Bureau of Indian Affairs Reforestation Policies and Programs[1]

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Abstract.--Within the Bureau of Indian Affairs the Branch of Forestry has responsibility for the preservation, production, regulation and development of timber, water, wildlife, and other values of forested lands held in trust by the Federal Government for the American Indians. These responsibilities are limited only to the extent that such action is in the best interest of the trust estate and the Indian people. The execution of this responsibility is complicated by many variations in geographic location, climatic zones, vegetative types, cultural attitudes, and economic goals from reservation to reservation. All areas within the BIA are confronted with the need for a high degree of flexibility in the management of Indian lands as exemplified by their reforestation concepts and policies. To satisfy local reforestation needs the Albuquerque Area has developed an efficient, mid-size, quality containerized seedling operation, the core of which is the greenhouse facility.

IN THE BEGINNING

From the time that this country was first settled by Europeans, certain Indian rights of occupancy have been recognized. The land and related resources have been customarily obtained by securing at least a color of title from the Indians by payment or trade, even from the earliest days of the colonials. **In** the beginning, these transactions were executed either through local governing bodies or by private individuals. As could be expected, this created many disputes evolving from State vs Federal jurisdication, original ownership, over-lapping tracts, documentation. etc. This bickering over possession of the land often led to bloodshed.

The Government of the United States recog-nized the then called "Indian Problem" in 1789 by assigning duties "relative to Indian Affairs" to the newly created War Department. An Act of Congress in 1790, provided "that no sale of land by an Indian or a tribe to any person or persons or to any state should be valid unless made under the provisions of a Federal treaty with the tribes", and thus a new bureaucracy was in the making. Subsequent years saw treaties made, reservations designated and bands, tribes and nations relocated often through force and always to what was then considered inaccessible or valueless areas of the country.

In 1832, a Commissioner of Indian Affairs was appointed under the Secretary of War to direct and manage "all Indian affairs and matters arising out of Indian relations." Then, in 1834, the Department of Indian Affairs was organized and the bureaucracy continued to grow. When the Department of Interior was created in 1849, the predecessor of the present-day Bureau of Indian Affairs was established, and authority over all Indian matters passed from military to civil control.

THE PROBLEM AND THE POLICY

In viewing management policies of the Bureat of Indian Affairs on Indian forest lands, one must realize the understand certain aspects which are peculiar to the so-called "Indian Problem."

Indian lands are private property, held in sacred trust by the United States for the benefit of the American Indian. There are approximately 46,000,000 acres still in trust status of which over 13,000,000 acres are classified

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as forest land. The Bureau of Indian Affairs for the past 130 years has been responsible for the custody and administration of these lands in accordance with provisions of laws enacted by the Congress and interpreted by the courts. Interpretations of these laws entitle the Indian to enjoy the full benefit to be derived from forests and other natural resources on their lands. Essentially, Indian forests are owned by Indians and managed by the BIA for the benefit of their owners.

Indian forest policies and Indian forest activities cannot be determined and carried on solely from the standpoint of technically correct forest management plans or silvicultural needs. The practice of Forestry on Indian lands inevitably requires consideration of many questions related to the educational, social, and industrial welfare of the owners. This intertwining of other phases of Indian administration with the forestry program, combined with the needs of individual Indian owners, has often necessitated adoption of Indian forest policies widely divergent from theoretically correct forest management practices. This flexibility of policy is not only necessary on a national level but must also be modified locally to fit social and economic conditions on each reservation and occasionally on different parts of the same reservation. In essence, the Bureau of Indian Affairs has carried the concept of "Multiple Use" beyond the five accepted fields of: Timber, Water, Wildlife, Recreation, and Range, to include cultural impacts, social progress, and economic advancement.

The cultural considerations of forest management policies within the BIA were further complicated by the allotment acts of the late 1800's and early 1900's. These acts promoted the subdivision of communally owned reservations into thousand of 20 to 160 acre parcels that were then given to individual Indians. The purpose of the allotment, in theory, was to provide a home for the Indian, and encourage economic independence through agriculture and stock-raising thus dissolving the tribal relationship and in turn the "Indian Problem". The best visonaries of Congress could not have foreseen that their good intentioned idealistic dreaming would soon grow into an unmanageable nightmare. Not only were most Indian people unskilled in agriculture with little desire to be tied to a small parcel of alien land but many allotments were heavily timbered, arid, rocky, or in other ways unsuited for agriculture. Many Indians never became independent, preventing abolishment of the government's trust responsibilities. Their heirs continued to multiply compounding ownerships. The United States found that rather than killing the sourcer's troublesome broom by chopping it into bits, it has created thousands more just as trying.

