

PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

MAY 3, 2006



Photo credit: Jack Rabin

Vegetable Growers' "Portfolio" Business Plan Recapturing Wholesale Buyer Interest

Jack Rabin, Associate Director – Farm Services, NJAES, Phil Neary, Director of Operations & Grower Relations, Sunny Valley International, Glassboro, NJ and Rick VanVranken, Atlantic County Agricultural Agent

What are tangible steps NJ vegetable growers can take for selling in regional wholesale markets?

We serve on the current NJDA Vegetable Task Force, which was formed by Secretary Kuperus, and charged to assist the vegetable industry in strengthening sales efforts. For many growers, there is a feeling of desperation that change is needed. Here we outline business plan steps revitalizing opportunities for New Jersey wholesale vegetable growers.

New Jersey's vegetable industry has fallen behind. Many sales practices do not move product into current produce markets. The core problem is not New Jersey's seasonality. It is that vegetable grower industry fragmentation is so great, it blocks our seasonal production from fitting in existing 52-week supply markets! There is little or no organized commitment reporting predicted grower supplies, and growers have come to depend solely on "fill-in spot market" prices in the hopes periodic shortages yield good prices. When markets are seasonally saturated with product, the industry no longer even moves New Jersey produce at any price, let alone a decent return. If the grower industry is not organized for success, no one needs its produce.

When viewed against today's consolidated wholesale produce buying and 52-week produce supply relationships, New Jersey's fragmented produce growing is dysfunctional. Much of New Jersey's produce growing is no longer viewed as an industry, just hard-working farms who have lost access to the largest volume and most valuable sales in the produce distribution.

We outline a "Growers' Portfolio" business, enabling growers to see how focusing their business with partners, can save their farms, their profits, and their industry. The "Growers' Portfolio" is a first step towards a commitment to detailed and up-to-date business practices. Core groups of New Jersey's most progressive growers must establish "Growers' Portfolios" that commit product, that commit to current industry business

SEE GROWERS' PORTFOLIO ON PAGE 2

INSIDE

**Vegetable Growers' "Portfolio"
Business Plan Recapturing
Wholesale Buyer Interest 1**

Vegetable Weed Control 4

Weekly Weather Summary 4

Pest Notes 5

Vegetable Disease of the Week 6

Update on Asian Soybean Rust 6

Vegetable Disease Update 6

practices, and that commit to a concept in which growers do what they do best, "grow" and partners with a viable sales entity or entities do what they do best, "sell." It is not our intention to document all needed components revitalizing the industry, but to suggest key steps the industry might take to make the New Jersey vegetable industry more interesting to customers and to create interest from professional produce sales companies to become fully engaged in our industry.

As first steps groups of farmers create "Growers' Portfolios" of sales items

1. Core groups of progressive growers coordinate creation of the portfolio. These growers together have critical mass of acres, quantity, shipping season length, quality attributes, and other information for key high-volume items, e.g., bell peppers. They secure commitment for the critical mass of acreage and product shipped from southern New Jersey for as many items as possible.
2. Interesting to wholesale selling agents who are given exclusive rights to market products with a brand label clearly distinguishing Growers' Portfolio shipped product from the rest of production.
3. Growers take leadership in the Grower Portfolio enterprise and a professional shipper sales agent takes leadership for sales. New Jersey farming support organizations provide support, not leadership.

The importance of exclusivity in growers - sales agent relationships

Besides quality, pricing, and reliability, what do sales agents need in arranging to sell a Growers' Portfolio? A good sales team will demand an "exclusivity" commitment when representing the Growers' Portfolio. Exclusivity means the Growers' of the Portfolio do not sell the same products or labels to other local companies, undercutting order flow or pricing. Establishing trust-business comfort on both sides-is vital. Exclusivity is valued when marketing agents talk with their customers.

Example of failed produce marketing experience

Red Tomato of Massachusetts is a case study in failed produce marketing. Red Tomato began as a grant-funded organization with a business plan becoming the sales agent for a "portfolio" of twenty-five or so smaller Massachusetts growers. They started acquiring direct store delivery (DSD) grocery chain customer accounts, touting their seasonal, local supplies.

