



freetings from Whately

After more than 50 years as the owner and President of Nourse Farms, I have decided to step away from the day-to-day operational leadership of the company.

We are very pleased to announce that effective January 1, 2022, John Place has been promoted to Chief Executive Officer at Nourse Farms. Many of you have met John and know him to be a highly accomplished farmer and successful business executive. He has been with us for nearly 3 years as our Chief Operating Officer and has made a significant impact on our performance to date, with an entrepreneurial eye for future opportunity, and an appreciation for our loyal employees and customers that make everything possible.

Nourse Farms, Inc. will be establishing a Board of Directors through the first half of the year, and I will serve as Chairman.

At Nourse Farms, we know our success comes from serving the needs of our customers at a very high level. This will not change with our leadership transition. Our number one priority will always be to deliver exceptional assistance through excellent customer service and high-quality plants. Our future looks bright in our core business, and we are



developing new lines of business to position us for continued growth in the future.

We look forward to continuing our partnership in the years to come the same way we have in years past. Feel free to reach out to either me or John if you have any questions. Here's to a terrific 2022 and beyond!

Best Regards,

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Tim Nourse tnourse@noursefarms.com

John Place jplace@noursefarms.com

This newsletter was produced by the collaborative effort of the Nourse Farms Sales and Customer Service Team.

ORDER ONLINE: NourseFarms.com PHONE ORDERS | CUSTOMER SERVICE: (413) 665-2658 M-F, 8 a.m.—5 p.m. EST QUESTIONS? E-MAIL US: Tim Nourse: thourse@noursefarms.com Anne Kowaleck: akowaleck@noursefarms.com

Fungicide Resistance

Recent studies have shown an increase in fungicide resistance of important fungal pathogens in some regions.

This brings up the importance of having a good mix of fungicides, from different classes and with different modes of action. Fungicides are arouped by their modes of action, each group is given a FRAC code, a number and/or letter. Most fungicides affect a single metabolic site, single site, however some affect multiple sites, multisite.

In general, single-site fungicides are more susceptible to developing resistance than multisite fungicides, like Captan. To avoid building resistance, growers should use a combination of multi-site fungicides and single-site fungicides with different FRAC codes, avoiding applying the same FRAC more than 2 times per season. When disease pressure is high, tank-mixing multi-site and single-site fungicides can provide better control.



FRAC Fungicide Group Labeled for Organic Actigard 21 Strawberrv Aliette 33 Strawberry Raspberry Badge SC/X2 M1 Strawberry Cabrio 11 Strawberrv Raspberry M4 Raspberry Captan Strawberry Captec M4 Raspberry Captevate 17,M4 Strawberry Raspberry Cease 44 Strawberry YFS M1 YES Raspberry Copper Strawberrv Strawberrv Cueva Μ YES Double Nickel 44 YES Strawberry Elevate Strawberry Raspberry Evito 11 Strawberry Flint 11 Fontelis Strawberrv U13 Gatten Strawberrv **Inspire Super** 3,9 Strawberry Intuity Strawberry UN YES Kaligreen Strawberry Kenja 7 Strawberry Raspberry Kocide 3000 M1 Raspberry YFS Strawberry Kumulus M2 Strawberry Raspberry Luna Privlege 7 Strawberry Raspberry Luna Sensation 7,11 Strawberry Raspberry Luna Tranquility Strawberry 7,9 Raspberry 7, 11 Mervion Strawberry Mettle 125 ME 3 Strawberrv Microthiol M2 YES Strawberry Milstop UN Strawberry **Miravis** Prime 7 + 12 Orbit, Tilt 3 Strawberry Raspberry **Orondis Gold** 4 Raspberry Strawberry Oxidate ---Strawberry Raspberry YES Ph-D 19 Raspberry Strawberrv **Phosphorous Acid** 33 Raspberry Phostrol 33 Strawberry Prev Am UN Strawberry Raspberry 7.11 Raspberry Pristine Strawberrv Procure 3 Strawberry Prolivo 300 SC 50 Strawberrv Propiconazole 3 Strawberry Raspberry Quadris Top 3,11 Strawberry OuiltXcel 3,11 Raspberry Quintec 13 Strawberry Strawberry Rally 3 Raspberry Regalia P5 Strawberrv Raspberrv YFS Rhyme 3 Strawberry **Ridomil Gold** 4 Strawberry Raspberry **RootShield Plus** UN YES Strawberry Raspberry Rovral Raspberry 2 Strawberry Scala 9 Strawberrv Serenade UN Strawberry Raspberry YFS Sonata UN Strawberry Raspberry SuffOil UN Strawberry Raspberry Sulforix M2 Raspberry 9.12 Switch Strawberry Raspberry Svllit U12 Strawberry Tanos 11 Raspberrv Tavano, Oso 19 Strawberry YES Raspberry М3 Thiram Strawberry Topsin-M 1 Strawberry Trilogy UN YES Strawberry Trionic 4SC Strawberry 3 Velum Prime Strawberrv Raspberry Zayin Fungicide UN Strawberry YFS **Zivion S** 48 Strawberry