It has been difficult in the past for the Branch of Forestry to develop and maintain a sound silviculturally oriented program on Indian lands while adhering to established policy and often confusing legislation and court decisions. An example of this situation is found in Senate Document No. 12, 1933, where on the same page seemingly contradictory policy statements are documented. It is stated that the general policy of the Forestry Branch is:

> "To administer all tribal lands that are primarily adpated to the production of timber, in such manner as to secure the highest present economic return for the tribe that is consistent with theoretically correct forestry principles and to preserve these lands so that they shall remain productive and capable of doing their part toward insuring the future welfare of the citizens of the United States of which the Indians themselves are a part."

And yet it further states that when evolving and carrying out timber sales, these must be considered in the following order of importance:

1. The financial need of the Indian.
2. The potential and actual resources of the Indians and the extent to which it is necessary for them to liquidate their timber capital to provide funds for social, educational, industrial, and general economic betterments.
3. The demand for Indian stumpage.
4. The extent to which scientific forestry can be practiced in view of the above."

In the first statement, the BIA Forester is told to use "theoretically correct forestry principles to produce the highest economic return for the tribe." In the second statement he is told that scientific forestry should be a last consideration and in no way limit the potential benefits to the tribe. Another statement in the same publication, addressing a question of sustained yield on allotted lands, reflects the restraints upon Indian forest policy. It states that the "Foresters should not sacrifice the well-established rights of men on the altar of speculative
theory as to the rights of trees." (Steer 1933)

How does this history and politics enter into a discussion on reforestation of Indian lands today? Without a complete understanding of the Indian situation, which has only been

superficially addressed here, one cannot attempt to comprehend the diverse scope of management decisions within the BIA forestry program. There are no standard solutions to, what would seem to the professional, simple technical problems in the administration of Indian forests. No past decision sets precedence for future decisions and every decision, even those made by the junior forester in the field, eventually must withstand the test of trust responsibility.

The preceding, is not intended to provide anyone with a complete perspective of the BIA and thus qualify to establish Indian forest policy. It is simply intended to expand one's understanding of the diversity and complexity of Indian forestry throughout the nation.

BIA REFORESTATION NATIONALLY

The science of forestry, or at least the most fundamental phases of forestry dealing with the production and management of forest crops is unavoidably a long time proposition. To be successful, reasonable assurances of the stability of land ownership, individual goals and forest policies must be secured. As such assurances have been difficult if not impossible in the management of Indian lands, funding for reforestation, afforestation, timber stand improvement, etc., have not been made available until recently.

Reforestation is not a new concept within the BIA. There is documentation of the need for Indian forest tree nurseries prior to the establishment of the Indian Forest Service (today's Branch of Forestry) in 1910. The first BIA nursery was established on the Menominee Reservation in Wisconsin in 1912. (Kinney 1950). This nursery and the majority of other forest improvement efforts on other reservations have been primarily funded through stumpage proceeds from timber sales, as formal budgeting was very difficult to attain. Although many reservations through the years have maintained reforestation programs, with some experiencing good success, they have been limited in scope by the erratic nature of funding.

With the passage of Public Law 94-373 in 1977, reliable funding has been made available, for a ten (10) year period, to eliminate the sizable reforestation backlog that has accumulated on the Indian trust lands. The extent of this backlog is easily seen in Table 1.

To accomplish the goal of reforesting 232,125 acres in ten (10) years will require in excess of 140,000,000 seedlings based upon an average of 600 tree/acre. This assumes a one hundred percent (100%) success thus re

Table 1.--BIA Forest Development Backlog - 1979

Area Office[1]	Reforestation needs (acres)
Aberdeen	12,000
Albuquerque	116,268
Billings	10,228
Eastern	3,218
Juneau	697
Minneapolis	20,417
Navajo	7,000
Phoenix	11,104
Portland	43,092
Sacramento	8,101
	232,125

[1]The BIA is structured on three primary organizational levels. Some locations require a fourth because of diversity or remote location. A comparison to the USDA Forest Service would be as follows: BIA Central = *FS* Washington; BIA Area = *FS* regional* BIA Agency =FS Forest Supervisor; BIA Sub-Agency = *FS* District.

quiring no replanting or interplanting. At first glance, this would appear to be an impossible task especially considering all the BIA reforestation experts nationally up to this time can be counted on one hand and considering that to date, the BIA has only planted 6,840 acres in its best year. Nevertheless, we are committed and will be planting 16,236 acres in 1979, and increasing to more than 24,000 acres annually during the program.

