

Misc (3)

INFORMATION LETTER FOR MARKET GARDENERS

March 17, 1948

VEGETABLE SEED TREATMENTS

Chart for 1948

By R. C. Rose, Extension Plant Pathologist

Crop	Fungicide and Method of Treatment	Diseases Controlled
Asparagus	No treatment suggested at present.	
Beans lima, snap	Spergon or Arasan, 2 oz. dust for each bushel of seed or $\frac{1}{2}$ level teaspoonful for each pound.	Damping-off, Seed-rot.
Beet	1. Arasan, 1% of seed by weight or 2 level teaspoonfuls for each lb. <u>or</u> 2. Semesan, 1% or $\frac{1}{4}$ level teaspoonfuls <u>or</u> 3. Soak 1 hr. in blue vitriol (copper sulfate) solution, 2 oz. in each gallon of water.	Damping-off, Seed-rot.
Beet seed varies greatly in weight, but the amount of chemical suggested is sufficient for even the greatest area of seed surface in a bushel.		
Broccoli	See treatment for cauliflower.	See cabbage.
Brussels sprouts	See treatment for cabbage.	See cabbage.
Cabbage	Soak seed in hot water at 122°F. (50°C.) for 25 minutes. Dry. Then just before planting, treat with Semesan, 0.4% or $\frac{1}{2}$ level teaspoonful for each lb. (if planted too early for maggots in the seedbed) or with calomel according to the directions of the entomologists (if planted late enough for maggots in the seedbed).	Black-rot, Black-leg, Alternaria leafspot, Peppery leafspot, Damping-off, Wire-stem.
Celery (celeriac)	1. Calomel, 1 oz. mixed thoroughly with 1 gallon of water. Place seed in fairly tightly woven cloth sack and dip until seeds are thoroughly wet. <u>or</u> 2. If soil is new and seed is new, treat in hot water, 118°F. (48°C.) for 30 minutes. See your county agricultural agent or your seeds man before treating with hot water. Seed 2 or more years old requires no treatment.	Damping-off, Seed-rot. Seed-borne diseases, as Early blight, Late blight.
Cauliflower	Same as for cabbage excepting the time limit is 15 to 18 minutes in the hot water.	See cabbage.
Carrot	Spergon or Arasan, $\frac{1}{2}$ % of seed by weight or 1 level teaspoonful for each pound. Treat only if there has been previous trouble in procuring good stands.	Damping-off, Seed-rot.

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Crop	Fungicide and Method of Treatment	Diseases Controlled
Chicory	: See treatment for endive.	: See endive.
Cucumber	: Corrosive sublimate, 1 large tablet of approximately 8 grains for each pint of water or 1 oz. of the powder in 7½ gallons. : Use a gallon of liquid for each pound of seed. The solution may be used 3 or 4 times. : Soak the seed 5 minutes, rinse well in water and dry. : 1. Then dust with Spergon, ½ teaspoonful for each pound : 2. Semesan, 0.4% by weight or ½ level teaspoonful for each pound.	: Scab, : Angular leafspot, : some anthracnose, : : : : Damping-off, : Seed-rot.
Egg plant	: When the disease has been severe, and 3-year rotations can be practiced, treat with hot water, 122°F. (50°C.) for 50 minutes. : After drying or if not hot water treated, dust with Arasan or Semesan, .4% or ½ level teaspoonful for each lb.	: Phomopsis blight, : : : Damping-off, : Seed-rot.
Kale Kohlrabi	: See treatment for cauliflower.	: See cabbage.
Lettuce	: No treatment is suggested unless poor stands were present previously. : Then dust very lightly with Spergon or Semesan. ¼ teaspoonful per pound of seed. : Zinc oxide, 1 heaping teaspoonful for each pound, also has been suggested.	: Damping-off, : Seed-rot.
Muskmelon	: See treatment for cucumber.	: See cucumber.
Onion	: Arasan, ¼ lb. for each lb. of seed moistened with ¼ pint of a 5% solution of Methocel (methyl cellulose).	: Damping-off, : Smut
Pea	: 1. Spergon, 2 oz. for each bushel, or ½ level teaspoonful for each lb. : 2. Semesan, 1½ oz. for each bu. : 3. Arasan, 1½ oz. for each bushel. : Semesan and Arasan require the addition of graphite, 1 oz. for each bushel, if a grain drill is used.	: Damping-off, : Seed-rot.
Pepper	: Corrosive sublimate solution, 1 large tablet in 3 pints of water, soak 5 minutes then rinse well in clean water; dry. : Then dust with Semesan, 0.4% or ½ level teaspoonful.	: Only if bacterial spot or anthracnose is prevalent : Damping-off, : Seed-rot.
Pumpkin	: See treatment for cucumber.	: See cucumber.
Rutabaga	: See treatment for cauliflower.	: See cabbage.