Labeled Small Fruit Fungicides

During drier periods, when disease infection is less favorable, growers can extend spray intervals. Maintaining good cultural control including proper row and aisle spacing to achieve adequate air circulation and light penetration will also greatly reduce pressure. We have had reports of growers seeing resistance with more commonly used fungicides including Elevate and Pristine. We have seen good results with Kenja but growers should speak to local extension agents for possible resistance build ups and recommendations on the best alternative for their region.

	Strawberries			
	Elevate	17		
	Switch	9, 12		
	Captan	M4		
	Thiram	M3		
	Topsin plus Captan	1, M4	1	
5% - 10%	or Captec	M4		
Bloom	Pristine	7, 11		
	Captevate	17, M4		
	Scala	9		
	Ph-D	19		
	Aliette	33		
	Phostrol	33	Leather Rot	
MidBloom	Same materials available as at early bloom. Alternate materials from different pesticide classes for resistance			
	management.			
Bloom	Same materials available as at early bloom. Alternate			
through	materials from different pesticide classes for resistance			
Petal Fall	management.			
	Abound	11		
	Captan	M4		
	Cabrio	11		
	Pristine	7, 11		
Green Fruit	Evito	11		
	Captevate	17, M4	1	
	Switch	9, 12		
	Aliette	33	1	
	Phostrol	33		
Pink Fruit	Same materials available as at early bloom. Note days-to-	-		
through	harvest limitations for all products.			
through	For products containing captan, note that the REI is 24			
Harvest	hours even though the PHI is 0 days.			

Small Fruit Spray Schedule

	Bramble	es	
	Rally	3	
	Cabrio	11]
	Pristine	7, 11	
	Abound	11	
PreBloom	Orbit	3	
	Tilt	3	
	Captan	M4	
	Tanos	11	
	Captevate	17, M4	Raspberry only
	Rovral	2	
	Captan	M4	
	Switch	9, 12	
	Elevate	17	
	Pristine	7, 11	
Bloom	Captevate	17, M4	Raspberry only
	Rally	3	
	Cabrio	11	
	Abound	11	
	Orbit	3	
	Tilt	3	
	Rovral	2	
	Captan	M4	
Petal Fall	Elevate	17	
through	Pristine	7, 11	
harvest	Switch	9, 12	
	Captevate	17 M4	Raspherry only
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FIVE POINTS TO PREPARE Get Ready for the Season!

TIMELY RENOVATION OF STRAWBERRIES

Renovation of June Bearing strawberry plants is a critical component to growing strawberries and must be performed in a timely manner to ensure success. Renovating your field provides an opportunity to control weeds, apply fertilizer, and thin your rows. There are factors that may delay

renovation, such as a heat or water stressed field, but, if possible, renovation should be performed

immediately after harvest. If renovation is not performed by the second week in August, you should skip mowing but fertilize and narrow your rows regardless. If you think you may have



missed the renovation window, give us a call to discuss your options.

