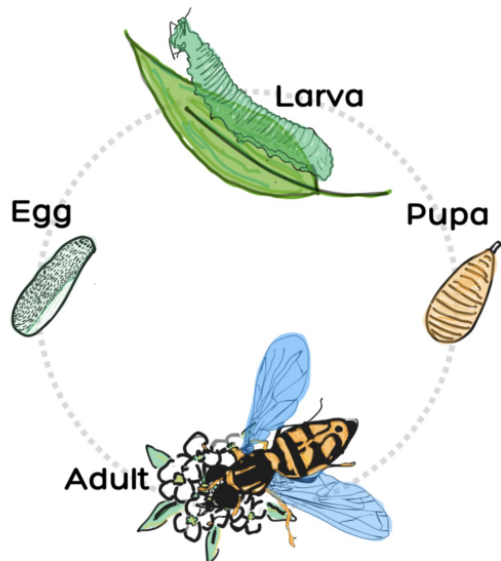


Figure 1. Syrphid fly lifecycle (design by Sheyla Zablah).



Figure 2. The larva of a predatory midge fly Cecidomyiidae (top panel) and a syrphid fly (bottom panel) (Photos by John Obermeyer).



Figure 3. Syrphid larvae (Photos by John Obermeyer).



Figure 4. *Eupeodes americanus* larva (panel a; photo by Allison Zablah), pupa and adult (panel b) (Photo by John Obermeyer).

There is a wide variety of syrphid species in Indiana (Figure 5), which can be found throughout a variety of habitats, from cornfields to gardens and forests. We typically observe syrphid flies in late spring and summer. In fact, we can confirm their presence in our research high tunnels since late April. As our field season begins, we have noticed syrphid flies, specifically *Eupeodes americanus*, on spinach crops from a fall planting in high tunnels, where aphids were present, typically finding 2-3 larvae per plant. In addition to monitoring the crops at our research farm, we visit other farms. During these visits, a lot of *Toxomerus marginatus* adults (Figure 6) are present, especially where polyculture

and flowers, such as sweet alyssum, are being grown.



Figure 5. Syrphid fly adults pollinating a variety of flowers (Photos by John Obermeyer).

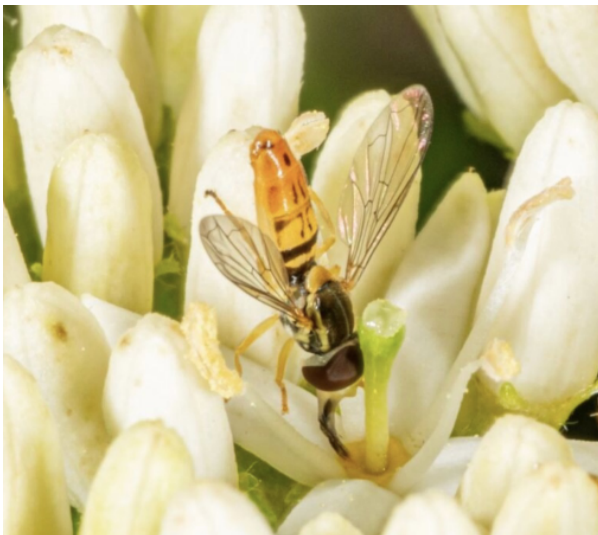


Figure 6. *Toxomerus marginatus* adult (Photo by John Obermeyer).

Understanding and promoting the presence of syrphid flies in agricultural settings can enhance crop pollination and pest control, making them valuable allies in sustainable farming practices. This is one insect you want to have around, even if they do bother you in late summer when hordes of them land on your body for a sip of sweat!

Watermelon Update

(Wenjing Guan, guan40@purdue.edu, (812) 886-0198)

By now, most watermelons have been planted in southern Indiana, and most fields are currently in the vegetative growth stage. The earliest planted fields have begun to set fruit.

In the past two weeks, I have observed herbicide damage in a few watermelon fields. Although the application rate and

method were consistent with the labels and have worked well in previous years, heavy rainfalls immediately following herbicide application and transplanting could have splashed the chemicals onto newly planted seedlings, potentially causing damage. Additionally, runoff after heavy rains may have carried higher concentrations of herbicide to lower areas of the fields, resulting in damage.

The frequent rains throughout April and May have made fieldwork particularly challenging this year. In some cases, planting was delayed, causing transplants to become stressed as they remained in small-cell trays for an extended period. These stressed transplants, combined with high temperatures shortly after transplanting, have led to transplant establishment failures or stunted growth in some fields.

