FUTURE NEEDS FROM INTERMOUNTAIN NURSERIES FOR SHELTERBELT PLANTING

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I enjoy speaking to nurserymen, because, without a doubt, you are the best untrained foresters in the country. You must have the knowledge to build or re-build machinery for your particular species and soil type. You have the ability to keep machinery running for years after spare parts are obsolete. You are expected to guess accurately how many trees or shrubs will be needed by the time the seeds you are sowing will be lifted as 1-0, 2-0 or even 2-2 stock. You must possess the vast knowledge of seed, including repining dates, the techniques of cleaning, storing, stratifying, testing and planting. You become soil experts on your own nurseries. You are expected to be and are, excellent accountants, with sales and purchases and employees' salaries, plus the part-time help and the little dabs of seed that you purchase from youth groups; all of which must be accounted for in the ledger. And these things seem simple, compared to the awesome task of handling employees and all of their problems. You graciously conduct tours of the nursery and are called upon many times to speak to garden clugs, service organizations, etc. And you do all these jobs without college training in most of the fields mentioned.

Therefore, it's an honor for me to speak to such a distinguished group.

I presume most of you nurserymen are producing trees for fiber; and that's where we, from the prairie differ from you in the Intermountain west. We on the prairie, produce trees for people.

Fred Deneke of Kansas State University said it best at a recent Great Plains Forestry meeting, "Since man on the prairie built his home of sod, built his fences of stone and fed his heating and cooking fires with buffalo and cow chips, there is no need to elaborate on the value of a tree on the prairie."

We know not why, the first settlers planted trees, but we think it was to make their new homes look something like the homes from whence they came. And from this humble attempt at tree planting, although it can be more accurately described as transplanting wildings from river bottoms and draws, came the now famous Field Windbreak and Farmstead Shelterbelt program.

For those of you that are not familiar with our windbreak and shelterbelt program, I have a few sets of slides that I would like to show that depicts the Field Windbreak, the Farmstead Shelterbelt and the Aesthetics of Tree Plantings on the prairie.

SLIDE TALK

FIELD WINDBREAKS

Slide # 1	Air borne soil particles are our biggest air pollutant. Field windbreaks were originally designed to reduce soil erosion by wind.
Slide # 2	Which results in the loss of valuable top soil, and causes its deposition in unwanted areas.
Slide # 3	Many designs evolved over the years through trial and error and later through intensive research.
Slide # 4	The multi-row belt.
Slide # 5	The single row belt.
Slide # 6	Tree and shrub combinations.
Slide # 7	To trees spaced in a single row 12' apart.
	There are many benefits of a field windbreak and some problems. Benefits include but are not limited to:
Slide # 8	Increased moisture by holding snow in winter,
Slide # 9	Reducing evaporation in summer,
Slide # 10	And offering wind protection to wind-rowed grain in the fall.
Slide # 11	Some of the problems are that the more dense windbreaks cause excessive drifting of snow adjacent to the belt.
Slide # 12	We must be careful not to place our windbreak too near a road, as a winter of heavy snow will surely render them impassable.
Slide # 13	The sapping of field moisture by the windbreak also occurs in some years.
Slide # 14	However, trees do not sap all of their moisture from adjacent croplands; they do hold snow even in years of very little winter precipitation.
Slide # 15	Better snow distribution through the use pattern type plantings Which result in added spring moisture,

Slide # 16 And where needed because of slope, these windbreaks are planted on the contour.

Slide # 17 But despite our many problems and unanswered questions, North Dakota farmers and ranchers are still planting more than 2,000 miles of single row Field Windbreaks each year.

FARMSTEAD SHELTERBELTS

Slide # 1 People plant multi-row shelterbelts around their farms for many different reasons but the foremost advantage of a farmstead shelterbelt is for personal comfort and beautification.

Slide # 2 Good farmstead shelterbelts just don't grow up from a hap-hazard planting; they are thoroughly planned. They are designed to hold all the snow of winter plus an extra 100' for that late spring storm.

Slide # 3 Farmstead shelterbelts receive moisture from the snow they trap.

Slide # 4 This trapped snow helps keep the farmyard and roads clear of snow.

Slide # 5 As opposed to the snow problems,

Slide # 6 And bleak appearance of unprotected farms.

Slide # 7 I think the housewife should be able to contribute to the design of the farmstead planting, especially in choosing the species for the inside row. That's the row she will see from the house and yard. It could be a single

Slide # 8 Or double row of evergreens to break the bleak look of winter,

Slide # 9 Or she may want to put in fruit varieties such as plum, chokecherry, crab apple

Slide # 10 Or a variety of eating apple.