2022 BERRY PRICING DECISIONS

Inflation has soared to its highest level in four decades, with the Consumer Price Index jumping over 7 percent for the year ending in

December. We know prices are increasing on just about everything. There is no question growers will need to get more money for their berries. Marketing and pricing of fruit is as important as selecting the best varieties and using the best management practices.

The question is how much should growers raise their pricing – 5%, 10%, 15% or more?

Considerations for pricing:

Production budgets. Now is the time to finetune production budgets for this season. Take a close look at budget increases, particularly in the following areas, where we anticipate the largest:

- Fuel & Transportation
- Labor (Seasonal and Full time)
- Packaging (Containers)
- Spray materials
- Fertilizer

Most state cooperative extension departments have excellent budgeting tools on their website.

Farm location. Farms located in more urban or metro areas, where the costs of living and farming are greater, may need a higher price increase.

Production type. Day neutral strawberries, organic, and berries produced in controlled environments (high tunnels) cost more to produce. As the fruit is often produced outside typical ripening seasons or conventional farming, they can garner a higher price increase.

Farm services & entertainment. Providing containers, clean bathroom facilities and farm entertainment (hayrides, petting zoos, etc.) are all incentives for consumers to pay more for your product.

Expanded marketing of berry health benefits. Marketing messages all growers should be promoting are the health benefits of berries as well as "Buying Local." Scientists have found berries to have some of the highest antioxidant levels of any fresh fruits (measured as ORAC), with kale and spinach being the only vegetables with ORAC values as high as fresh, delicious local berries. Social media, including META (Facebook), Instagram and Twitter can assist in focusing on the high value of local berries.

FROST PROTECTION REMINDER

Growers have reported an increased need for frost protection over the last several years and we expect this trend to continue. Strawberry plants grow close to the soil and blossom earlier than many other crops, putting them at risk for spring frost and freeze damage. Frost protection is in an important component to a successful strawberry planting, as frost and freeze can cause significant injury to strawberry plants, during open blossom, but also to unopened buds if it is cold enough.



There are several options available for frost protection, including overhead watering, row covers, and wind machines/return stack heaters. We believe overhead watering is the most dependable option. Below is a chart of critical temperatures for plant tissue, which are a degree or two lower than critical air

temperatures. Because of the variables involved, we recommend beginning frost protection when temperatures are expected to drop below 32

Stage of Development	Approximate Critical Temp. °C (°F)
Tight bud	-5.5 (22°F)
"Popcorn"	-2.2 (26°F)
Open blossom	-1.1 (30°F)
Fruit	-2.2 (28°F)

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PLASTICULTURE PLANTING DATES

As more growers consider switching to plasticulture production for bare root strawberries, it is important to note that planting dates for plastic

should be later in the season than for matted row production. Planting too early on plastic leads to the development of too many branch crowns which can significantly reduce berry size and yield. Further, there is an increased development of runners which will require an extra round of removal. Growers should be planting bare root strawberries on plastic between mid-June to mid-July depending on your region and aim for 3-4 branch crowns at the end of the season. Strawberry plugs on plastic should be planted approx. 30 days after bare root, or between early-August to mid-September, depending on location.

AN ALTERNATIVE FOR SURFLAN HERBICIDE



We learned this past year that SURFLAN was no longer going to be available. Surflan has been a safe herbicide for brambles.

A labeled alternative for SURFLAN is TRELLIS SC, manufactured by Dow AgroSciences (now known as

Corteva). Growers will need to try Trellis SC to gain experience.

As it has more activity than Surflan, I would suggest you begin at the lower rate when applying it to sandy soils.

- Trellis will be most effective if watered in with a half inch of rain or irrigation.
- Labeled rates 16 to 31 fl. Ounces/acre.
- Apply Trellis when the soil is settled around newly planted plants.
- Do not apply within 60 days of harvest.
- Recommended not to apply through the irrigation system.