Red Tomato went from modest sales to hundreds of thousands per year. They began to lease delivery trucks and lease/purchase cooling capacity. By the third or fourth year, well-established wholesale distributors won these accounts back and Red Tomato quickly went from success to failure. High hopes dashed. Why? Because they did not respect the efficiency, essential role, services, 52-week supply chain service established distributors bring to

their customers. As a not for profit grant-funded group, they had no business being in the produce business.

I say it frequently, and I believe, the only long-term sustainable value-added in the produce business is the value of service. Red tomato would have been better off forming a Growers' Portfolio, and seeking an established sales agency. Growers should be partnering their Portfolios, not forming their own sales companies.

What does the Portfolio look like, and what do growers present to a shipper/sales agent to represent them?

1. Growers develop a product "Portfolio" around key high volume items. The Portfolio is a business.
2. The Portfolio identifies and lists who the growers are, their reputation in the trade, and joined acreage size. It describes the strengths as a joined grower group and the % of acreage they represent in their shipping area and window for the products offered. The Portfolio identifies the business structure of the joint Growers' Portfolio. The growers could establish themselves as an LLC, Partnership, or other entity.
3. The Growers' Portfolio describes the produce items.
 - a. What are the items? Varieties, type descriptions, sizes, and colors are described. The quality grades standards are described. Quality is expected as a given.
 - b. What are the containers, packaging, and labels, with photograph samples. While central packing makes sense, good packing is more important than central packing. No short cuts can be made in providing PLUs, sorting, weight-fill consumer packs, trace back requirements, etc.). Palletizing, handling, and cold chain are described. A description of the cooling capacity, cold chain maintenance, inventory management, and consolidation are described.
 - c. What is the joint Growers' Portfolio harvest calendar including beginning dates, ending dates, and expected weekly volumes at each grade, based on past years' experiences. This means joined pack volume from all the Portfolio Growers. A statement that regular field reports will clarify expected volumes beginning pre-season and extending regularly through the shipping season. Changes are communicated quickly. Field men/women monitor crops, conditions, etc., providing updates to the marketing company 2-3 weeks or more before harvest to enable advance order and sales planning.
 - d. Promotion and merchandising support offered with products (web, print, advertising, Jersey Fresh, grower visits to customers, or other methods is described. Once a sales entity is selected, detailed promotional activities can be developed.
 - e. How the Growers' Portfolio maximizes government support from NJAES, NJDA, NJFB, USDA Value-added Grants for business development, logo, crop culture are described.

SEE PORTFOLIO ON PAGE 3

4. The physical facilities are described. Where and what are the offices, communication, and coordination facilities? Where are the facilities that product is packed, consolidated, and shipped from? These consolidation services can be leased or purchased from existing growers' physical facilities or other entities in the area. What is the cooling capacity or availability, and how is the cold chain of custody maintained? This information includes square footage, age, and capacity.
5. What are growers promising to deliver in their Portfolio? An example statement like, "We deliver the top Pepper Label, or top Greens Label, or any other top label, from New Jersey." *The growers commit to this and do not give their product to other sales entities.* Formal marketing agreements are prepared and signed by the grower entity and the sales entity. The marketing agreement describes how price/quality/volume/time/cold chain disputes are addressed at all levels of custody (formal agreements are required by the PACA).
6. The Portfolio presentation includes a Quality Assurance commitment and a communication commitment by Portfolio Growers to the marketing group. The Portfolio QA statement is backed by Portfolio Growers conducting Third Party Audits for Good Agricultural Practices. This includes worker hygiene, product traceability, IPM monitoring participation, cold chain, etc.
7. The Portfolio describes how support from outside groups is maximized. The support groups provide assistance, identifying potential strategic alliances with 52-week marketing companies, varieties, cultural practices, GAP training, Jersey Fresh marketing support, etc. These include NJDA with Jersey Fresh or institutional arrangements; Farm Bureau; Rutgers Cooperative Research & Extension; Packaging companies; NJAES Food Innovation Center; Input suppliers, etc.