Farmers are now starting fungicide applications. Some are curious about the status of **MELCAST**. The **MELCAST** site (melcast.info) is operational. Watermelon and cantaloupe growers can find the updated EFI values by selecting a nearby location. For those new to **MELCAST**, the publication "[Foliar Disease Control Using MELCAST](#)" provides guidance on using this tool. For specific fungicide recommendations, please refer to "[Cantaloupe and Watermelon Fungicide Schedule](#)" updated by Dr. Dan Egel in December 2023, and mwveguide.org. As many of you are aware, Dr. Dan Egel retired earlier this year. As a result, there will not be a hard copy of **MELCAST** newsletter this year. However, the exciting news is that we are expecting a new plant pathologist to join us in July. In the meantime, I am happy to answer questions if I can.

Clearspring Produce Auction Update

(Jeff Burbrink, jburburink@purdue.edu)

The Clearspring Produce Auction is located just 2 miles south of US 20 in Clearspring Township in the Heart of the LaGrange-Elkhart Amish Settlement. It is within easy driving distance of the towns of Shipshewana, Topeka, Emma, and LaGrange.

Produce is sold 3 days a week throughout most of the growing season (Tuesday, Thursday, Friday), with a hay sale on Saturdays. Office hours are Monday and Wednesday, 1 to 4 pm, and Tuesday, Thursday, and Friday, 8 am to 4 pm. An auction report can be heard by calling (260) 463-4131.

Besides the produce and hay auctions, Clearspring has an equipment and supply business operating onsite for growers.



Figure 1. Clearspring Produce Auction (Photo by Jeff Burbrink).

Are you curious about vegetable pricing?

In an effort to communicate more market information, we are publishing Clearspring Produce Auction volumes and prices. You will be able to view volumes and pricing below:

[May 16, 2024](#)

[May 21, 2024](#)

[May 23, 2024](#)

Indiana Strawberry Production Census

(Wenjing Guan, guan40@purdue.edu, (812) 886-0198)

According to the newly released [2022 Census of Agriculture](#), Indiana has 248 farms growing strawberries, a 25% increase from 2017's 199 such farms. This rise is particularly notable because the number of strawberry farms decreased from 250 to 199 between 2012 and 2017.

Despite the increase in the number of farms over the past five years, the total strawberry acreage has remained similar. This indicates that more farms are growing strawberries on relatively smaller acreages in Indiana. Separating bearing age and nonbearing age crops, the increase was primarily in bearing age crops, both in terms of acreage and the number of farms, while the number of farms and acres for nonbearing age crops decreased over the past five years. Below is the Indiana strawberry data in the past

three Ag Census.

Table 1. Indiana strawberry production in the past three Ag Census

Year	Total		Bearing age		Nonbearing age	
	Farm	Acre	Farm	Acre	Farm	Acre
2022	248	262	223	220	47	41
2017	199	254	150	204	78	50
2012	250	285	200	218	80	67

Meteorological Spring Ending Wet With Dryer Days Ahead

(Jacob Dolinger, jdolinge@purdue.edu)

As of writing, it appears we're heading into the start of meteorological summer (June 1) with a wet meteorological spring on the books. Meteorological spring will end with over 15 inches of rain from March 1 through the end of May, making it the 24th wettest Spring on record for Indianapolis. Keep in mind that records for Indianapolis go back 154 years, so that's 24th out of 154 springs, which is impressive. Even more noteworthy, however, is what seems to be Fort Wayne's 4th wettest meteorological spring on record since 1897, also with over 15.6 inches of precipitation.

All in all, much of the state looks to end meteorological spring with widespread accumulations of over 15 inches. Some spots, especially in central and southern Indiana, got above 16 inches (Figure 1). However, most of this fell after April 1, and this is displayed by the percent of mean precipitation, which is 100 percent of the mean in central and southern Indiana and up to 150 percent of the mean for northern Indiana since March 1 (Figure 2). However, when using April 1 as a start date, this switches to 125-150 percent of the mean statewide, with the exception of southeast Indiana (Figure 3). For those rain-weary folks, as of May 29, the 8-14 day precipitation outlook from the National Weather Service's Climate Prediction Center (CPC) has all of Indiana leaning toward near normal or even slightly below normal precipitation through June 11. There is a slight signal of a 50-65 percent chance of above-normal precipitation again for southern Indiana heading through June 21.

