

# PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

APRIL 24, 2002

## Potash Terminology and Facts



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Ever wonder where the term potash originated? Of course, potash is now commonly used in reference to potassium fertilizers. But, in colonial days it referred to a crude potassium carbonate salt that was produced by leaching wood ashes and drying or evaporating the leachate in iron pots...hence pot ash. Early settlers used this salt as a source of potassium fertilizer and for soap and glass making, wool scouring, and cloth dyeing. In fact, the first patent issued in the US was for a process to extract potash from wood ashes.

In fertilizer terminology, potash refers to potassium oxide, or  $K_2O$ . For example, a fertilizer with 0-0-60 analysis will contain 60 percent  $K_2O$  equivalent by weight. This is somewhat confusing since the fertilizer material doesn't actually contain  $K_2O$ , and plants do not take up  $K_2O$ . It's simply the standard that has been adopted and used for some time now. Occasionally, in scientific literature, percent potassium is used instead of percent  $K_2O$ . To convert potassium to  $K_2O$ , multiply by 1.2; multiply  $K_2O$  by 0.83 to convert to potassium.

Potash fertilizers range from 20 to 62 percent  $K_2O$ . They are all water-soluble and therefore agronomically effective. They consist of potassium in combination with chloride, sulfate, nitrate, and other elements. Common potash fertilizer sources include,

- Muriate of potash (MOP), or potassium chloride (KCl)
- Sulfate of potash (SOP), or potassium sulfate ( $K_2SO_4$ )
- Sulfate of potash magnesia, or potassium-magnesium sulfate ( $K_2SO_4 \cdot 2MgSO_4$ )
- Saltpeter, or potassium nitrate ( $KNO_3$ )

In addition to potassium, these fertilizers provide other needed nutrients. For example, MOP contains 60 to 62 percent  $K_2O$  and about 45 percent chloride. Sulfate of potash contains 50 to 53 percent  $K_2O$  and about 18 percent sulfur. Sulfate of potash magnesia contains 20 to 22 percent  $K_2O$  and sulfur and 10 to 11 percent magnesium. Potassium nitrate contains 44 percent  $K_2O$  and 13 percent nitrogen.

Muriate of potash is by far the most commonly used of the potash fertilizer sources. It comes in red, white, and colors in between. The question is sometimes asked, "Does the color of MOP make a difference in its agronomic effectiveness?" The answer is an emphatic *No*. Some crops may be sensitive to the chloride in MOP. Therefore, SOP or

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# Vegetable Crops Diseases

Stephen A. Johnston, Ph.D., Plant Pathology

✓ **Asparagus:** **Purple spot** is now present on some spears being harvested. Infected spears have numerous, elliptical lesions with purple borders and gray centers scattered over the portion of the spear near the soil surface and progressing to the tips. There are no control measures available at this time. Removal of previous year's fern growth during the winter reduces the incidence of the disease the following harvest season. In order to reduce stress associated with production fields that can lead to an increase in severity of **Fusarium Root** and **Crown Rot**, adhere to the following recommended cutting regime. Do not harvest the year following establishment of the bed. Harvest for two weeks the third year. In subsequent years, stop harvesting by June 15<sup>th</sup>. For new plantings, be sure to use disease-free crowns, and plant into a field without a history of asparagus production for at least 8 years to reduce the severity of **Fusarium Root** and **Crown Rot**.

✓ **Bean (snap):** Apply Ridomil Gold 4E in a 7-in. band over the row after seeding or apply Ridomil Gold PC 11G as an in-furrow application for the control of **root rots**.

✓ **Beet:** Apply Ridomil Gold 4E as a soil surface application after seeding for control of **damping-off**. Observe fields for the presence of **Cercospora leaf spot**, which is characterized by small circular red lesions with gray centers. Once observed, apply Quadris 2.1F as a foliar spray for control.

✓ **Carrot:** In fields with **Root-Knot Nematode** populations, apply a soil fumigant (Vapam or Telone II) for control. Fields to be treated should be free of debris by moldboard plowing and discing prior to treatment. Allow 2-3 weeks between treatment and seeding.

✓ **Cole crops:** After seeding in the greenhouse, drench beds or flats with Terraclor for prevention of **damping-off** caused by **Rhizoctonia**. Improve the air circulation in the greenhouse, and apply Aliette alternated with maneb every 7 days as a foliar spray for control of **Downy Mildew**.