The New Jersey growers forming their production and product Growers' Portfolio jointly offer this exclusive produce to marketing companies. New Jersey growers' success joining a marketing group depends on what the Portfolio shows a potential marketing business group. The marketing group then presents itself in the trade as selling and shipping for this Portfolio group of growers.

**What does the sales and marketing entity do?
What are the growers of the portfolio looking for?**

The shipper/sales agent/marketing partner:

1. Has a proven track record of sales.
2. Must be in the business year-round.
3. Must be able to provide accountability.
4. Is the organizing group, promoting the growers' labels and produce.
5. Must make the new Growers' Portfolio a high priority of their program—suggesting they sell only product

from this group unless the group falls short of the necessary supply. If fill-in produce is purchased for order voids, the sales agent shares margins with the Growers' Portfolio.

6. Has trust and comfort working with the Growers' Portfolio. This is key.
7. Proactively markets products, proactively keeps Growers' Portfolio informed on marketing issues. The sales company communicates multiple times daily and weekly with receivers.
8. May deploy and supervise field personnel to assess crop condition, crop volume, crop quality, and make expected harvest volume and pack schedules for the sales team, and communicate this to buyers and receivers, or may do this jointly funded in cooperation with the growers.

Over time, a strong grower-sales partnership melds into one voice from the shipping point. Growers speak of the sales organization as if it is their own and the sales organization speak of the growers as if it is their own. The partnership becomes a unified grower-shipper.

Growers' Portfolios are just one possible business structure restoring growers' valued, trusted, profitable place in regional wholesale produce markets. What are other incremental, short-term steps New Jersey's produce growers can do to improve their sales positions?

1. Demand New Jersey renew its participation in USDA Market News, at the first handler wholesaler FOB prices level, which was discontinued in 1998.
2. Growers need to do more communication on the "Buyers'" side of the business. Growers should provide *advance* availability faxes to potential customers, with volume and quality assessments, as well as specific growers or shippers where product can be obtained. The current Jersey Fresh Availability alert sent by NJDA is sound, but needs to be customized to lead buyers to a wholesaler or growers selling the product.
3. More New Jersey growers should be undertaking USDA authorized Food Safety Good Ag Practices Audits with the assistance of Rutgers Cooperative Research & Extension and NJDA. □

Vegetable Weed Control

Bradley A. Majek, Ph.D., Specialist in Weed Science

Spinach

Common ragweed is a frequent problem weed in spring seeded spinach. Neither Ro-Neet preplant incorporated nor Dual Magnum applied preemergence controls common ragweed. The weed can be controlled very effectively early postemergence with Stinger 3A (clopyralid). Use 1.0 to 1.5 fluid ounces per acre. Do not tank-mix with other pesticides or use spray additives.

The key is timing the application to the weed size. The optimum treatment time is when the spinach has 4 to 5 true leaves and the common ragweed has 2 true leaves and is less than 1 inch tall. Treatment before the weed exceeds four true leaves and 2 inches in height is critical. Stinger is a growth regulator type herbicide, which kills weeds s-l-o-w-l-y. Larger common ragweeds can be killed, but not in time for weed to “lay down” before harvest.

Weed Control Under Plastic Mulch

✓ **Cucurbits** (cucumbers, melons, squash): Use Prefar before laying plastic mulch to aid in the control of weeds at the planting hole. Spray the full recommended rate on the soil surface after bedding, but before laying the mulch. Condensation from soil moisture will activate the herb-icide. Irrigate before laying plastic only if dry conditions prevail.

Sandea has also been labeled for use under plastic

mulch for cucumbers and certain melons including cantaloupes, honeydew melons, and Crenshaw melons **ONLY!** Watermelons are *not* included in the “under plastic mulch” label in New Jersey. Use Sandea to improve the control of **annual broadleaf weeds** and to suppress or control **yellow nutsedge** under the mulch. Consult the *Commercial Production Recommendations* for rates and additional information.

✓ **Tomato:** Use Devrinol before laying plastic mulch to aid in the control of weeds at the planting hole. Spray on the soil surface *after bedding*. Condensation from soil moisture will activate the herbicide. Irrigate before laying plastic only if dry conditions prevail. Consult the *Commercial Production Recommendations* for rates and additional information.