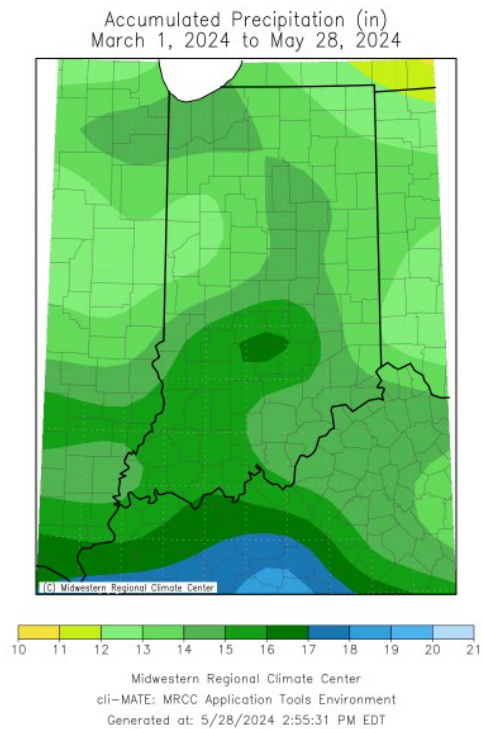


Figure 1. Accumulated Precipitation for March 1, 2024-May 28, 2024.

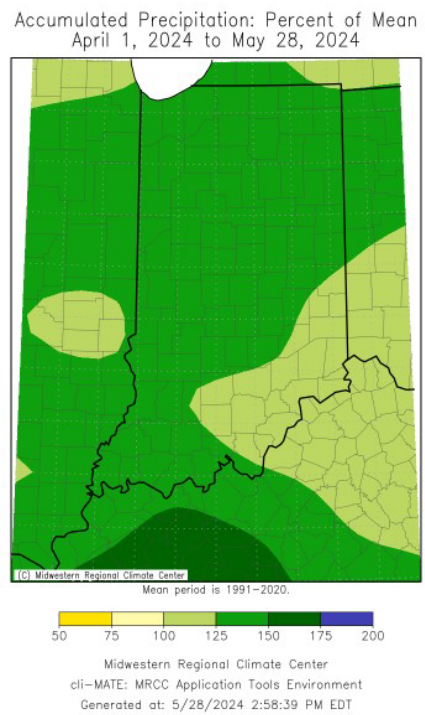


Figure 3. Precipitation Percent of Mean for April 1, 2024-May 28, 2024.

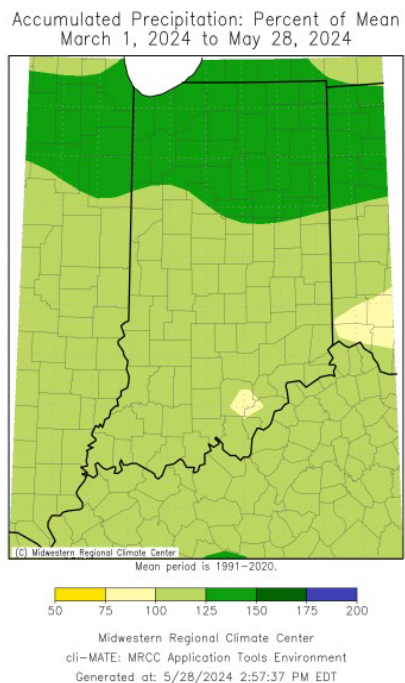


Figure 2. Precipitation Percent of Mean for March 1, 2024-May 28, 2024.

Temperatures have also been above normal, with northeast Indiana and a pocket of southwest Indiana up to 5 degrees above normal while most of the rest of the state hovered 4 degrees above normal since March 1 (Figure 4). It looks like the CPC is predicting near-normal temperatures for most of Indiana through June 10, with a slight chance of above-normal temperatures through far northern Indiana. As for growing degree days, they are chugging along with major accumulations south of Indianapolis, much of which is well above normal (Figures 5 & 6).

