

POLYETHYLENE TARP USED IN PELLETING CONIFEROUS TREE SEED

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The pelleting of coniferous tree seed with various fungicides and/or repellents for use in sowing in nurseries or for direct seeding operations is now more or less standard practice. Some nurseries report that where damage from damping-off diseases is severe, added benefits result from pelleting seed with a fungicide even though a soil fumigant has been used to treat the area prior to sowing. We consider it good insurance to do so in view of the relatively small additional cost of treatment and presently treat most of our seed using Dow Latex 512-R as the sticker and DuPont Arasan-75 as the fungicide.

There are various ways in which pelleting can be done but one of the simplest is with the use of a polyethylene tarp. The method is feasible for use in treatment of up to several hundred pounds of seed in batches of 15 to 25 pounds each.

In practice, a polyethylene sheet of about 4-mil thickness and 6 feet square is placed on a clean floor and the previously weighed batch of seed is poured into a mound in its center (fig. 1).

The Latex 512-R, which contains 48 percent solids, is diluted with water at the rate of 1 part of latex to 9 parts of water. Only that amount of sticker needed for a half day's treatment should be made up at any one time.

General recommendations call for about a quart of the diluted latex to each 25-pound batch of seed. This can be varied somewhat depending on seed size, with a slightly greater amount for small seed (because of the larger surface area) than for large seed. Conservative rather than liberal use is preferred because use of more than that needed will require longer drying periods and may cause the seed to stick together.

A measured amount of the sticker is poured into the seed. The container is moved during the pouring so as to distribute the material as much as possible. Next the sticker is distributed throughout the batch of seed by agitation of the seed by movement of the tarp. Two men can be used for this operation although three make it somewhat easier, particularly with larger batches of seed.

If two men are employed, they stand opposite each other. Three men would arrange themselves so that each could control one-third of the edge of the tarp. In either case they would grasp the edge of the tarp, each with his hands about 2 feet apart (fig. 2).

To mix the seed, each man in turn lifts his side of the tarp, causing the seed to move toward another man. With three men it is easy to make the seed flow in a circular motion, either clockwise or counterclockwise, so that the mass is tumbled, and the seed is



Figure 1.--Weighed batch of seed poured in center of tarp.



Figure 2.--Three men preparing to mix seed and sticker by agitating tarp.

thoroughly mixed with the sticker. It is not necessary to lift the tarp clear of the floor but each in turn only lifts it enough to cause the seed to flow toward another man (fig. 3). After each lift, a man lowers his arms until the next round. A couple of minutes practice with the dry seed before the sticker is added will suffice to insure that everyone understands how the operation is to work and that proper flow and mixing will result. After a short trial it is easy to see that each pair of hands need not be kept horizontal but that by lifting and lowering each hand in turn a better seed movement can be obtained with but little effort. Some bending at the waist will be required, however, to do the best job.

After the seed and sticker are completely combined, as indicated by a uniformity of color as the mass is tumbled, agitation is stopped and the seed is left in the center of the tarp. This initial mixing should take only a minute or two.

Next the Arasan-75 powder is poured over the seed. We have been using this fungicide at the rate of 1 part of Arasan-75 to 6 parts of seed by weight. In other words, by dividing the weight of the batch of seed by 6, the weight of the correct amount of the Arasan-75 will be obtained. The Arasan should be weighed out prior to the start of each batch so that it will be ready when needed.

After the Arasan is put with the seed, the whole is then tumbled for about 2 to 3 minutes, reversing direction of the flow from clockwise to counterclockwise once or twice as needed to insure complete mixing of the seed and Arasan powder. If a few small lumps of Arasan seem to persist, slightly longer mixing tends to work them out. Tumbling is then stopped and several heaping teaspoonfuls of aluminum flake powder, which can be



Figure 3.--Best mixing occurs when the seed flows in a circular direction inside the tarp.

obtained through hardware or paint stores, are placed on top of the pile of seed; a final tumbling of about 5 minute duration is given in order to distribute this material. The aluminum flake powder has been reported to afford some bird repellency and, in addition, helps dry out the individually coated seeds and prevents their sticking together.

The tarp is then lifted from the floor and the seed is run into a metal container such as a square tub or a bushel measure from which it can be more easily poured onto the drying paper. For this, we use 4-foot-wide tree wrapping paper cut into lengths of about 25 feet. One to several lengths can be used depending upon the amount of seed to be treated.

After treatment, the seed is poured to form a long mound down the center of the paper. A short length of board or a mason's trowel can then be used to spread the seed in a thin layer for drying. A period of .5 to 1 hour should be sufficient for drying, depending upon the temperature, humidity, and circulation of the air in the room. In cool, damp weather, use of a heated building might be desirable.

When the pelleted seed is dry, the ends of the paper can be picked up in such a way that a trough is formed and the seed is run to the middle of the length of paper. From this the seed can be poured into a container for storage.

We have occasionally kept small amounts of seed treated with Arasan from one year to the next without any apparent ill effects. It is generally recommended, however, that each year's requirements be treated within a few days time of the expected date of sowing.

Some adjustment in sowing rate will be necessary because of the added weight of the sticker and chemical. By weighing several batches after they are treated and dried, and comparing these with the weight of the seed before treatment, it is a simple matter to determine how much the rate must be increased to compensate for the change.

We find that by use of a tarp an excellent pelleting job is obtained.