✓ **Pepper:** Use Devrinol before laying plastic mulch to aid in the control of weeds at the planting hole. Spray on the soil surface *after bedding*. Condensation from soil moisture will activate the herbicide. Irrigate before laying plastic only if dry conditions prevail. Consult the *Commercial Production Recommendations* for rates and additional information.

✓ **Eggplant:** Use Devrinol before laying plastic mulch to aid in the control of weeds at the planting hole. Spray on the soil surface *after bedding*. Condensation from soil moisture will activate the herbicide. Irrigate before laying plastic only if dry conditions prevail. Consult the *Commercial Production Recommendations* for rates and additional information. □

Weekly Weather Summary

Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged much below normal, averaging 52 degrees north, 53 degrees central and 54 degrees south. Extremes were 75 degrees at Toms River on the 26th, and 31 degrees at Flemington on the 30th. Weekly rainfall averaged 0.06 inches north, 0.22 inches central, and 0.38 inches south. The heaviest 24 hour total reported was 0.42 inches at Atlantic City on the 24th to 25th. Estimated soil moisture, in percent of field capacity, this past week averaged 96 percent north, 94 percent central and 94 percent south. Four inch soil temperatures averaged 54 degrees north, 55 degrees central and 56 degrees south.

Weather Summary for the Week Ending 8 am Monday 5/ 1/ 6										
WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON %FC
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	
CANOE BROOK	.01	4.37	-4.33	73	33	53.	-1	178	148	92
CHARLOTTEBURG	missing									
FLEMINGTON	.05	5.83	-2.51	74	31	53.	-2	166	131	93
NEWTON	.13	4.20	-3.43	70	33	52.	-1	125	110	93
FREEHOLD	.10	4.77	-3.48	73	33	52.	-4	191	134	92
LONG BRANCH	.16	5.62	-2.91	71	38	52.	-3	140	96	84
NEW BRUNSWICK	.13	4.36	-3.58	74	33	53.	-4	205	130	93
TOMS RIVER	.31	4.52	-3.83	75	34	52.	-3	171	122	88
TRENTON	.39	5.02	-2.46	72	36	54.	-3	208	117	83
CAPE MAY COURT HOUSE	.32	3.08	-4.18	69	37	52.	-5	192	116	87
DOWNTOWN	.51	3.83	-3.66	72	33	53.	-5	211	114	90
GLASSBORO	.24	4.55	-3.35	73	39	55.	-2	249	158	85
HAMMONTON	.48	3.97	-3.70	73	34	54.	-3	221	135	88
POMONA	.49	3.82	-3.51	71	34	52.	-4	190	129	88
SEABROOK	.27	4.53	-2.15	72	39	56.	-2	294	194	85
SOUTH HARRISON	.53	4.27	-3.24	72	38	55.	NA	270	NA	NA
WES KLINE — GDD BASE 40 PINEY HOLLOW LAST WEEK 125 (Ending 4/24/06) THIS WEEK 93 (Ending 5/1/06)										

Pest Notes

Gerald M. Ghidui, Ph.D., Specialist in Vegetable Entomology

What's So Good About the New Formulations?

Several "old" insecticides are now available in "new" formulations. Although the active ingredient hasn't changed, the new formulation allows for much more flexibility that growers can certainly benefit from. Some of the new formulations and their advantages are:

Admire PRO – from Bayer Crop Science, this product still has imidacloprid as the active ingredient, and still remains labeled on the same crops as the old Admire. However, all else has changed. It is more concentrated (thus the rates will change compared with the old Admire), and it more easily mixes with water. After mixing, it stays in suspension much longer and has few precipitates. The mixture pours like water into the tank, and leaves almost no residue behind in the container. The big advantage is that Admire PRO can be applied in numerous ways, including pre-plant, at-plant, drenching, seed treatments, post-plant, foliar, and even in the greenhouse! Instead of having two formulations (one for soil application, one for foliar), there is only one formulation. So much has changed that it is crucial to consult the label before use for all rates, restrictions and application instructions.