✓ **Corn (sweet):** All fields should be treated for **flea beetles** to reduce the transmission of **bacterial wilt** (Stewart's Wilt). Several control options are available. Plant seed treated with Gaucho, apply Counter 20CR as an in-furrow or banded application at planting, or apply foliar sprays with an insecticide beginning at the spike stage of growth.

✓ **Cucumber:** Immediately after seeding or transplanting, treat fields with mefenoxam (Ridomil Gold or Ultra Flourish) for control of **damping-off** caused by **Pythium**. Shortly after transplanting, apply a copper fungicide + mancozeb as a foliar spray to reduce the incidence of **angular leaf spot**. Apply an insecticide at

seeding or transplanting or as a foliar spray up until flowering for control of **cucumber beetles** that transmit **bacterial wilt**.

✓ **Eggplant:** **Bacterial leaf spot** is present on some transplants in greenhouses at this time. Infected seedlings have numerous small, circular, gray-black lesions scattered over the cotyledons and lower leaves. Infected plants are stunted and become defoliated. Flats containing infected seedlings should be removed from the greenhouse and destroyed. Only water in the mornings to allow the foliage to dry quickly to avoid spread of the disease. Fields used for production should be well drained and devoid of low spots. Produce the crop on raised beds and allow drainage to occur at the end of the field to avoid conditions of high soil moisture that favor the development of **Phytophthora blight**.

✓ **Lettuce:** **Bacterial leaf spot** is present in some fields of romaine being harvested at this time. Infected leaves are present within the head, and contain black, water-soaked, angular lesions usually concentrated near the margins. The disease develops following periods of heavy rainfall. Applications of Oxidate as a foliar spray may assist in reducing the spread of the disease. Adjacent fields to those with infected plants, or fields with a history of the disease should be treated. In young fields, reduce watering as much as possible to limit the incidence of **Corky Root**. **Drop** caused by *Sclerotinia sclerotiorum* (large sclerotia producing species) is present in fields at this time. Apply Ronilan or Rovral as a directed spray to the base of the plants once plants recover from transplanting or after thinning. Repeat 10 and 20 days later for the control of **Drop**.

✓ **Muskmelon:** To reduce the incidence of **Fusarium wilt**, rotate away from fields that produced muskmelons for at least 5 years before returning to muskmelons, and plant the **Fusarium** resistant variety, 'Athena' Apply an insecticide at seeding or transplanting or as a foliar spray up until flowering for control of **cucumber beetles** that transmit **bacterial wilt**.

✓ **Onion:** Now is the time to begin fungicide applications for the control of **Downy Mildew**, **Purple Blotch** (Alternaria) and **Blast** (Botrytis) on overwintered onions and leeks. Repeat applications every 7 days.

✓ **Parsley:** Soon after seeding, apply a soil surface application of Ridomil Gold 4E or Ultra Flourish 2E for the control of **Damping-Off**.

✓ **Pepper:** Avoid using fields that are poorly drained. However, if poorly drained fields must be used, select the variety, 'Paladin' or 'Aristotle', which have resistance to **Phytophthora blight**. Apply streptomycin foliar sprays every 5-7 days until transplanting to assist in preventing **bacterial spot**. Produce the crop on raised beds and allow drainage to occur at the end of the field to avoid conditions of high soil moisture that favor the development of **Phytophthora blight**.

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✓ **Potato (sweet):** Use new or sterilized sand in seedbeds for sprout production. Use seed potatoes that are free of **Scurf**, and dip potatoes in Mertect 34°F prior to bedding for disease control. Maintain bed temperature between 80-85°F, and do not overheat to prevent collapse of the potatoes.

✓ **Spinach: Alternaria Leaf Spot and Anthracnose** are present in fields at this time. Apply Quadris 2.1F as a foliar spray, and repeat in 7 days. Do not make more than 2 sequential applications of Quadris to avoid the development of resistant strains of the pathogens. Observe fields for the presence of **white rust**. The disease is now present in some fields in South Jersey. Once observed, apply Quadris as a foliar spray. If additional applications are warranted, alternate Quadris with a low rate of a copper fungicide. Some winter over fields have scorched crown leaves at this time. This is the result of the intense heat last week impacting the tender new growth.

✓ **Squash, summer:** Apply an insecticide at seeding or transplanting or as a foliar spray up until flowering for control of **cucumber beetles** that transmit **bacterial wilt**.