Average Temperature (°F): Departure from Mean
March 1, 2024 to May 27, 2024

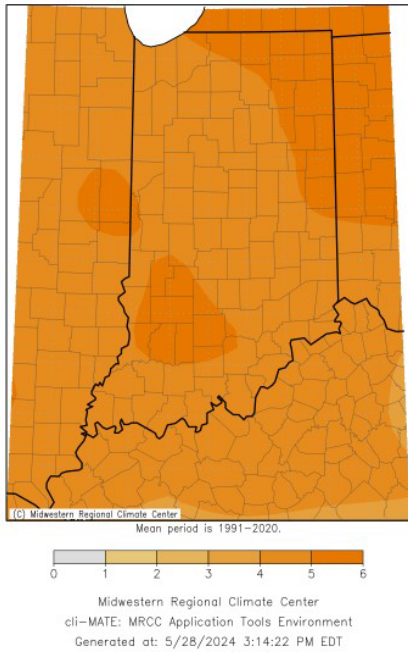


Figure 4. Average Temperature, Dep. From Mean for March 1, 2024-May 27, 2024.

Growing Degree Day (50 F / 86 F) Departure From Average

April 1 - May 27, 2024

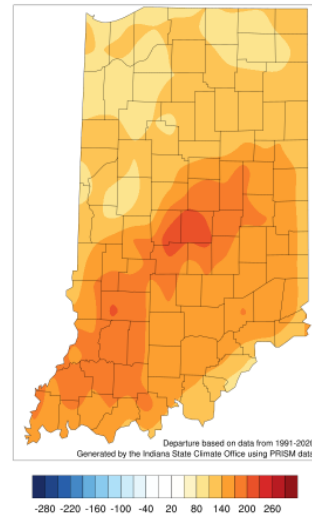


Figure 6. GDD Departure from Average for April 1-May 27, 2024.

Growing Degree Day (50 F / 86 F) Accumulation

April 1 - May 27, 2024

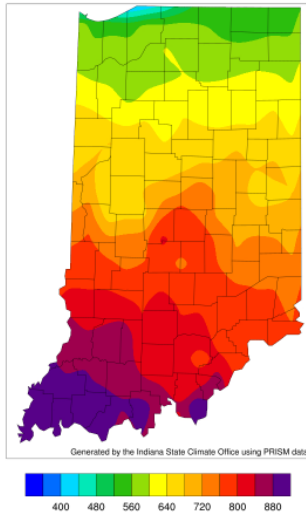


Figure 5. GDD Accumulation for April 1-May 27, 2024.

Purdue Fruit and Vegetable Field Day on July 18, 2024

(Petrus Langenhoven, plangenh@purdue.edu, (765) 496-7955)

We are happy to announce that Purdue Extension is presenting its annual Fruit and Vegetable Field Day on July 18, 2024, at the Throckmorton/Meigs Horticulture Farm, Lafayette, IN.

Registration is now open! Register here: [Purdue Fruit and Vegetable Field Day](#)

More information about the upcoming field day will be available by mid-May 2024.

Contact [Lori Jolly-Brown](#) or [Petrus Langenhoven](#) if you have any questions.

Purdue Small Farm Education Field Day on July 25, 2024

(Petrus Langenhoven, plangenh@purdue.edu, (765) 496-7955)

at www.purdue.edu/hla/sites/studentfarm/events/ or contact Lori Jolly-Brown or Petrus Langenhoven.

We are happy to announce that Purdue Extension is presenting its annual Small Farm Education Field Day on July 25, 2024, at the Purdue Student Farm, West Lafayette, IN.

Registration is now open! Register here: [Purdue Small Farm Education Field Day](#)

Educational topics for the 2024 field day will be available soon. To learn more about the field day, visit our [webpage](#)



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Market Report for

Clearspring Produce Auction
 2050 S 300 W
 LaGrange, IN 46761
 * Phone (260) 463-4131
 * Fax (260) 463-4362
 * Market Report (260) 463-4131

Order Buyers:
 David Schrock & Richard Yoder

Date of Report:	16-May	2024
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Description of Product	Unit	Units Sold	Price	
			Average	High
Asparagus	lb.	46	\$ 1.83	\$ 2.50
Black Raspberry starts		16	\$ 3.00	
Cucumber	peck	8	\$ 17.75	\$ 19.00
Flower Flats		21	\$ 11.43	\$ 14.00
Flowers, 4 inch pots		1924	\$ 1.25	\$ 3.50
Flowers, 6-8 inch pots		1066	\$ 3.15	\$ 9.00
Green Beans	lb	50	\$ 3.50	
Hanging Baskets, 10 inch		1154	\$ 9.32	\$ 20.00
Hanging Baskets, 12 inch		182	\$ 14.68	\$ 24.00
Herbs, misc		407	\$ 1.92	\$ 5.00
Kolrabi	ct	109	\$ 2.00	
Lettuce	head	115	\$ 1.96	\$ 2.50
Onions, green	bunch	126	\$ 1.56	\$ 1.75
Perennials	pots	191	\$ 6.61	\$ 40.00
Rhubarb	lb.	410	\$ 0.88	\$ 2.00
Strawberries	qt	12	\$ 6.00	
Succulents		86	\$ 2.05	\$ 5.00
Tomatoes	10#	22	\$ 27.30	\$ 30.00
Urns/Specialty Baskets		48	\$ 21.33	\$ 40.00
Vegetable Flats		68	\$ 5.58	\$ 20.00