There is a supplemental label for Trellis SC that each grower should obtain for their records. Each grower should check to be sure Trellis is registered for your state. Currently Trellis appears to be labeled for all states except New York. The chemistry, isoxaban, is not registered for New York.



Contact us at 413-665-2658 or via email at info@NourseFarms.com if you have questions about any of these topics.

Key Rust Diseases in Brambles

Identification and Management of Orange Rust & Late Leaf/Yellow Rust

With the number of long periods of wet weather over the last two years, we have fielded numerous calls looking for information regarding the type of rust the growers may have. Orange rust and Late Leaf (yellow) rust are distinctly different both in their appearance as well as their severity.

ORANGE RUST

Orange rust, the most common and serious of the rust diseases attacking brambles, can be caused by two stages of a single rust fungus. Aethuriomyces peckianus is the long-cycled state that typically affects black raspberries. Gymnoconia nitens is the short-cycled state of the rust fungus in erect, and trailing blackberries. Neither fungus has an alternate host, which is common for other rust diseases of raspberry. Orange rust is not known to affect red raspberries.

In the spring, leaves on infected plants appear stunted, and misshapen. In some cases, orange spores can be detected on the underside of lower leaves. Spores will spread the disease to other plants and will spread to the plants root system by fall. Orange rust is systemic in the plant.

Management of Orange Rust

Each spring, inspect plants for any signs of the disease. Southeast U.S. growers may begin seeing symptoms as early as March, late April or May in the north. It is critical to identify and control this early – if not controlled, it will go systemic in the plant, kill it, and provide inoculum to other plants. Immediately dig, remove, and destroy infected plants early, before pustules break open and spores can spread. Rally, Tilt or Abound are main tools for chemical control of orange rust and should be applied early at first sign of pustules. Sulfur sprays are an option for organic growers. Sound cultural practices are also key for managing orange rust:

Remove and destroy all wild blackberry and wild black raspberry plants in the area, as they harbor the disease.

Good air movement throughout the planting is important. Use good thinning and pruning practices, and keep weeds to a minimum.



Orange rust (top & bottom photos) seen with very distinct orange sporulation on the undersides of leaves. Young, infected primocanes are often stunted. Leaf lesions are blister-like in appearance, and they are more pronounced on the periphery of the leaf, as opposed to the leaf center. Spores are generally round with lobed margins, as opposed to spiny.

Photos courtesy of "Is it Blackberry Leaf Rust or Orange Rust?" www.raspberryblackberry.com Authors John R. Clark, University of Arkansas and Phil Brannen, University of Georgia



Key Rust Diseases continued on page 9

ADVERTISEMENT



With Netafim Meganet Sprinklers and Flexnet distribution manifold Strawberry growers are able to get uniform frost protection without the headache and limited field access of aluminum pipe.



The Meganet sprinkler is a balanced sprinkler with two equal water jets. Meganet fight the wind with large droplet size and excellent distribution uniformity. The sprinkler is held up with a fiberglass stake, allowing for easy install and removal. Each sprinkler head has its own basket filter to prevent clogging. Meganet sprinklers for strawberries are spaced 24 feet in row, and 30 foot between laterals. Using 72" spaced Flexnet every 4th hole gets a sprinkler; the remaining holes are plugged. This system provides over 90% uniform distribution of water utilizing the Blue Meganet Sprinkler.

Brookdale Farm Supplies

38 Broad Street Hollis, NH 03049 603-465-2240



Bio360 a Biodegradable and Compostable Black Mulch Film is made of Mater-Bi, a bio-based plastic that is completely compostable according to BPI standards. This biodegradable mulch has the same mechanical and physical characteristics as plastic mulch without the negative impact on the environment. Bio360 breaks down over time with organic matter in the soil. Bio360 is the ideal biodegradable mulch for strawberries. First year establishment on a matted row system a 0.6 mil Bio360 film greatly reduces weeding cost and still allows plant runners to set through the plastic. In an everbearing systems a 1 mil Bio360 film is ideal for multiyear use.



