

measured by a tilting seed pocket. When a certain quantity of seeds has flowed into the pocket, the pocket tilts and dumps its load into the treating chamber. A counterweight returns the pocket to its original position. The movements of the seed pocket are transmitted to an endless chain, equipped with small slurry buckets, by means of a shaft fixed to the back edge of the pocket. The slurry buckets are filled with sufficient chemical suspension to treat the seeds measured by the pocket. Seeds and slurry are supplied simultaneously into the mixing chamber. Distribution of the slurry over the surface of the seeds in the treating chamber is done by rapidly revolving agitator blades. The rate of flow of seeds may be adjusted, and any change in the rate of flow is automatically accompanied by a change in the flow of slurry.

Seeds leaving the machine can be sacked directly if application of disinfectant is correct. Calibration of machines may be done in a similar way to that given for dusting machines.

Another method of applying liquid seed disinfectants is by directing high-pressure spray against a descending stream of seeds. Treated seeds are then thoroughly agitated by a paddled shaft running in an inclined cylinder before they are discharged into sacks.

Recommended Slurry Treatments

Materials and dosages to be used on various vegetable seeds are given in Table 3.

Valuable features of the slurry method of application are that it is rapid in operation, does not contaminate the atmosphere with dust, is economical in material, and ensures thorough coverage.

Disadvantages of this method compared with dusting are that the equipment is more expensive, incorrect concentrations of disinfectants may cause seed injury, and it is not suitable for seeds of high moisture content, especially at temperatures below 50 degrees F.

Hot Water Treatment

The hot water process is used for control of diseases and pests carried within the tissues of various seeds.

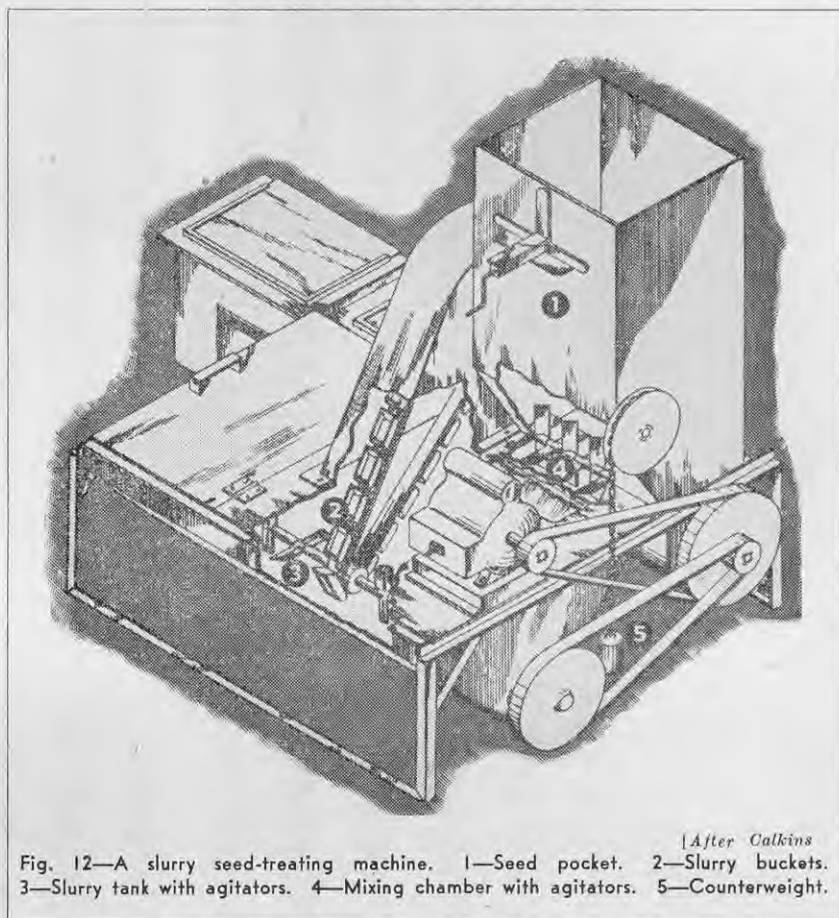


Fig. 12—A slurry seed-treating machine. 1—Seed pocket. 2—Slurry buckets. 3—Slurry tank with agitators. 4—Mixing chamber with agitators. 5—Counterweight.

Disease organisms are killed by temperatures lower than those tolerated by seeds.

Hot water treatment includes several operations as follows:—

(a) **Pre-soaking:** For certain species it is necessary first to soak the seeds in cold water to make them more permeable to heat. The seeds are placed in cheesecloth bags or wire baskets which are then immersed in a con-

tainer of cold water. Duration of the pre-soak is shown in Table 4. Seeds are drained before being placed in the hot water container.

(b) **Steeping:** For this process a container is fitted with some means of heating such as an electric element. A thermostat is necessary to hold the water temperature to within half a degree of that required. A good-quality thermometer which has been standardised is used to check temperatures. Constant agitation of the seed mass is necessary. Duration of immersion and temperature of the steep influence disease control and seed injury. Seeds are removed from the steep and drained before the next step.

(c) **Post-steeping:** Seeds are immersed for a short time in cold water.

(d) **Drying:** Seeds may be spread out to dry in a warm room. High temperature or direct sunlight should be avoided, as quick drying may affect germination.

(e) **Protection:** When dry, seeds should be treated with a dust to protect them from recontamination with seed-carried organisms and from harmful soil fungi.

The value of hot water treatment is that it eliminates seed-borne diseases which cannot be controlled by other means. This method, however, is difficult to apply and as it is liable to depress germination, especially when

TABLE 3—SEED DISINFECTION BY THE SLURRY METHOD

Crop	Concentrations of Disinfectants and Amounts of Seeds treated (for prevention of seed decay and damping-off)							
	"Fermispray"		"Phygon XL"		"Spergon Wet"		"Thirospray"	
Beans (french) ..	2.75	2300	1.5	1500	2.0	1800	2.25	1900
Beetroot ..	—	—	2.0	800	—	—	—	—
Brussels sprouts ..	—	—	—	—	4.0	800	1.5	1050
Cabbages ..	—	—	—	—	4.0	800	1.5	1050
Carrots ..	—	—	—	—	4.0	800	1.5	1050
Cauliflowers ..	—	—	—	—	4.0	800	1.5	1050
Cucumbers ..	—	—	1.5	2550	2.0	800	2.25	3000
Egg plants ..	—	—	—	—	4.0	800	1.5	1050
Kale ..	—	—	—	—	4.0	800	1.5	1050
Lettuces ..	3.0	1550	1.5	1150	4.0	800	2.25	1150
Onions ..	—	—	—	—	—	—	1.5	1280
Peas ..	3.0	2400	2.0	1800	2.0	1800	1.5	1250
Pumpkins ..	—	—	3.0	4800	2.0	800	1.5	1800
Silver beet ..	—	—	2.0	800	—	—	3.25	2000
Spinach ..	—	—	2.0	800	—	—	2.25	1550
Sweet corn ..	—	—	3.0	3600	3.0	2700	2.25	3050
Tomatoes ..	—	—	3.0	1200	—	—	2.25	1570
Turnips ..	—	—	—	—	—	—	2.25	1700

(The first column under each chemical shows in pounds weight the quantity of disinfectant required for 1 gallon of water, and the second column shows in pounds weight the quantity of seed which can be treated by 1 gallon of disinfectant mixture.)