Baythroid XL – Bayer Crop Science has released a new formulation of Baythroid. Instead of cyfluthrin as the active ingredient, it is now beta-cyfluthrin, the active isomer of cyfluthrin, which reduces the risk of skin sensitivity. The toxicity rating has been reduced so that it is now a "Warning" signal word on the label, and thus has a re-entry interval of 12 hours and a preharvest interval of "0" days (instead of 3) on labeled crops. And the label has been expanded to include leafy vegetables, cucurbits, fruiting vegetables, and root, tuberous and corm vegetables. Another huge advantage to this formulation is that **seedcorn maggots** have been added to the label for some crops! Remember that Baythroid XL is now a 1 lb/gal material, which affects the rates used on all crops.

Capture LFR – from FMC Agricultural Products Group, this is the new formulation (1.5 lb per gal) of the older Capture 2EC (bifenthrin) for use on field, sweet, and popcorn. It is a new formulation that is ready to be mixed with liquid fertilizer as a single at-plant application to control soil insect pests. Fertilizers that it can be mixed with include the liquid starter or "pop-up" fertilizers. The formulation is designed to mix evenly and stay suspended with minimal agitation. It has a "warning" signal word on the label, and a 12 hour re-entry interval.

Warrior – although not new, this formulation (with "Zeon technology") replaced the old EC formulation several years ago. The new formulation is much easier to mix and rinse than the old formulation, and stays suspended with little agitation. A major improvement in the new formulation was to eliminate the potential of skin sensitivity that was characteristic of the old emulsifiable formulation. Warrior currently has a "warning" signal word on the label.

Other New Label Additions

SpinTor 2SC (spinosad) has several new crops added to their label. These include:

Bulb vegetables – for control of **armyworms, leafminers, European corn borer, flea beetle, loopers** and the suppression of **thrips** on (but not limited to) dry and green onion, garlic, leek, shallot, and Welch onion. Do not harvest within 1 day of application.

Sweet corn, popcorn – for the control of **armyworms** (including fall armyworm), **European corn borer**, and **corn earworm**. This label includes application through the irrigation system (chemigation). Do not harvest grain within 1 day of application, or forage/fodder within 3 days of application.

Mint – for the control of **armyworms, cutworms, leafminers, loopers**, and the suppression of **thrips** in mint. Do not apply within 7 days of harvest.

Rimon 0.83EC (novoluron)

Head and stem brassica – crops include cabbage, broccoli, cauliflower, Brussels sprouts, Chinese mustards and kohlrabi. Apply Rimon for the control of **armyworm, cabbage looper, diamondback moth larvae, cabbage-worm, webworm, leaf miners** and **cucumber beetles**.

Always consult the label for complete rates, restrictions and application instructions.

Section 18, Specific Exemptions for New Jersey

Coumaphos – the NJ DEP granted a specific exemption for the use of Checkmate+ Bee Hive Pest Control Strips (containing 10% coumaphos) for use in honey bee colonies to control **varroa mites** (*Varroa spp.*) and small **hive beetles** (*Aethina tumida*). See label for specific conditions and restrictions.

Thymol, eucalyptus oil and L-menthol – the NJ DEP granted a specific exemption for the use of ApiLife VAR for use in bee hives to control **varroa mites** (*Varroa spp.*). ApiLife VAR contains a mixture of thymol, eucalyptus oil and L-menthol. See label of specific conditions and restrictions. □

Vegetable Disease of the Week

Andy Wyenandt, Ph.D., Specialist in Vegetable Pathology



Anthracnose fruit rot of strawberry.



Septoria leaf spot of Parsley.