Hillside Cultivator for Strawberry Weed Control throughout the Year

Weed control is probably the most difficult obstacle to successful strawberry production. In a matted row system a combination of effective mechanical tools will greatly reduce hand labor. The Hillside Cultivator incorporates several tools for the different stages of growth. Timing is always critical.



- Rolling cultivator gangs are part of the cultivator in all seasons and are excellent for uprooting weeds while not cultivating too deeply.
- S-tines mounted in the front position are used to move runners into the row. (pictured above)
- Finger Weeder attachment can be used all season for disrupting small weed growth along the row and close to plants. (pictured left)
- Through the late summer and into the fall, the width of the strawberry row can be controlled with the **rolling cultivators** and weeds between the row removed. These cultivations can remain shallow so that new weed seeds are not brought to the surface. Cultivation can also be done as an herbicide loses its effectiveness and prior to another low rate application.



The Eco Weeder is a PTO driven machine with rotating vertical teeth that are manually moved between and around young plants. An attachment is available for straw removal in the spring.



 Following harvest and mowing the plants, the Hillside Cultivator is ideal for strawberry renovation. Disk gangs are mounted in the



front position which are used to narrow the row and cut through the straw. A **coil tine** follows and fractures the soil which has been packed by foot traffic during harvest. The rolling cultivator in the rear rolls soil back toward the strawberry plants. Cultivating speed is 3-4 mph with two passes normal for each row. This machine is more economical and less disruptive of soil structure than a rototiller.



- The cultivator can be used for vegetables such as Pumpkins, Squash, Potatoes, and Cole Crops.
- The cultivator can be used to straddle a plastic bed.

Hillside Cultivator Co. LLC 911 Disston View Dr. Lititz, PA 17543 Cell 717-669-3158 www.hillsidecultivator.com Email: sales@hillsidecultivator.com

Prices can be found in the catalog section of our website

Key Rust Diseases continued from page 6

LATE LEAF (YELLOW) RUST

A potentially serious disease of red raspberries, late leaf rust (Pucciniastrum Americanum) can affect leaves, canes, and fruit. It appears in late July or early August first on lower foliage with small chlorotic or yellow areas initially. Unless it's severe, foliar infections may be difficult to see. More advanced symptoms include the appearance of yellow masses on the underside of leaves. The yellow presence on fruit makes them not marketable. It is important to control when first seen, as it can spread rapidly during wet periods. We have seen it in grower fields where it will completely defoliate the plant and eliminate harvest. Fall bearing varieties Heritage, Caroline and Anne are particularly susceptible.



Pustules on individual drupelets on infected fruit. Note the masses of yellow spores. Photo courtesy of The Ohio State University, Bulletin PLPATH-FRU-30

Management of Late Leaf (Yellow) Rust

Controls for Late Leaf (Yellow) Rust are similar to Orange Rust. Chemical control rotating Rally, Tilt or Abound fungicides are warranted beginning at first signs of infection. Unlike orange rust, late leaf rust is not systemic and can be eliminated from the planting. Most of the fungicides that are rated for late leaf are also rated for other leaf/ cane diseases. Cultural controls include trellising, proper spacing, cane/leaf management, use of drip irrigation.

With orange rust and late leaf (yellow) rust, if you identify and control it successfully early, you may not see the advanced symptoms that are extremely detrimental to your crop and planting.

Please feel free to contact us with any questions.





Cane and leaf rust. Lesions are found throughout the underside of the leaf, and sporulating lesions are generally yellow in appearance and do not distort the leaf. Lesions are also found on canes.

Above photos courtesy of " Is it Blackberry Leaf Rust or Orange Rust?" www.raspberryblackberry.com Authors John R. Clark, University of Arkansas and Phil Brannen, University of Georgia



Scan code to visit our website. www.noursefarms.com

We have Powell gears available in a variety of sizes. Please call for recommendations on appropriate gears and pricing.



Double-Cropping Raspberries

For growers who are looking to extend their harvest season without planting several varieties, everbearing varieties are an excellent option.

