PRODUCING THE MOST PLANTABLE SEEDLINGS PER POUND OF SEED

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Let me say to start with that I am glad to be at this meeting of the Southeastern Area Nurserymen's Conference and I appreciate the opportunity to speak to you. I look forward to these conferences from one to the next. I was not at the 1970 meeting in Kentucky, but would like to have been there. I feel that, from the standpoint of practical information, these conferences accomplish more than any other meetings I have had the opportunity to attend, and I think the sponsoring agencies, the U. S. Forest Service and the various state groups, should be commended for the good job they do in putting them on.

Jim McConnell asked me and several others to speak briefly this afternoon on "Producing the Most Plantable Seedlings Per Pound of Seed," and said we could speak for about ten minutes each. Well, when you stop to think about it, producing the most plantable seedlings per pound of seed is the whole story of good nursery practice wrapped up in a short phrase. It is "the whole thing" and summing it up in ten minutes is like trying to tell what was wrong with the Democratic Convention in 25 words or less. Actually, there are no quick answers or statements that cover these areas.

Growing the most plantable seedlings per pound of seed is certainly a timely topic in view of the rapidly growing cost of seed and the fast increasing use of more expensive seed orchard seed. We all remember when pine seed was selling for four to five dollars a pound, only about five years ago. Today, as near as I can determent, the going rate is close to ten dollars a pound. It is difficult to place an exact value on seed orchard seed but it is certainly safe to say that it is significantly more valuable than regular seed. Considering all of this and the fact that the cost of seed probably comprises 30% or more of the total cost of growing seedlings, we should be looking for more efficient nursery practices.

Producing the maximum number of plantable seedlings from our seed involves many considerations, including good cone collection and processing techniques, good seed cleaning practices, proper storage, stratification, repellant treatments, soil management practices, planting, mulching, weeding, spraying, weatering, lifting, packaging, and shipping procedures. All these, and more, contribute to the quality and quantity of planting stock and we could talk at length on any of them. For the sake of this discussion, I am going to limit my remarks to two of these things, seed treatment and mulching techniques.

We started treating our seed at the Bellville Nursery about eight years ago and have been very happy with the results. The benefits derived from seed treatment depend on the amount of predation you are exposed to and I know that this varies from nursery to nursery. We feel at Bellville that we have to have some protection from birds, particularly mourning doves, and we have found that the most practical method is treatment of the seed with anthraquinone prior to planting. We depended on bird patrols for years before someone put us onto anthraquinone and we have come to believe that the chemical treatment is cheaper, more efficient, and much easier than any other method of bird control.

We apply anthraquinone to the seed at the rate of about 3 pounds of undensified anthraquinone per 100 pounds of seed, binding it to the seed with a regular 9:1 latex mixture. We have a small cement mixer we treat seed in, and after mixing the seed, anthraquinone and latex thoroughly, we spread it in a thin layer on our barn floor to allow it to dry for about 24 hours. This is not a time consuming job. It takes us about 2 days to treat the seed required for 30 million seedlings.

Undensified anthraquinone is available from only one source that I know of: Winthrop Laboratories in New York. Last year, some of Winthrop's people were on strike and it looked like we were going to have to find another source. I contacted everyone I could find but was not able to locate any of the material. Fortunately, it turned out that Winthrop could furnish what we needed in time.

Anthraquinone is about the only thing I can think of that hasn't risen in price recently. It has sold for $1.10 per pound as long as I can remember. At this rate, the total cost of treatment is less than per thousand seedlings and we feel that it is money well spent.

We feel that this chemical is completely effective in keeping the birds away from the seed. We have examined the craws of birds in our fields following planting and have never been able to find evidence that they are eating seed. Further, we believe that anthraquinone, unlike some of the other chemical repellants, has not effect on germination, either favorable or unfavorable.

The second factor that I would like to discuss in maximizing quality seedling production is mulching techniques.

You can get a good argument going fast among nurserymen by saying that this type of mulch or that type is best and I don't want to start an argument so I am not going to say that. Some nurseries seem to be sold on some of the new artificial mulches and I have heard other nurserymen, on the other extreme, say that they use no mulch at all. I am sure the efficiency of any mulch depends on the weather conditions encountered, particularly between planting and germination, and also on the applied nursery practices. What is best for one nursery under one set of circumstances may not be best for another.

At our nursery, we have used pine sawdust for several years and we have been well-satisfied with the results. We feel that at the present time, under the conditions we normally encounter, pine sawdust is the best for us. We started out about six years ago using sawdust on a trial basis on some of our beds. Then, as we gained more confidence, we gradually expanded its use and have used it exclusively for at least the last four years.

Like anything else, sawdust mulch has its good points and its bad points. Among the good, from our point of view, are:

1. It is economical. We haul sawdust from a sawmill only a mile and a half from our nursery, and get it free. This may change in the future, but, at present, it is by far the cheapest mulch we can apply.

2. Sawdust is easy to handle and apply. Mulching has always been the limiting factor in our planting operation and we have found that we have to gear our planting program to the speed that the mulch can be applied. We feel that it is advantageous, in terms of seedling quality, to get the nursery planted in as short a time as possible and have found that using sawdust enable us to do the job quickly and efficiently. For example, this spring we planted seed for 30 million seedlings in five days with six men.

3. Sawdust has little or no inhibiting effect on germination. We have never determined that sawdust slowed or prevented germination in any way.

4. Sawdust does not bring weed seed into the nursery beds to the extent that some of the other natural mulches do. Weeds and grasses in our nursery are major causes of concern and we feel that sawdust is desirable from this standpoint.

5. Sawdust, if applied properly, is more resistant to wind erosion than many of the other mulches we have tried. You may want to argue this point but we have found it to be true. We run the feet on our Whitefield planter deeper than normal creating furrows in the beds about one-half to three-quarter inches deep.

We then cover the beds with about three-quarter inches of sawdust and irrigate for twenty minutes or so every day until germination is complete. We have found that the wind will blow the sawdust from the top of the bed but it settles in the furrows and, if kept wet, will hold in the depressions well in pretty strong winds.

Of course, the use of sawdust is not all good; if it was, everyone would be using it. There are at least two disadvantages that I feel should be mentioned.

First, decomposition of sawdust depletes the available nitrogen in the soil. This, of course, must be restored. However, we have found that this can be offset fairly easily through the application of some additional nitrogen fertilizer during the growing season.

Secondly, sawdust is subject to water erosion during flooding rains if they occur before seed germination is well advanced. Fortunately, we don't generally encounter these conditions during the germination period at our nursery.

I know that I haven't covered the idea of producing the most plantable seedlings per pound of seed to any extent in the short period of time. I do hope that I have given you a little something to think about and will be glad to answer any questions or hear any comments you may have.