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Order Buyers:
 David Schrock & Richard Yoder

Date of Report:	21-May	2024
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Description of Product	Unit	Units Sold	Price	
			Average	High
Asparagus	lb.	342	\$ 1.58	\$ 2.25
Bench planter w/ geranium		2	\$ 100.00	
Cucumber	peck	13	\$ 22.77	\$ 26.00
Flower Flats		98	\$ 5.85	\$ 8.00
Flowers, 4 inch pots		2345	\$ 0.93	\$ 3.00
Flowers, 6-8 inch pots		1273	\$ 2.63	\$ 11.00
Green Beans	lb	54	\$ 3.33	\$ 3.50
Hanging Baskets, 10 inch		1515	\$ 8.30	\$ 18.00
Hanging Baskets, 12 inch		245	\$ 10.78	\$ 25.00
Kolrabi	ct	220	\$ 1.00	
Lettuce	head	104	\$ 0.99	\$ 1.00
Onions, green	bunch	164	\$ 2.10	\$ 2.50
Onons	ct	80	\$ 1.93	\$ 2.00
Perennials	pots	233	\$ 5.46	\$ 42.00
Radishes	bunch	34	\$ 1.00	
Rhubarb	lb.	183	\$ 1.01	\$ 1.50
Rhubarb Starts		3	\$ 18.00	
Strawberries	qt	8	\$ 6.00	
Tomatoes	10#	36	\$ 35.83	\$ 39.00
Tomatoes, Canner	1/2 bushel	3	\$ 37.50	
Tomatoes, Cherry/Grape	pt	10	\$ 4.00	
Urns/Specialty Baskets		80	\$ 22.05	\$ 40.00
Vegetable Flats		103	\$ 1.97	\$ 11.00
Vegetable pots, 4 inch		161	\$ 1.75	\$ 5.00



Market Report for

Clearspring Produce Auction

2050 S 300 W

LaGrange, IN 46761

* Phone (260) 463-4131

* Fax (260) 463-4362

* Market Report (260) 463-4131

Order Buyers:

David Schrock & Richard Yoder

Date of Report:	23-May	2024
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Description of Product	Unit	Units Sold	Price	
			Average	High
Asparagus	lb.	20	\$ 2.40	\$ 2.50
Cucumber	1/2 bu	3	\$ 22.00	
Cucumber	peck	42	\$ 17.98	\$ 20.00
Flower Flats		41	\$ 4.96	\$ 10.00
Flowers, 4 inch pots		1565	\$ 0.66	\$ 2.25
Flowers, 6-8 inch pots		896	\$ 2.12	\$ 10.00
Green Beans	lb	41	\$ 3.50	
Hanging Baskets, 10 inch		1158	\$ 7.79	\$ 26.00
Hanging Baskets, 12 inch		58	\$ 10.59	\$ 15.00
Herbs	various	58	\$ 1.48	\$ 9.50
Kolrabi	ct	180	\$ 1.67	\$ 1.90
Lettuce	head	292	\$ 1.13	\$ 1.75
Onions, green	bunch	92	\$ 1.00	
Onons	ct	76	\$ 1.40	
Perennials	pots	157	\$ 4.84	\$ 30.00
Radishes	1/2 bu	5	\$ 15.58	\$ 17.00
Rhubarb	lb.	303	\$ 0.94	\$ 2.00
Strawberries	qt	47	\$ 5.16	\$ 5.50
Succulents	various	240	\$ 0.87	\$ 7.00
Tomato	peck	5	\$ 22.20	\$ 27.00
Tomatoes	10#	66	\$ 33.08	\$ 41.00
Tomatoes, Canner	1/2 bushel	4	\$ 28.00	\$ 37.00
Urns/Specialty Baskets		41	\$ 14.22	
Vegetable Flats		160	\$ 2.93	\$ 13.00
Vegetable pots, 4 inch		72	\$ 0.59	\$ 0.75