When selecting a variety of raspberries, one of the first questions asked of growers is "what is your desired harvest time?" Are you looking for summer production, fall production or both?

True commercial everbearers can produce both a primocane and floricane crop effectively, double-cropping. Double-cropping increases the overall yield while also extending the harvest season. Several primocane fruiting varieties also offer good summer crops in addition to their normal fall harvest. Additionally, there are some traditionally summer-bearing varieties which also produce a good quality fall crop, Prelude and Nova are excellent examples.

Double-cropping can be a good option for most growers in zone 5 or warmer. The use of high tunnels can drastically increase yields, up to 50% increase, as well as extend the season and provide better quality fruit. For growers in cooler climates, use of a high tunnel can be necessary to extend the growing season when doublecropping.

Good cane management is essential for maximizing yields. Trellising plants is also necessary to maintain high yields and reduce loss



and breakage from wind, crop load, and winter damage. Attaching canes to the trellis wire with clips locks the canes in place, thus reducing potential damage from wind and fruit weight and increasing winter protection. After summer harvest, floricanes should be removed at ground level and primocanes can be thinned to 6 - 8canes per linear foot of row. Primocanes should then be clipped onto the trellis wires. In late fall, when plants reach or are close to dormancy, cut canes to 4' - 5'.

VARIETIES TO CONSIDER FOR DOUBLE-CROPPING

Himbo Top is a vigorous mid-season primocane variety that has good winter hardiness and has shown good tolerance to Phytophthora root rot. It has very large berries with a lighter color, which does not dark after picking. Given its vigor this variety is a good option for organic production but should be thinned and trellis for best results. Care should also be taken not to overapply nitrogen as it can cause soft fruit.

JOAN J is a very high yielding, thornless variety which primocane crop ripens a week after Polka. Its large fruit have a dark color when fully ripe and will darken after picking so they should be picked every other day. Fruit can be picked under ripe to increase shelf life but with a loss of flavor. This variety is an excellent choice for high tunnel production.

Prelude is often treated as a floricane but in fact it does produce a good quality late primocane crop in zone 5 or warmer. The earliest producing floricane variety, Prelude has excellent vigor and winter hardiness. Fruit is medium-large, roundconic with very good flavor.

Mapema® U.S. Plant Patent #27,182

This is the earliest ripening variety from ABB, with harvest similar to Polka. Mapema produces over a long season. Berries are large and firm with very good flavor, however the color can be a little dark. In zones 6 or warmer, especially when grown in a high tunnel, Mapema produces an excellent floricane crop.



Mara® U.S. Plant Patent #23,916

An extremely productive primocane variety from ABB that begins production shortly after Mapema, about 7 – 10 days. Fruit is well displayed and release easily when ripe. Berries are medium-large, bright red, with very good flavor.

Kweli[®] U.S. Plant Patent #23,915

A mid-season primocane variety from ABB, which begins fruiting just after Imara. With very high yields of large, bright fruit with excellent flavor and shelf life make Kweli an excellent choice for shipping as well as local sales. Due to its vigor, care should be taken to exclude excess canes to keep plants more open.

KWanza® U.S. Plant Patent #23,914

Currently our most sought-after variety for southern growers and the west coast. The latest ripening varietiy from ABB, Kwanza begins fruiting about 3 weeks after Polka. The characteristics that make Kwanza a top variety include its large fruit size, good flavor, exceptional shelf life and ease of picking. Fruit also does not darken noticeably after harvest.





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For additional information see noursefarms.com

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Mapema® Red Raspberry

From the Advanced Berry Breeding (ABB) in the Netherlands.

Mapema characteristics:

- Early primocane variety, ripens about same as Polka with • similar winter-hardiness.
- Large sized fruit.
- Growers like its good flavor and it produces high yields.
- Growers reporting its continued excellent performance.
- Will produce a floricane crop in some areas of zone 5 and zone 6.

We have a good supply of Mapema available for 2022.

Licensing agreement required. Bare Root \$2.06/each + royalty. Minimum 200.