✓ **Tomato:** For staked tomato culture, thoroughly wash reused stakes and treat with a chlorine dip to reduce overwintering inoculum of **bacterial canker**. Use seed that has been chlorine treated, or treat with Clorox if untreated to reduce incidence of **bacterial leaf speck** and **spot**. Once seedlings have their true leaves, begin foliar applications of streptomycin, and repeat every 5-7 days until transplanting in the field to reduce bacterial diseases. To avoid injury to transplants, maintain adequate moisture levels and avoid sudden changes in temperature from leaving open vents and doors near young, tender seedlings. Shortly after transplanting apply Actigard as a foliar spray to reduce the incidence of bacterial diseases. Use only the low rate (1/3 oz/A) and repeat every 7 days for a total of 6 applications. □

## POTASH FROM PAGE 1

potassium nitrate may be the best source for crops such as potatoes, tobacco, fruit trees and others with low tolerance to chloride. Sulfate of potash magnesia is routinely used wherever there is a need for at least two of the three nutrients in that material.

Potassium is a major essential nutrient in crop production. Where it is deficient in the soil or where crop demands during specific growth stages exceed the soil's ability to supply adequate potassium, it must be supplemented through fertilization. All potassium fertilizers are agronomically effective and in most cases will perform similarly. Crop sensitivities, the need for accompanying nutrients, and market availability are factors that should be considered when selecting the best source for a specific situation.

*Submitted by Joseph R. Heckman, Ph.D., Specialist in Soil Fertility.* □

## Pest Notes

*Gerald M. Ghidui, Ph.D., Vegetable Entomology*

✓ **General:** Because of the warm soil temperatures, growers will likely see early populations of insect pests such as **Colorado potato beetles, flea beetles, asparagus beetles, maggot flies, and cutworms**. Consequently, damage from these pests will appear earlier than "normal" on various crops. Monitor frequently, especially when evening temperatures are above 50°F. Refer to the *2002 Commercial Vegetable Production Recommendations* for information on effective management of these pests.

Also, the degree day accumulation for central southern New Jersey is currently at 338. Last year at this time the degree day accumulation was only 180. Insects such as **aphids** and **European corn borer** may be active at this time, and if evening temperatures remain at 55°F it is most likely that the first activity of these pests will be observed.

As a general rule, the overwintering insect pests are probably in a more advanced stage than they were during this time last year. Begin monitoring for these pests as soon as evening temperatures remain above 50°F, and monitor more frequently than usual. Because of the advanced state of insect activity, it is also most likely that the pest populations will be higher than normal for this time of the year.

## New Labels for 2002

Assail 70WP (acetamiprid) - a newly labeled neonicotinoid (related to Admire, Provado, Calypso, Platinum, Actara) for control of **aphids, whiteflies, thrips, leafhoppers, and potato beetles**. Now labeled on leafy vegetables (arugula, dandelion, endive, head and leaf lettuce, parsley, radicchio, spinach etc), cole crops (broccoli, cabbage, collards, kale, kohlrabi, mustard, etc.) and fruiting crops (eggplant, pepper, tomato, tomatinos, etc). Do *not* harvest within 7 days of last application for any of these crops. Consult label for actual rates, restrictions, etc.

Mustang 1.5EC (zeta-cypermethrin) - a newly labeled pyrethroid (similar to Fury EC) for control of various insect pests, including **beetles (cucumber, flea, leaf beetles), stink bugs, thrips, worms (corn borers, corn earworms, loopers, etc.)**. Labeled on head and stem brassicas (1 day PHI), bulb vegetables (7 day PHI), sweet corn (3 day PHI), leafy vegetables (1 day PHI), legume vegetables (1 day PHI), and fruiting vegetables (1 day PHI). Consult label for actual rates, restrictions, crops, etc.

SpinTor 2SC - the label for SpinTor has been expanded to include leafy vegetables, leaves of root and tuber crops, edible beans and peas, okra, artichokes, beets, and the chemigation of potatoes and sweet corn. **Note:** nearly all of these new labels have been as a result of work conducted by IR-4, much of which is completed at the Rutgers Agricultural Research and Extension Center of Upper Deerfield, NJ and the IR-4 Headquarters, New Brunswick, NJ.