Crop	Fungicide and Method of Treatment	Diseases Controlled
Radish	Semesan, according to directions on the container or zinc oxide, 1 level teaspoonful per pound of seed.	Damping-off, Seed-rot.
Spinach	Before planting, dust with: <ol style="list-style-type: none"> 1. Arasan, $\frac{1}{2}\%$ of weight of seed, or 1 level teaspoonful for each pound. <u>or</u> 2. Zinc oxide, 2% or 3 level teaspoonfuls. <u>or</u> 3. If a wet treatment is desired, tie seed loosely in cheesecloth and soak for 1 hour in blue vitriol (copper sulfate) solution, 2 oz. in 1 gallon of water. 	Damping-off, Seed-rot. Copper may produce darker green plants.
Squash	See treatment for cucumber.	See cucumber.
Sweet corn	<ol style="list-style-type: none"> 1. Arasan, 1 oz. for each bushel ($\frac{1}{4}$ level teaspoonful per pound). <u>or</u> 2. Semesan Jr., 2 oz. for each bushel ($\frac{1}{4}$ level teaspoonful per pound). <u>or</u> 3. Spergon, 2 oz. for each bushel. 	Damping-off, Seed-rot.
Swiss chard	See treatment for beet.	See beet.
Tomato	Hot water, 122°F. (50°C.) for 25 minutes, followed immediately by soaking <ol style="list-style-type: none"> 1. In blue vitriol (copper sulfate) solution, 2 oz. in 1 gal. of water for 1 hour. <u>or</u> 2. Dip in New Improved Ceresan, 1 oz. in 9 gals. for 5 minutes (1 level teaspoonful in 9 pints of water). Dry. <u>Or if a dust is desired</u> Just before planting, dust with Arasan, 1 level teaspoonful for each pound of seed. <u>or</u> Semesan, according to the directions on the container.	Bacterial fruit spot and canker, Anthracnose, Septoria blight, Damping-off, Bact. tomato, Seed-rot.
Turnip	See treatment for cauliflower.	See cabbage.
Watermelon	See treatment for cucumber.	See cucumber.

It is of slight use to treat seed for specific diseases, such as blights, anthracnose, black-rot, etc., unless proper crop rotations are practiced. One to three years between related crops is a paying practice on the vegetable farm.

If red cuprous oxide without oil is available, it still is one of the best materials to use on beets, egg plant, pepper, and spinach. The yellow cuprous oxide can be used, but the margin of seed safety is so narrow that it is not included in the chart. Spergon is a mild fungicide so that it may give the best results on delicate seeds where the soil is not heavily infested. Arasan injures at least slightly almost all seeds, but it is such an excellent fungicide that it gives

favorable results on many crops when the soil contains much inoculum. It sloughs off of the seed easily, so that if the treatment is made ahead of the planting time and the bags handled much, the chemical sifts to the bottom of the container in such large quantities that it may injure the seed near the bottom of the bag.

MODIFIED LIQUID FORMALDEHYDE SOIL TREATMENT

Where plants are grown in flats for transplanting later, some growers may prefer to use the modified liquid formaldehyde soil treatment. Two and one half tablespoonfuls of 40% formaldehyde are used for each bushel of soil, or 1 tablespoonful for each 20 x 14 x 2 3/4 in. flat of soil. Dilute the formaldehyde with 5 or 6 parts of water, sprinkle over soil and thoroughly mix in. Place treated soil in flats and allow to stand for 12 to 24 hours before seeds are sown. After seeds are sown, water soil thoroughly. The cost of formaldehyde is less than 1 cent per flat. It disinfects soil, seeds, and flats in a single operation. Excellent control of damping-off is obtained with beet, cucumber, spinach, tomato, and other vegetable seeds and also among the following ornamentals: Calendula, China Aster, Clarkia, Gypsophila, Kochia, Larkspur, Lunaria, Marigold, Scabiosa, Stock, Strawberry, Sweet Pea, and Zinnia.