Update on Asian Soybean Rust

Andy Wyenandt, Ph.D., Specialist in Vegetable Pathology

To date, **Asian soybean rust** (ASR) has been detected in 5 counties in Alabama, 11 counties in Florida, 4 in Georgia and 1 in Texas. No new positive identifications of ASR have been made since the first week of March. For more information on ASR, please visit RCRE's Asian soybean rust website at <http://www.rce.rutgers.edu/soybeanrust/>. □

Vegetable Disease Update

Andy Wyenandt, Ph.D., Specialist in Vegetable Pathology and Wesley Kline, Ph.D., Cumberland County Agricultural Agent

✓ Cole crops – Downy Mildew and Alternaria –

Symptoms of Downy Mildew include purple to yellowish-brown spots on upper leaf surfaces. A grayish-white spore mass will develop and cover the underside of leaves under ideal temperatures (night temperatures of 46 to 61°F and day temperatures below 75°F). Downy mildew can kill young plants. Heavily infected leaves may drop providing entry points for bacterial infections (Black rot and Soft rot). Symptoms of Alternaria on infected leaves include small, expanding circular lesions with concentric rings that may have a 'shot-hole' appearance as lesions age. Heavily infected seedlings may result in damping-off. Control of Downy mildew and Alternaria begin with preventative fungicide applications. Use one of the following at the first sign of disease and continue every 7 to 10 days (Please refer to the pesticide table on page F17 of the *NJ Commercial Vegetable Production Recommendations* to determine which fungicide is labeled for each specific crop.): Amistar (azoxystrobin, 11) at 2.0 to 5.0 oz 80 WDG/A (Alternaria only; labeled for use on leafy greens only), or Bravo, Echo, Equus (chlorothalonil, M5) at 1.5 pt 6F/A or OLF, or maneb (M3) at 1.5 to 2 lb 80WP/A or OLF, or Ridomil Gold Bravo (mefenoxam + chlorothalonil, 4 + M5) at 1.5 lb 76.5WP/A (14-day schedule), or Switch (cypridonil, 9) at 11 to 14 oz 62.5WG/A (Alternaria only). For downy mildew only, apply Actigard (acibenzolar-S-methyl, P) at 1 oz 50WG/A (begin applications 7-10 days after thinning and re-apply every 7 days for a total of 4 applications per season.), or Aliette (fosetyl Al, 33) at 3 to 5 lb 80WDG/A (on 14-day schedule). For more information please see *2006 New Jersey Commercial Vegetable Production Recommendations Guide*.

✓ **Lettuce** – For Bottom Rot, Endura 70W (boscalid, Group 7) at 8 to 11 oz/A, or Rovral 50WP (iprodione, 2) at 1.5 to 2 lb/A or OLF should be applied one week after transplanting or thinning and 10 and 20 days later. For Lettuce drop, the biological Contans 5.3WG at 2 to 4 lbs/A pre-plant can be incorporated at a depth of 1 to 2 inches, or Rovral 50WP can be applied at 1.5 to 2 lb/A beginning one week after transplanting or thinning and again at 10 and 20 days later. For more information on control of Bottom rot and Lettuce drop and other important diseases of lettuce please see the *2006 New Jersey Commercial Vegetable Production Recommendations Guide*.

✓ **Parsley – Septoria Blight /Bacterial (blight) leaf spot** – Leaf spots caused by **Septoria blight** are easily distinguished by small, angular to round leaf spots with grayish-brown centers with a definitive dark, brown

SEE DISEASE UPDATE ON PAGE 7

margin. Numerous black fruiting bodies develop and are visible in the center of lesions (see photo in VDOW). Spread of Septoria blight is by wind-driven rain, heavy dews and overhead irrigation. Workers and equipment may also spread the disease during wet conditions. Best management practices include: i) proper crop rotations of at least 2 years and by using clean or treated seed, ii) **scout fields early** for symptom development, iii) keeping workers and equipment out of fields with wet foliage, and iv) plowing under residue of harvested crop and avoid planting in fields adjacent or near previously infected fields. Applications of azoxystrobin (Amistar or Quadris) and fixed copper can be alternated every 7 days for control. **Bacterial leaf spot** (*Pseudomonas syringae*) of parsley can up at the same time as **Septoria blight**. Leaf spots caused by Bacterial blight appear as small brown to black spots on the leaves. It does not have the grayish brown centers or brown margins like **Septoria**. The pathogen can be soil or seed borne and develops during cool, moist weather. The disease spreads during cool rainy periods or under sprinkler irrigation; and a high plant density. The same control measures listed for **Septoria** will assist in preventing the spread of **Bacterial leaf spot** as long as the fixed copper is included with the azoxystrobin. If Oxidate is used, follow the label carefully.