Admire, Provado - the label has been expanded to include edible podded beans and succulent shelled beans for the control of **aphids, whiteflies and thrips**. Rates of Admire are 16-24 oz 2F/acre and for Provado 1.6F rates are 3.5 fl oz/acre. □

# Weekly Weather Summary

Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged much much above normal. Extremes were 97 degrees at Toms River on the 18th and 38 degrees at Charlotteburg on the 22nd. Weekly rainfall averaged 0.65 inches north, 0.16 inches central, and 0.26 inches south. The heaviest 24 hour total reported was 1.00 inches at Canoe Brook on the 19th to 20<sup>th</sup>. Estimated soil moisture, in percent of field capacity, this past week averaged 88 percent north, 64 percent central and 55 percent south. Four inch soil temperatures averaged 65 degrees north, 67 degrees central and 68 degrees south.

## Weather Summary for the Week Ending 8 am Monday 4/22/ 2

WEATHER STATIONS	R A I N F A L L			TEMPERATURE				GDD BASE50		MON %FC
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	
BELVIDERE BRIDGE	.22	5.94	-.80	93	44	67.	15	187	180	81
CANOE BROOK	1.03	6.27	-1.21	96	45	69.	18	217	214	92
CHARLOTTEBURG	1.08	6.68	-.60	93	38	66.	17	161	161	100
FLEMINGTON	.34	6.10	-1.04	93	43	67.	15	217	212	76
LONG VALLEY	.63	6.06	-1.55	92	42	65.	15	160	160	93
NEWTON	.58	5.09	-1.36	93	42	67.	17	181	181	92
FREEHOLD	.13	5.13	-2.02	95	46	70.	17	259	244	66
LONG BRANCH	.22	5.75	-1.65	87	46	69.	17	212	203	54
NEW BRUNSWICK	.11	4.96	-1.84	95	45	69.	15	234	210	74
PEMBERTON	missing									
TOMS RIVER	.16	6.97	-.21	97	44	72.	19	266	256	50
TRENTON	.18	4.84	-1.64	93	45	70.	15	249	214	56
CAPE MAY COURT HOUSE	.07	6.61	.31	93	48	71.	17	265	238	37
DOWNSTOWN	.21	5.36	-1.12	94	44	71.	16	253	215	52
GLASSBORO	.66	5.74	-1.08	95	43	70.	15	267	232	69
HAMMONTON	.15	5.51	-1.10	96	44	71.	17	264	232	43
POMONA	.09	6.81	.43	94	45	71.	18	257	239	50
SEABROOK	.53	5.69	-.06	95	44	71.	16	276	236	62
ATLANTIC CITY MARINA	.14	5.96	-.04	88	49	68.	15	198	175	44
SOUTH HARRISON	1.38	6.37	.10	93	44	71	NA	271	NA	NA
WES KLINE — GDD BASE 40 PINEY HOLLOW Last Week 118 (Ending 4/15/02) This Week 217 (Ending 4/22/02)										

## Resident Canada Geese Management Options

Rutgers Cooperative Extension, in cooperation with USDA-APHIS-Wildlife Services, will hold an informational meeting to discuss the issue of resident Canada geese in New Jersey. Topics to be discussed include:

- ◆ Why the population of resident Canada geese is so large in New Jersey
- ◆ Who is responsible for the management of Canada geese in New Jersey
- ◆ All available management options for Canada geese within New Jersey

### Those concerned with Canada Geese should attend:

- Homeowners
- Golf courses
- Corporate park grounds officers
- Municipal Officials
- Park and Recreation Managers
- The Agricultural Community

### Meetings:

- ◆ Monmouth and Middlesex Counties: **April 25<sup>th</sup>, 7-9pm, Freehold Gardens Hotel**
- ◆ Somerset and Union Counties: **May 1<sup>st</sup>, 7-9 pm, Union Vo-Tech**
- ◆ Warren and Sussex Counties: **May 2<sup>nd</sup>, 7-9 pm, Hackettstown High School**
- ◆ Cumberland and Salem Counties: **May 6<sup>th</sup>, 7-9 pm, Elmer Grange Hall**
- ◆ Gloucester County: **May 7<sup>th</sup>, 7-9 pm, Gloucester County Office of Government Services**
- ◆ Essex and Hudson Counties: **May 15<sup>th</sup>, 6-8 pm, Robison Center, Rutgers-Newark**
- ◆ Camden County: **May 23<sup>rd</sup>, 7-9 pm, Camden County Cooperative Extension Office**

For questions or more information on the programs please contact your local Rutgers Cooperative Extension office or David Drake, Extension Wildlife Specialist, 732-932-1509 x 10. □

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