To accomplish this objective, with reasonable success, will require competent personnel with aggressive professional attitudes; cooperation by other BIA service functions including administration; confidence and support by the tribes; and a lot of luck. A need exists for good experience decisions in the field to eliminate potential problems, prepare workable projects and insure quality compliance. In addition, a relationship must be developed between grower and planter to assure that well formed, healthy seedlings are being planted properly along with accountability for seed quality and source. Many different approaches are being utilized to best satisfy these requirements.

The "Phoenix Area" faced with a need of 1,200 acres annually, harsh southwest climate, a reasonably uncomplicated land ownership pattern, and an existing centralized greenhouse operation, determined to go solely with containerized seedlings to meet their goals. They expanded their Fort Apache Reservation greenhouse operation and are currently producing

750,000 pine and spruce annually. These seedlings are being planted by force account labor creating a totally self-contained, seed to planted tree operation allowing for maximum quality control. This control has resulted in better than ninety percent (90%) survival.

The "Portland Area" on the other hand, has taken a more diverse approach. A need exists to reforest over 4,000 acres annually. This acreage is scattered over a large area of the Northwest with many extremes of climate, topography, soils, and species. Pine, Douglasfir, cedar, larch, hemlock and the true firs are utilized in their reforestation program as well as force account and contract planting labor sources. Planting stock is obtained from federal, state, and private nurseries in addition to tribally owned greenhouses at Neah Bay and Nespelem, Washington.

The Neah Bay greenhouse on the Makah Reservation is in its first year of operation growing spruce, cedar, and hemlock on a onecycle per year schedule. These seedlings are being purchased by the BIA and planted under a P.L. 93-638 (Indian Self-Determination) tribal contract. It is the intent of this Indian enterprise to eventually supply timber operators on the reservation with stock to reforest clear-cut logging areas and to sell on the open market. This is not a government facility, but is privately owned by the Makah Tribe and therefore in a profit-making position.

The Nespelem containerized operation is tribally owned by the Colville Tribe in eastern Washington. The present facility has been in operation for three (3) years. It consists of three (3) quonset type double-layer poly houses with plans for expansion to five (5) houses by next year. They are capable of producing 450,000 Ray Leech cell, pine, larch, or Douglasfir seedlings. The facility currently supplies the needs of the BIA-Colville Agency and has contracted growing with the U.S. Forest Service, BIA-Umitilla Agency and Flathead Agency. The operation is currently financed through administrative fees deducted from the proceeds of timber sales in addition to contract revenues.

Bare-root seedlings used in the Portland Area is generally 2-0 stock grown under contract using locally collected or certified seed. Because of the variety of sites and planting stock, survival statistics vary from fifty percent (50%) to eighty percent (80%) based on reservation averages and in localized area have exceeded ninety-eight percent (98%).

The "Billings Area" is dependent upon the greenhouse facility on the Flathead Reservation to supply 800,000 containerized seedlings annually. This satisfied their total planting needs for all reservations in the Area, plus producing an excess for sale on the open market.

This operation is a unique cooperative cost sharing arrangement between the Tribe and the BIA allowing considerable flexibility in what would be stringent government regulations in procurement and labor. The Area utilizes all northern rocky mountain coniferous species which are grown six (6) months in the greenhouse producing a 2-0 quality seeding. Satisfactory survival results have been experienced.

Reforestation operations in other Areas are just as diverse and individualistic as those described above. From red pine in the Minneapolis Area and bare-root slash pine in the Eastern Area to aerial seeding in the Sacramento Area, all policies and procedures must be justified and tailored to satisfy local needs.

One fact is obvious in the total BIA re-forestation concept. The project is doomed to failure without competent, experienced personnel trained not only in technical procedures but in cultural differences, and who have an ability to mold the two into a successful program. The reforestation forester within the BIA is not born with a talent nor is he trained in school, he matures into a specialist. As for any specialist, his services are expensive. If we are willing to invest millions of dollars in reforestation, then we should pay the price that can produce a return on our investment. Too often this is not the case. Too many crops are damaged because of simple mistakes or oversites. Too many trees are lost in storage or transit because of inadequate care. Too many plantations are failures because of improper supervision or inspection. Too many trees are destroyed at the end of a planting season because of short sighted decisions by unqualified manage-ment, supervisory and field personnel. There are many explanations for these and other losses. The true reforestation specialist will not accept mere explanations without finding a course of action to prevent future losses.