Slide # 11 I wonder if the personality of the resident can sometimes be determined by the shelterbelt design. The rugged, masculine type planting, dominated by the heavy block plantings certainly reflects a rugged individual

Slide # 12 While this easy flowing contour planting, curving along the stream reflects an easy going individual.

Slide # 13 — If plantings do reflect on the personality of the farmer, I think I would like to know the owner of this farm; the very heavy shelter to the west and north reflect masculinity, the snow trap to the east paralleling the road and south, reflect completeness of the individuals endeavors. And tho many spruce trees around the house approaching a formal type of planting reflect a true country gentleman.

Slide # 14 — You can rest assured that all of the plantings have been carefully planned on paper prior to the planting.

Slide # 15 — North Dakota farmers and ranchers plant more than 3,000 acres of this type planting each year.

AESTHETICS OF TREE PLANTINGS

Slide # 1 — This farmer paid to have the trees planted around his farm. This is what we call a shelterbelt.

Slide # 2 — Let's take a walk through a shelterbelt.

Slide # 3 — After the long winter - nature seems to come alive.

Slide # 4 — We look forward to seeing the 1st Robin in the spring.

Slide # 5 — A fungus is helping to reduce this solid log, to a punky matter that will enrich the soil in this shelterbelt.

Slide # 6 — A rock that most people would not notice unless they stubbed their toe on it, is supporting plant life.

Slide # 7 — The creeping juniper has engulfed the rock and is beginning to grow over it. But a closer look

Slide # 8 — Reveals Lichens. A very unusual plant which is both - a fungus and an algae. They are found in areas having clean and unpolluted air.

Slide # 9 — Plant life is where you find it, just look for it. The seed of American elm lodged in the bark of a fallen moss covered tree; grew when moisture and temperature were just right.

Slide # 10 — Song birds are probably the most commonly observed animal in the forest. A trained bird watcher knows this silhouette as either a Cedar or Bohemian Waxwing.

Slide # 11 — The Mourning Dove is known for its poorly made nest, but after viewing this nest, I'm sure this dove moved into someone else's home to lay her egg.

Slide # 12 — Speaking of homes, have you ever waited near the entrance hole in a tree to see who or what would either come or go.

Slide # 13 — It could have been a Red-Headed Woodpecker.

Slide # 14 — As the summer progresses the Juniper berries in their pale blue - offer quite a contrast to the green foliage of the juniper.

Slide # 15 — Some fruits of the forest are edible.

Towards fall man's pilgrim instinct sends him afield to collect the winter meat supply.

Slide # 16 — But whether you hunt with a gun, or a camera; field glasses or a high powered magnifying glass, please remember this. The things you saw in this very brief presentation were possible because someone planted, paid for and cultivated trees.

Some of the nursery stock produced in the state of North Dakota is sold to the U.S. Army Corps of Engineers for reservoir planting; and since the State Game & Fish Department quit planting trees, some of the sportsmen's clubs will purchase and plant a few thousand seedlings. The North Dakota Forest Service will plant some surplus conifer stock on some state land, but the vast majority of our nursery stock is sold to people through their Soil Conservation Districts, and this stock is for protection-type plantings. And here-in lies our problem. We have species of trees and shrubs that can tolerate wet areas; we have species that can survive extreme drought; we have some species that can tolerate a saline-type soil; we have some trees that can attain a height of over 50' and some that will never reach 20'. But, we do not have trees and shrubs that will tolerate man and some of his activities. Let me further explain our people problem.

Research tells us that wind protection from a field windbreak will reach out from 10H to 20H; H equals the height of the barrier. Therefore, if we have a tree belt 50' in height, we can expect wind protection from 500' to 1000'. When we plan a windbreak on nervous soils (the sandy soils), we should be planting at 500' intervals and on the heavier clay-type soils we could go to a distance of 1000'. The landowner will prepare his site one year prior to planting; but when the time comes 6o plant, he doesn't want the trees that are capable of growing to and in excess of 50'. He insists on planting Siberian Elm that rarely exceeds 30' in height. His argument is that after the first growing season, the Siberian Elm will be tall enough to see at a distance of a quarter mile. He likes that rapid initial growth. But, let's look at what happened to

his protection; if on sandy soils, his 30' windbreak will be effective to 300', but his trees are planted in the prepared strips at 500'. The outcome is that he will be dissatisfied because the windbreak has not stopped wind erosion, and he will want to remove the belt and put the land it occupies back into a crop.

Let's look at another problem; farmstead shelterbelts should be planted at a distance of about 100' from buildings. This allows room for those late heavy spring snows, when the shelterbelt is full from the winter's accumulation. This is how a farmstead shelterbelt is planned. Long after the shelterbelt is effectively protecting the farmstead, the owner decides to errect a shed for cattle or machinery and he puts it next to the belt for protection. Then we have a spring blizzard like we had in 1966 and again in 1967, and sheds collapsed from the snow load as if they were made of balsa wood and covered with paper. The dollar value of sheds, machinery and cattle lost, ran into the millions.