✓ **Strawberry – Anthracnose fruit rot** -Strawberry anthracnose can be extremely destructive during warm, wet weather causing significant fruit rot. Symptoms of Anthracnose include blackish-brown circular spots on maturing green fruit and soft, sunken (flat) circular lesions on ripe fruit (see VDOW). On ripe fruit, lesions can expand rapidly and are often covered with a pinkish-orange spore mass. Spores are spread from infected to healthy fruit with splashing water. Control of Anthracnose always begins with a 7 to 10 day preventative spray program no later than 10% bloom and/or prior to disease development. For control apply the following combinations:

#1) captan (M3) at 4 lb 50WP/A plus Pristine (pyraclostrobin + boscalid, 11 +7) at 18.5 to 23.0 oz 38WG/A

#2) captan 5(M3) at 4 lb 50WP/A plus Abound (azoxystrobin, 11) at 6.2 to 15.4 oz 2.08F/A, or Cabrio (pyraclostrobin, 11) at 12 to 14 o 20EG/A

#3) Captevate (captan + fenhexamid, M3 + 17) at 3.5 to 5.25 lb 68WDG/A

For subsequent applications, alternate:

captan (M3) at 4 lb 50WP/A plus Abound (azoxystrobin, 11) at 6.2 to 15.4 oz 2.08F/A, or

Cabrio (pyraclostrobin, 11) at 12 to 14 oz 20EG/A with captan (M3) at 4 lb 50WP/A, or

Captevate (captan + fenhexamid, M3 + 17) at 3.5 to 5.25 lb 68WDG/A

To help manage fungicide resistance development, do not make more than 2 consecutive applications of either Pristine (pyraclostrobin + boscalid, 11 + 7), Cabrio

(pyraclostrobin, 11) or Abound/Quadris (azoxystrobin, 11) before switching to another fungicide chemistry.

✓ **Strawberry – Botrytis (Gray Mold) and Blossom blight** – can cause serious losses in strawberry plantings if not controlled properly. Development is favored by moderate temperatures (59 to 77°F) with prolonged periods of high relative humidity and surface wetness. Control of Gray mold begins with preventative fungicide applications. Apply at 5 to 10 percent bloom and every 10 days until harvest. During periods of excessive moisture, spray intervals of 5 to 7 days may be necessary. Alternate fungicide chemistries to aid fungicide resistance management.

Application #1: captan (M3) at 4 lb 50WP/A plus Topsin M (thiophanate-methyl, 1) at 1 lb 70WP/A or Switch (cypridonil, 9) at 11-14 oz. 62.5WG/A

Application #2; Elevate (fenhexamid, 17 - See restrictions) at 1.1 to 1.5 lb 50WDG/A, or Pristine (pyraclostrobin + boscalid, 11 + 7) at 18.5 to 23 oz 38 WG/A

Application #3: captan (M3) at 4 lb 50WP/A plus Topsin M (thiophanate-methyl, 1) at 1 lb 70WP or Switch (cypridonil, 9) at 11 to 14 oz. 62.5WG/A

For subsequent applications, alternate:

Captan (M3) at 4 lb 50WP/A, or Captevate (captan + fenhexamid, M3 + 17) at 3.5 to 5.25 lb 68WDG/A, or Switch (cypridonil, 9) at 11 to 14 oz. 62.5WG/A or Pristine (pyraclostrobin + boscalid, 11 +7) at 18.5 to 23 oz 38 WG/A, or Thiram (M3) at 4 to 5 lb 65WSB/A