AN INDEPTH VIEW

The Albuquerque Area is responsible to the Central Office for implementing, coordinating, directing, and controlling the total BIA program within its jurisdiction boundaries. These boundaries include twenty-four (24) Indian reservations in New Mexico, Colorado, and Utah with a combined total of 4,165,345 acres. Of this, 1,945,024 acres are classified as forested. A study in 1978 concluded that more than 116,000 acres within the commercial forest lands of the Albuquerque Area are either totally denuded or less than ten percent (10%) stocked. It is the intent of the Albuquerque Area Forest Development program to totally eliminate this backlog by 1989.

There has never been a reforestation project in the BIA to equal this effort.

Prior to 1976, there has been no concerted effort to plant tree seedlings within the Albuquerque Area aside from some futile attempts to utilize surplus Forest Service stock or exotic species on a trial basis. There is no evidence of these plantations today. In 1976, the first major outplanting of bare-root stock within the Albuquerque Area was attempted on the Mescalero Reservation following all the Forest Service recommended procedures. It was by the book: local seed source, spring planting season, 2-0 bare-root stock specifications, site prep, planting quality, handling, etc. Within three (3) months, it was apparent the planting was a failure with less than twenty-five percent (25%) survival. Another attempt was immediately made utilizing the summer rains in July and August. By the next spring, less than five percent (5%) survival was noted. It was obvious that something was wrong. Inquiries of the Forest Service revealed that the average survival in the Southwest was only twenty-five percent (25%). This figure was derived only after inclusion of eighty percent (80%) or better survival data on excellent sites in Arizona which were far superior to the shallow soils and harsh climate found at Mescalero. We had to ask ourselves, could the "book" be wrong? Does anyone really know how to reforest the Southwest? Are two plantings enough to draw any valuable conclusions? Whatever the answer, it was becoming obvious to the tribe that neither the BIA or the Forest Service knew what they were doing. The tribe had no intention of planting the same area seven times to establish an adequately stocked stand as is reported to be common on some sites.

At the same time as the summer bare-root planting in 1976, we acquired a few thousand containerized seedlings from a new greenhouse operation on the Fort Apache Reservation in Arizona. A test plot was established within the bare-root area to compare results of the two types of stock. The plot was located on a south aspect which ran from deep soils with heavily sodded grass in the bottom up a forty percent (40%) slope through exposed broken surface rock. Planting was accomplished with difficulty using post hole bars. Within two (2) months, twenty-five percent (25%) of the seedlings in the plot had been trampled by cattle and seventy-five percent (75%) had been browsed by deer. The future looked dismal. However, by the next spring, better than seventy percent (70%) of the seedlings had survived and were growing. What was it that allowed these seedlings to survive while at the same time the bare-root had failed? We noted that the sites were the same, the site preparation was the same, the planting season was the same, and the planting quality for bare-root was better. The only difference was the tree itself. We know that the containerized seedlings' roots had much more mass than the bare-root seedlings and were undamaged and growing when planted while the bare-root seedlings were lifted early and held in a dormant state. We theorized that the roots of bare-root seedlings were damaged in lifting and unable to respond immediately when planted. We also theorized that survival on this site required the roots to grow faster than the loss of soil moisture which occurs twice each year in the southwest during the spring and fall dry periods. We observed that rodents ignored the containerized seedlings while bare-root seedlings were immediately devoured even prior to compliance inspections. Also noted was an apparent contradiction to the accepted theories of site preparation. Seedlings planted under existing oak brush with no effort to prepare the site not only resulted in higher survival rates than seedlings planted in the standard eighteen (18) inch scalp but exhibited superior growth. It was obvious that the existing oak brush protected the seedling from animal damage. Could it be that utilizing existing vegetation rather than destroying it in site preparation provided an advantageous micro-site? Was this micro-site reducing soil temperatures and providing increased soil fertility with longer soil moisture retention than did the denuded site?

To confirm our ideas, we requested 100,000 containerized seedlings for planting the next year. Fort Apache could not provide such quantities because of local needs, and other competent growers could not be located at the time. We were left no alternative but to produce our own stock. In the Spring of 1977, greenhouse construction began and with it the Albuquerque Area took a new direction in reforestation. Today, the Albuquerque Area depends solely on containerized planting stock in its reforestation program. We are convinced that one factor necessary for satisfactory reforestation iri the southwest is quality planting stock.