I realize these are not nursery problems, but I wanted to point out the diversity of our people problems.

I'm sure some of our nursery problems are similar to yours, in that we get pressure to produce twice the number of a species that last year we couldn't give away. The search for superior trees for our protection planting purposes would closely parallel your search for superior forest trees. And we are all looking for that tree that has a natural resistance to a certain insect or disease. But, we do have a problem on the prairie that you do not have in the timbered area, and that is the problem of phenoxy herbicide drift. We are asked to find trees that are resistant to the drift of these herbicides, and prairie foresters and nurserymen are convinced that if there is such a resistance and those individuals are developed for out planting, it will open the door for indiscriminate spraying without regard for the trees, or for a stronger herbicide in which case, we will be starting the search over again. The thing that disgusts prairie foresters is that we know how to live with phenoxy herbicides; don't spray on windy days, don't use the high volatile forms, and keep the stuff off our trees.

There are many people that do not recognize herbicide damage, and some that claim it doesn't hurt the trees. Why then, are so many trees dieing of such weak pathogens as cytospora, tubercularia and others? Now if we think about this situation, it <u>could be</u> much worse than we suspect. The problems of herbicide drift is so widespread, that weakened trees could now be considered a normal condition. If this is so, as many of us believe, would not these so called secondary pathogens become primary? Would not the cytospora and tubercularia be considered virulent? I will not dwell on the subject of phenoxy herbicide drift and its resulting problems, but I assure you it's one of our more common maladies.

As I look to the future, I can see another problem that you nurserymen may be faced with; let me quote from the National Guidelines of December 1972 of Cooperative Forestry, Urban and Community Forestry, section 3, paragraph c, <u>Planting and Related Services,</u> the third sentence starts:

> "In cooperation with private and public agencies, the State Forester may: (1) conduct field trials on trees

> to determine their ability to endure the stresses of roadside and urban conditions such as drought, soil compaction, salt and other pollutants, and (2) propagate and make available to private nurserymen and municipalities, specimens of trees which may show superior characteristics for urban and community planting, but which are not readily available from commercial nurseries."

Now if that doesn't open a new can of worms, I'll miss my guess. Can you imagine the problems associated with urban forestry? Gardeners looking for crabapples with larger flowers and small fruit: a bird-watcher wants a tree that will attract the Baltimore Oriole. You will be looking for trees with a !Articular or even a peculiar shape, size, color, flower, fruit, etc. You will be looking for street trees that will survive with pavement over its roots, and one that can stand to have the roots periodically severed for a new underground telephone line, gas line, water line, sewer line or new curb and gutter. Some species will produce fruit for humans and here again, selections will be made to obtain and produce the best.

The reclamation of strip mined land is not a problem of nurserymen, and not too much of a problem for plains forester; the real problem rests with either the soil scientists, to leach or neutralize the high sodium salt found at the top of the spoil piles or an engineering problem. If the engineers could develop a way of digging a hole, without the last shovel full ending up on top of the spoil pile, the job of reclamation would be simple.

I hope I have not given you the idea that I am a fatalist and that all these problems are insurmountable; on the contrary, I view all of these problems as a challenge. Some nurseries are stagnant as far as production limits and customers are concerned, some are stagnant because of their administration, some are stagnant because they are afraid to try new methods, and the list goes on and on. Let's look at these problems, and we each have our own, as reasons for moving off dead center. If the urban forestry bill is approved with the nursery assistance provision as I have indicated, look at this as a challenge.

We are passing through an exciting era; the greenhouse production of seedlings is still in its infancy. I can see the production of superior stock from cuttings which will greatly reduce the number of years waiting for a tree to produce seed. I can also see the day coming provided I'm allowed to live 4 score and 10, where bontanists and foresters will be searching the Plains of Russia, Siberia, Mongolia, Manchuria, and China for species that may be adapted to our Great Plains.

Sometimes a nurseryman feels like the fellow with a mouthfull of hot coffee; there are only two things he can do, and both are wrong. But hopefully, you are taking advantage of the researchers and specialists within your organization, the U.S. Forest Service or the nearest University as these people are willing to help. I urge you to get involved in a little research either on your own, or in cooperation with someone else; it will give you a better understanding of the "long wait" for results.

In conclusion, I want to say that the objective of all dedicated employees should be to thoroughly analyze all situations, anticipate all problems prior to their occurrence, have answers for these problems and move swiftly and efficiently to solve these problems when called upon to do so.

However, when you are up to your ass in alligators, it is sometimes difficult to remember that the initial objective had been to drain the swamp.

It has been a pleasure speaking to you today, and I thank you very much.