✓ **Tomato – Bacterial spot and speck** – Both bacterial diseases can cause serious problems in the field if infections begin in the greenhouse prior to transplanting. Symptoms of spot and speck look very similar on infected leaves. Lesions are small, circular, blackish-brown and with time develop a halo, or yellowing of tissue surrounding the lesion. As lesions develop they can coalesce (join together) and can cause premature death. Since sources for these diseases include weed hosts, volunteer plants and contaminated wood (benches or stakes) make sure production or holding areas are disinfested, weed free and clean prior to introducing transplants, and inspect all seedlings prior to holding and transplanting. Infections can occur on all parts of the tomato plant and can easily be spread during transplant trimming with contaminated equipment and by workers' hands. Tomato plants with suspected symptoms can be treated with streptomycin (Agri-Mycin 17, Agri-Strep, 25) at 1 lb/100 gallons, or 1.25 teaspoon per gallon prior to transplanting every 4 to 5 days. After transplanting apply Actigard (P) at 0.33 oz 50 WG/A, or fixed copper (M1) at 1 lb a.i./A plus a mancozeb (Dithane, Manex II, Manzate, Penncozeb, M3) at 1.5 lb 75DF or OLF, or ManKocide (M1 + M3) at 2.5 to 5.0 lb 61WP/A, or Cuprofix MZ (M1 + M3) at 1.75 to 7.25 lb 52.5DF/A on a 7 day schedule. □

MILLTOWN, NJ 08850
PERMIT #576
POSTAGE PAID
FIRST CLASS

New Brunswick, N.J. 08901-8551
18 College Farm Road
Rutgers' Cook College
Plant & Pest Advisory
RUTGERS
COOPERATIVE RESEARCH & EXTENSION
NJ AGRICULTURAL EXPERIMENT STATION



PLANT & PEST ADVISORY VEGETABLE CROPS EDITION CONTRIBUTORS

Rutgers Cooperative Research & Extension (RCRE) Specialists

Gerald M. Ghidui, Ph.D., Vegetable Entomology
George Hamilton, Ph.D., Pest Management
Joseph R. Heckman, Ph.D., Soil Fertility
Bradley A. Majek, Ph.D., Weed Science
Andy Wyenandt, Ph.D., Vegetable Pathology

RCRE County Agricultural Agents

Atlantic, Richard W. VanVranken (609-625-0056)
Burlington, Raymond J. Samulis (609-265-5050)
Cumberland, Wesley Kline, Ph.D. (856-451-2800)
Gloucester, Michelle Infante-Casella (856-307-6450)
Hunterdon, Winfred P. Cowgill, Jr. (908-788-1338)
Middlesex, William T. Hlubik (732-398-5260)
Monmouth, Bill Sciarappa, Ph.D. (732-431-7260)
Morris, Peter J. Nitzsche (973-285-8300)
Passaic, Elaine F. Barbour, Agric. Assistant (973-305-5740)
Salem, Peter R. Probasco (856-769-0090)
Warren, William H. Tietjen (908-475-6505)

Vegetable IPM Program (732-932-9802)

Joseph Ingerson-Mahar, Vegetable IPM Coordinator
Kristian E. Holmstrom, Research Project Coordinator II

Newsletter Production

Jack Rabin, Associate Director for Farm Services, NJAES
Cindy Rovins, Agricultural Communications Editor

Pesticide User Responsibility: Use pesticides safely and follow instructions on labels. The pesticide user is responsible for proper use, storage and disposal, residues on crops, and damage caused by drift. For specific labels, special local-needs label 24(c) registration, or section 18 exemption, contact RCRE in your County.

Use of Trade Names: No discrimination or endorsement is intended in the use of trade names in this publication. In some instances a compound may be sold under different trade names and may vary as to label clearances.

Reproduction of Articles: RCRE invites reproduction of individual articles, source cited with complete article name, author name, followed by Rutgers Cooperative Research & Extension, Plant & Pest Advisory Newsletter.

For back issues, visit our web site at: www.rce.rutgers.edu/pubs/plantandpestadvisory.

THE STATE UNIVERSITY OF NEW JERSEY
RUTGERS

Cooperating Agencies: Rutgers, The State University of New Jersey; U.S. Department of Agriculture; and County Boards of Chosen Freeholders. The U.S. Department of Agriculture (USDA) prohibits discrimination in all programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, or marital or family status. (Not all prohibited bases apply to all programs.) Rutgers Cooperative Research & Extension is an Equal Opportunity Program Provider and Employer.