We learned early that conventional flower and vegetable oriented greenhouse systems cannot grow quality tree seedlings. By following Dr. Richard Tinus' recommendations, and observing success and failure in the containerized industry, we designed an efficient, mid-sized greenhouse system specifically for the purpose of growing tree seedlings. After constructing ten (10) houses through four (4) generations of design modifications, we are satisfied that our system is the best to be found in the United States for the type of production we anticipate.

The Albuquerque Area program required five (5) separate facility locations scattered throughout New Mexico and Southern Colorado. Fourteen (14) houses in total are necessary to

supply program goals. The most economical production facility consists of four (4) houses totaling 11,500 square feet of growing space. Such multi-house facilities are located at Mescalero and Dulce, New Mexico, and Ignacio, Colorado. Two (2) single house facilities are located at Zuni, New Mexico, and Albuquerque, New Mexico. The Albuquerque unit is in combination with the Area seed extractory and storage facility.

A single house facility consists of a "Nexus" two-inch (2") square tubular steel, ninety feet (90') by thirty feet (30') quonset type frame covered by two layers of Monsanto 602 six (6) mil. polyethylene film. The standard structure is modified with bench high sidewalls by oversizing the supplied ground posts. This allows full utilization of the total available floor space that would otherwise be lost to the curvature of the quonset design. The double layer poly structure was especially attractive because of its insulating qualities in view of limited fuel allocations to BIA facilities and also because of the low initial investment required. A thirty foot (30') by fifteen foot (15') headhouse of standard frame construction is attached at one end of the quonset to house heating and cooling equipment. Attached to, and resembling an extension of, the headhouse perpendicular to the greenhouse is a thirty foot (30') by fifteen foot (15') office/work area. This area contains electrical controls, water injection system and restroom facilities. A 15KW standby generator is housed outside and is wired to the environmental control functions. These generators have proven themselves many times at our remote locations.

In addition to the main structure, an adjacent twenty-eight foot (28') by thirtytwo foot (32') metal warehouse building is located for easy access and storage of potting soil, containers, etc., and is used as a welding shop and container filling shed. The greenhouse is aligned in a north-south direction with the headhouse at the north end to eliminate any shadow effects. At the south end of the structure is a lath house that is twice the size of the greenhouse in order to accomodate two crops simultaneously. The lath house is constructed of 6" x 6" posts at fifteen foot (15') centers with 2" x 8" stringers and 2" x 6" joists. The joists are topped with 1" x 4"s aligned north to south to provide uniform fifty percent (50%) shade throughout the day. Walls of corregated fiberglass panels are necessary around the lath house to prevent winter-wind desiccation.

The greenhouse is equipped with three (3) forty-eight inch (48") two-speed exhaust fans at the south end and four (4) forty-eight inch (48") motorized shutters opening to an exterior six foot (6') by thirty foot (30') aspen pad wall for cooling. It is also equipped with four (4) floor mounted gas fire heaters teamed with two (2) twenty-four inch (24") floor mounted fan jet heat accessories for heating and circulation. The fan jets force air through a twenty-four inch (24") perforated convection tube on the floor under elevated growing benches for maximum heat efficiency and air circulation thus enhancing temperature and disease control. A CO_2 generator is mounted in the headhouse to enrich the inhouse atmosphere with carbon dioxide during nonventilating daylight hours.

The environmental conditions are monitored at seedling level in the center of the house in a sensing station protected from the sun and related heat build-up. The station contains a single thermistor and humidistate that are wired to the main control panel in the office area. It also contains a hygrotnermagraph for continuous recording of temperature and humidity fluctuations. The primary control panel is an Acme Team II controller that has been adapted to satisfy our needs which include separate daynight temperature control and low humidity control. High humidity does not seem to present a problem in the southwest. In addition, it allows us four (4) stages of cooling and two (2) stages of heating which provides efficient energy use. This system also allows us to maintain a temperature range of $\pm 5^0$ F of optimum. Normal dry periods show only a 2^0 deviation in temperature at the recording station. Hardening off problems have been encountered and have required the addition of an override sensor in the headhouse to prevent frosting trees when super-cold air is drawn into the house for cooling. The humidity is easily maintained at fifty percent (50%) by water applied to the aspen pad. Lower or higher humidities require excessive equipment use and energy consumption in order to stabilize within an acceptable range.

