

# Diversity of Species at Humboldt Nursery<sup>1</sup>

Tony Ramirez<sup>2</sup>

Abstract. In the past, the Humboldt Nursery has been considered a coastal Douglas-fir bareroot nursery but past successes with several diverse species has proven the Humboldt Nursery can successfully propagate several stock types as well as various species.

Weather

## INTRODUCTION

The Nursery produces several stock types which include 1-0, 2-0 and transplants. The various transplants successfully propagated include 1-1, 2-1, plug-1 as well as various other combinations such as 2-2, 2-2-1, etc. This year, the propagation of cuttings was attempted with a very good success rate observed within the nursery beds.

The climatic environment is conducive for excellent germination and growth for many species. The summers are very mild with an average temperature of 60 to 70 degrees Fahrenheit. The Nursery is situated within a fog belt which provides a good environment of reduced evaporative stress. The fog belt and reduced evaporative stress provides the Nursery with flexibility in planting times and ability to propagate a wide variety of stock types and species with minimal stress to the seedlings.

## HUMBOLDT NURSERY

### Location

The Nursery is located in McKinleyville, California which is approximately 20 miles north of Eureka. The Nursery lies within a mile from the coast and is situated within a mixed conifer type area. There are several species of both hardwood and conifers within the immediate area of the Nursery.

Winters are cold enough to provide the propagated seedlings the temperatures to induce proper and sufficient dormancy. This is proven by the lifting window and RGC studies. Even though the winters are cold enough to induce proper seedling dormancy, they are not severe to inhibit or delay lifting operations.

## TRANSPLANTS

### Plug-1

### Soil

The soil is a sandy loam which averages approximately three meters deep throughout the entire nursery. It is derived from a marine parent material. It has very good and rapid drainage. There is also a good level of organic matter. These factors make an excellent growing environment for many species to be successfully propagated.

Plug-1 transplants are an excellent stock type for those species that are difficult to germinate and propagate in the field as either 1-0 or 2-0 bareroot stock. These type of species can be started in tubes within a greenhouse facility for the first year and later transplanted into the field for more desirable height, caliper and root growth. This has proven to be very successful in species such as western hemlock and western red cedar. In the past, germination of these particular species has been inconsistent in the field and growth patterns for a 2-0 bareroot stock has not produced a well balanced seedling. An excellent remedy for this is to propagate the seedlings as containerized stock within a greenhouse facility for the first growing season. After the first year, these seedlings can be transplanted into the fields and grown as bareroot stock during the second year. A second year of

<sup>1</sup>Paper presented at the Western Forest Nursery Association meeting at Fallen Leaf Lake, CA, Sept. 15-17, 1992.

<sup>2</sup>Tony Ramirez is the Nursery Manager of the Humboldt Nursery, McKinleyville, CA.



Figure 1.--Plug-1 Western Hemlock transplanted in the Humboldt Nursery beds.

growth as bareroot stock will provide additional height, caliper and root growth for a well balanced seedling.

Humboldt has traditionally transplanted plug stock by extracting the seedling plugs from the container and removing the original greenhouse medium. This is done with no damage to the seedlings by gently shaking the medium off the existing root system. The seedlings are then transplanted in prepared beds in the field by a Mechanical Transplanter. With the Mechanical Transplanter, the seedlings are planted at a spacing of approximately 6 seedlings per square foot or 25 seedlings per bed foot. The beds are approximately four feet wide and there are five transplanted rows per bed.

Other species the Humboldt Nursery has successfully transplanted and propagated as plug-1 stock include giant sequoia, digger pine, coffeeberry, redbud, white oak, red alder, and sitka spruce.

#### 1-1 Transplants

Humboldt Nursery utilizes various transplanting times to control the size and balance of transplanted seedlings. Seedlings are transplanted at a later date to provide a shorter growing season, which in turn provide a shorter period of time for height growth. The timing of the transplants range from March to July to provide the desired height growth requested by

<sup>3</sup>Nelson, James A. and Jenkinson, James L. 1992. Transplanting Time Controls Size and Balance of 1-1 Douglas-fir.

clients. With the optional planting date, a well balanced seedlings with the proper root to shoot ratio can still be obtained.

#### 1-0 STOCK

The Nursery has also successfully produced and propagated 1-0 stock. Some species successfully produced as 1-0 stock include Douglas-fir, red and white alder and big leaf maple. The 1-0 Douglas-fir seed is stratified for 90 days and sown in the fields by the end of February. This early sow date provides a long enough growing season for sufficient height and root growth. Height for 1-0 Douglas-fir has averaged 8 to 12 inches with an average caliper of 6 cm. Other species, such as the red alder, are planted at a later date after a 24 hour water soak for seed stratification. The later sow date is done to shorten the growing season of the red alder due to its fast and aggressive growth rates.

The mild and consistent climate of Humboldt Nursery allows for the flexibility of planting dates with minimal decline on germination and growth.

#### CUTTINGS

The Nursery has ventured into the propagation of cuttings (fig. 2). The Diverse Species Culture Unit collected stems of several species of hardwoods, such as willows and cottonwood, from various locations throughout Northern California.

<sup>4</sup>Formerly the Administrative Studies Unit at the Humboldt Nursery.



Figure 2.--Root growth of Pacific dogwood cuttings propagated in the bareroot nursery beds.

The stems were stored in a cold storage cooler with a temperature ranging from 32 to 34 degrees Fahrenheit. The storage time lasted from one to three months. The stems were then cut into 8 inch lengths and planted into prepared beds within the fields of the Nursery. Approximately two-thirds of the cutting were inserted into the ground with one-third of the cutting remaining above ground. The cuttings were planted in May and June. After planting, the cuttings were irrigated once a day

at midday with a rainbird sprinkler irrigation system for approximately 20 minutes.

The cuttings will be lifted from the field, processed, packaged, delivered and planted into the sites in the close vicinity to where the original stems were collected. The survival and growth will be closely monitored by both the Nursery and District personnel.