SEED PROCESSING: MANAGEMENT TECHNIQUES [1]

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ABSTRACT

Management techniques to help meet the basic objective of seed extraction: High quality clean seed, are presented. Seed extraction based upon the five component management framework: Planning, Organization, Motivation, Control, and Innovation is explained.

INTRODUCTION

In recent years there has been an increased emphasis on tree seed quality for Nurseries. This is due in part to the reduction of broadcast sowing, the advent of more precise seed drills, and for the large part increased container grown stock. All this has led to the continued development of new and better seed cleaning equipment; i.e., Missoula dewinger, Barnes separator, International Forest Seed Company kilns, Oliver Destoner, and the increased use of seed monitoring equipment; i.e., H. P. Faxitron X-Ray.

My purpose is not to address the equipment improvements, but rather management techniques for seed processing (extraction and cleaning). The question might be asked, "What management techniques for seed processing? All that need be done is clean the seed." This may be sufficient for some seed processing plants and you may get adequate results, but for the reasons cited above seed processing management needs further analysis and emphasis in Nursery operations.

BASIC SEED PROCESSING PLANT

Most typical extraction facilities will follow a similar line; that is, cone reception and storage, extraction, cleaning equipment, and seed testing. This last item may or may not be accomplished at the Nursery. Naturally, the type of equipment for each step in the process will vary at each Nursery. However, the objective of each facility remains the same; to extract and clean seed. How this objective is accomplished is what I wish to discuss.

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MANAGEMENT OBJECTIVE

The basic management objective in a seed extractory is the attainment of quality seed. Quality is defined as good vigor, high purity percent, and germination percent. The management process to achieve this objective, or any objective, may be separated into five parts: PLANNING, ORGANIZATION, MOTIVATION, CONTROL, AND INNOVATION (Batten 1969). Each part is dependent upon the other. Seed extraction easily fits into these five areas.

Planning

By July of the extraction year a fair estimate of cone crop size should be available to the manager. With this information it is then possible to plan budgeting data: cost, length of time to accomplish the job, size of crew, equipment needs, and contingencies. These items are the very least required of a good extraction plan.

Organization

Organizing the job is where crew deployment takes place. A manager should know the people in the crew and how to best deploy them; i.e., what they are best suited to do. Not all crew members function at the same levels. This is where skillful managers can best organize the utilization of their crew.

Motivation

Motivation is a very fragile word. The concept is not that difficult to understand. Webster defines motivate as (1) some inner drive, impulse, intention, et cetera, that causes a person to do something or act in a certain way; incentive, goal. Dwight Eisenhower is quoted as saying "Leadership is the ability to get a person to do what you want him to do when you want it done, in a way you want it done, because he wants to do it." I feel this is the core of seed extraction management.

Control

Control can be obtained in a few ways. As a manager you can be in the extractory checking on the crew's work constantly, or you can establish checks at various points in the process. If an accountability system is established, the spot check works rather well.

Innovation

In seed extracting this is, and must be, an on-going process. There is no single best method of cleaning seed. Each seedlot is slightly different. The size, weight, and shape of seed differs not only between lots but also within lots. The crew often times can be the best source of new ideas.

MANAGEMENT METHODS AT COEUR D'ALENE

The primary ingredient in any operation is a good crew. This is simple to state and also the answer to many management functions. Obtaining a good crew is not so easy and yet with a little effort not that difficult to achieve.

If you accept the management principle that people must have an interest in what they are doing and understand where they fit in (Boyd 1976), as well as a quantitative goal to try and accomplish, then you will agree in principle with this paper. Also, it must be understood that whether or not a group accepts management's objectives depends not only on what is demanded but also on how it is demanded. (Strauss and Sayler 1972).

My procedure at the Coeur d'Alene Nursery is as follows: The Nursery has established minimum purity standards for each species which we clean (Table 1). These standards are made known to each crew member before the start of extraction (the standards are re-evaluated each year to reflect the state of the art). In doing this I accomplish two points: (1) Management objectives are explained to the crew, and (2) A quantitative goal is presented. It is also explained that when each new seedlot is tested for purity and falls below the standard, it will be tagged with yellow flagging and must be recleaned. This, coupled with the fact that as a seedlot is processed from tumblers to scalper to dewinger to fanning mill to pneumatic separator, the operators of each piece of equipment sign off on the lot, instills quite a bit of pride in work as well as a sense of accomplishment. When the system was first instituted on those few lots that needed further processing, crew members took it as a personal affront to receive a yellow flag. That's a nice type of management problem to deal with.

Table 1.--Minimum purity standards, Coeur d'Alene Nursery

Species	Pure seed by weight
Grand fir	95%
Subalpine fir	95%
Western larch	90%
Engelmann spruce	95%
Lodgepole pine	95%
Western white pine	92%
Ponderosa pine	97%
Douglas-fir	95%

How does our crew accomplish the task of cleaning seed to a predetermined purity? The obvious answer is training and communication. This does not mean providing information. Often managers tend to equate information with understanding. This can lead to problems. Managers must communicate for the purpose of obtaining a level of understanding by crew members (Miller and Steinberg 1975). In 1978 the Coeur d'Alene Nursery processed 14M bushels of cones yielding 10M pounds of seed. This was accomplished with a neophyte crew. They had never cleaned seed before.

Each piece of equipment was explained as to its function and how it worked. Crew members were given instructions as to their equipment operations and after a short break in period told to clean seed. On those machines with different screens, starting points were established for each species and crew members were told to experiment for themselves to decide which other screens would work best, again keeping in mind the production goals. This free reign further installed a sense of accomplishment and pride in work. As notes were compared crew members began to agree with my statement that each seedlot is different regardless of species, and certain standards began to be established as starting points for cleaning. Often times they were not in agreement with my original suggestions. Innovation or new methods to clean seed are often brought out by crew members. I feel it is important that they are given the freedom to try these techniques once they have been discussed with management. A successful process which we use for pitch removal on western larch came about after such a discussion.

It was also necessary to explain to crew members what to look for in seed cleaning, which trash could be removed in certain ways, and to explain that while seed cleaning is not hard work, it does require patience. One must accept each seedlot as a challenge to clean it to a certain standard. At Coeur d'Alene the crew members also participate in both bareroot and container sowing operations and therefore have the opportunity to see the fruits of their labors or past errors as well as an understanding of where they fit in the scheme of things. Monitoring is accomplished with an X-Ray unit at various points in the process. It is done not to criticize the operators of equipment but as an instructional tool to help them accomplish management's goal of high quality seed.

CONCLUSION

By spending some time explaining to your extraction crew the importance of seed processing in the entire scope of Nursery operation, I believe you will be able to increase seed quality. I define this as increased purity, in most cases germination, and perhaps a slight reduction in yield. This reduction is due in part to more attention to trash removal and an unwillingness to let a dirty lot slide by.

Communication between people allows you to mold a good crew. It is a rare occurrence when a group of people are placed together and work well together instantly. A good manager must observe and follow the five step management process: Planning, organization, motivation, control, and innovation to achieve the desired objective.

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