In unusually dry soils or in very acid soils, some chemicals may be harmful to vegetable seed; consequently, best results are obtained during wet or normal seasons and in soils testing pH 5.5-6.5.

Most vegetable seedlings, excepting cabbage and cauliflower, are benefited by spraying alternately with one of the insoluble copper compounds, 2 lbs. in 50 gallons of water, and Zerlate, 2 lbs. in 100 gallons, as soon as the plants are up and at 4-7 day intervals thereafter, making sure the spray reaches the soil immediately about the base of each plant. Small power sprayers narrow enough to be drawn through the aisles of the greenhouse now are on the market and do an efficient job quickly in any seed bed. The spray can be made in small quantities by using the following proportions:

Red copper oxide	1 oz.	is mixed in	4 gallons	of water
Yellow copper oxide	1 "	" " " "	6 "	" " "
COCS - (not diluted)	1 "	" " " "	2 "	" " "
Copper oxychloride sulfate	1 "	" " " "	2 "	" " "
Microgel (Tenn. Tribasic)	1 "	" " " "	2 "	" " "
Compound A	1 "	" " " "	2 "	" " "
Zerlate	1 "	" " " "	2 "	" " "

Each of these should be made into a wet paste before being dumped into the full amount of water. The spray will stick a little better if an ounce of cheap flour is made into a paste with the ounce of copper and placed into the spray. Zerlate should have a commercial sticker, 1 pint to 100 gallons, added.

Do not use a copper spray or dust on a flat or bed where Semesan or any other mercury compound has been applied. The chemical reaction may kill many plants.

The Zerlate can be applied also to the cabbage family. Otherwise, cabbage and other crucifer plants should be treated 2 or 3 times with a corrosive sublimate solution, 1-2000, or calomel suspension, 1 oz. in 6 gallons or 1 lb. in 100 gallons, poured along the stems of the seedlings.

In determining the amounts of dusts to use, the following figures should be kept in mind: 1 ounce = 28.35 grams or 1 pound = 453.59 grams.

1 level teaspoonful	Semesan	= 3.5 grams
1 "	"	"
1 "	Spergon	= 2.0 "
1 "	"	"
1 "	Arasan	= 2.0 "
1 "	"	"
1 "	zinc oxide	= 3.3 "

Therefore, if 1 per cent of weight of seed is suggested as the correct dosage, it means approximately 4.5 grams of dust for each pound of seed, or 2 spoonfuls of Arasan or Spergon, and slightly over 1 spoonful of Semesan.

If a gardener buys a 10-cent package of seed so that the quantity of dust is difficult to determine, it is nearly enough accurate to open the packet slightly and put into it as much dust as will stay on the tip quarter of inch of a small pen knife blade. The seed and dust are shaken vigorously until well mixed.

Seed companies who treat large quantities of seed with dust and have had difficulty in getting men to work in the dust-laden atmosphere, are not sure of accurate dosages being applied, or have had complaints about the dust not sticking to the seed might well consider the use of the slurry method of application. A special machine is required and at present it is more expensive than it is hoped it will be later when machines are made in quantity. But it eliminates dust, treats most accurately, and causes a uniform coating of the chemical, which sticks much better than in the dry form. A special form of the dust is required. One pound of the dust is mixed with each gallon of water. This is not enough liquid to raise the moisture content of the seed which dries almost instantly, leaving it coated with a uniform, permanent layer of the fungicide. If you are interested, see your county agricultural agent about the details of this slurry method.

Where resistant varieties or certified seed are available, these should be used whenever possible. Such seed still require seed treatment for damping-off and seed-rot.

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Dear Sir:

We believe that attached information on market gardening will be of interest to you.

Very truly yours

County Agricultural Agent