The C02 generator is controlled by a separate twenty-four (24) hour timer but is wired into the main panel to correlate its operation with the cooling function. This prevents the unit from venting C02 from the house during the cooling process. Supplemental lighting is provided by 84-300 watt flood lamps mounted down the center of the house. They are controlled by a seven-lobe cam timer that actuates a bank of twelve (12) bulbs every ninety (90) seconds for an on period of thirty-five (35) seconds. Limiting the on period to thirty-five (35) seconds prevents excessive heating that breaks the bulbs by condensation drip, thus allowing the use of relatively inexpensive thin-glass bulbs.

The water system, the most critical factor in producing a uniform crop, is a traveling boom

suspended in barn door trolley track mounted overhead and powered by a stationary gear motor. It is chain driven and directionally controlled by cat whisker limit switches attached at each end of the trolley track. The unit makes a pass every twelve (12) minutes and delivers approximately 3/16 inches of water per pass through industrial full cone pattern nozzels. The nozzels, mounted twenty-four inches (24") above the containers in a one inch (1") PVC manifold, are supplied by a three-quarter inch (3/4") vinyl hose. The system provides uniform water distribution within a twenty percent (20%) variation, with exception to the extreme outside edges where distribution is effected by the quonset design. Fertilizers, pesticides and phosphoric acid to control pH are injected into the water supply by a double diaphragm Anderson Ratio Feeder located in the office area. This unit is not only capable of treating water to the greenhouse but can also treat water in the lath house where a stationary water system is installed. The lath house water system consists of rotating industrial roof sprinklers at 12-foot spacings that provide very uniform distribution and excellent water droplet size. The system is versatile in that it allows watering of one-half (1/2), two-thirds (2/3), or all the lath house area. Trays of seedlings placed in the lath house must be elevated above the ground to allow continued air pruning of roots.

The Albuquerque Area is committed to using the Spencer-Lemaire book type container in our total reforestation program. The decision to do so was not difficult after establishing our goal to plant the highest quality seedling that can be produced. There are other containers that have equivalent root volumes, containers that control root configuration, and almost all allow air pruning of the roots. However, the book type container is the only one that allows the seedlings to be planted with respect, undamaged. The Spencer-Lemaire containers are bulky, fragile and expensive to the grower in seeding, thinning, culling, and

Table 2.--Albuquerque Area Containerized Seedlings Growing Costs

	Spencer-Lemaire* (10.5 inch^3)	Spencer-Lemaire** (21.5 inch^3)
Supplies:		
Container with tray	$0.0259	$0.0384
Potting soil	.0130	.0341
Perlite	.0011	.0015
Acid	.0004	.0006
Fertilizer	.0005	.0006
Other	.0004	.0002
Total	$0.0413	$0.0754
Labor:		
Container assembly	$0.0063	$0.0083
Filling	.0210	.0143
Seeding and loading		.0079
Thinning	.0127	.0110
Growing	.0210	.1144
Unloading	.0014	.0029
Total	$0.0624	$0.1588
Utilities:		
Gas	$0.0056	$0.0095
Electricity	.0032	.0039
Water	N/C	.0006
Total	$0.0088	$0.0140
	0.1125/ tree	0.2482/ tree

*Projected for four (4) house facility from Spring 1979 costs at a two (2) house facility.

**Actual Spring 1979 costs at a one (1) house facility.

IN CONCLUSION

The BIA nationally is faced with a very difficult assignment to reforest 232,125 acres of understocked Indian forest lands within the next ten (10) years. The Albuquerque Area, faced with fifty percent (50%) of this acreage, has come a long way in a short time. In the process, we have had to develop many new concepts in Southwestern reforestation to obtain survival. To do so required that accepted reforestation practices, applied by so many, be put aside as they are not applicable to conditions found on Indian lands in the southwest. Planting seasons had to be changed, different planting stock had to be considered, and a means to obtain quality seedlings had to be developed. Concepts were revised to utilize competing vegetation to the advantage of the seedling rather than destroying it in site preparation and the responsibility link between growing, transporting, and planting had to be established to insure that good trees were being well planted. Briefly, the Albuquerque Area has concluded that the established method of reforestation is incomplete and short sighted, and the Area has encouraged further investigation.

By being observant of natural progressions and not hesitating to question established procedures, by utilizing scientific understanding to attain logical conclusions and responding to the men in the field, the BIA has established a means by which to reforest the southwest. We hope that prudent men will follow our lead and not ask, "Why should I try?" but rather, "How can I succeed?"

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