Fertility Introduction

Whether growing tree in a wild stand or plantation, fertilization can increase overall Christmas Tree productivity.

However, regardless of the system, investing in fertilizer must make economic sense and cannot come at the expense of the environment. The "**4Rs**" provide a framework for nutrient stewardship. They refer to applications of fertilizer that are the:

Right Source
Right Rate
Right Time
& Right Place

The 4Rs can be applied to growing Christmas Trees.

Research regarding Christmas tree response to various fertilizer regimes is limited. Soil and tissue testing are important components of a fertilizer plan, but visual observations of color and quality and in-field measures of tree growth must also be taken into consideration when designing a fertility program.

The standard for fertilization recommendations across the agricultural sector is to manage nutrients across the entire field.

When it comes to Christmas Trees many growers choose to manage nutrients on a per tree basis and opt to apply fertilizers around the dripline of individual trees.

There are pros and cons to both methods. Nutrient application on a field basis will improve soil fertility of the entire site over time, which will show benefits such as improved germination and growth for decades. Fertilizing around the drip line is often cheaper and allows for more efficient use of product, however it requires individual tree evaluation which is challenging to do accurately. Ideally, fertilizer recommendations should be based on a soil test. Depending on the grower's plans for nutrient application, that soil test can be done as a composite sample across the lot, or as individual samples at the drip line of the tree. Reach out to your local agrologist for recommendations and assistance in selecting sites for soil sampling.

The 4R's

The Right Source

Fertilizers are sold as single elements or in combinations of **N (nitrogen), P (phosphorus). and K (potassium).** The three numbers on the label of a bag indicate the levels of N-P-K contained in that bag of fertilizer. For example, 34-0-0 is a single element fertilizer containing 34% nitrogen, no phosphorus, and no potassium. A fertilizer labelled 20-5-5 contains 20% nitrogen, 5% phosphorus, and 5% potash (potassium).

There are a number of sources of nutrients and different sources may be used to make up a fertilizer blend, but they may vary in price. It is best to talk to the fertilizer dealer to see what blends can be made to suit your needs at the most effective formulation and cost.

The Right Time

Fertilizers should be applied in the spring, usually **about one to two weeks before bud burst in the balsam fir.** This period will usually fall in the **middle three weeks of May to mid-June depending on your geographical location.**

Fertilizer applied too early can be lost to leaching. Applied too late, it will prolong the needle-growing period and cause premature needle drop in late fall as a result of frost kill. Seedlings benefit from more frequent fertilization with smaller amounts.

The Right Place

On low stocked areas, apply fertilizer around the dripline of the tree only. Otherwise, broadcast treatments are most efficient and effective. Always use caution to avoid throwing fertilizer next to the stem or allowing it to land in clumps. In particular, keep the fertilizer off the trees' foliage, especially on a wet day. Aerial applications on dry days do not stick to the foliage, but wet day aerial or mechanical applications of granular fertilizers should be avoided.

The Right Rate

Determining the right rate of fertilizer should be a multi-pronged approach using a soil test, tissue testing, visual observations and measurements. However, because the relationship between soil applications of fertilizer and tree fertilizer uptake is not well established, traditional recommendations based loosely on estimations of visual responses only will also be presented here. A grower's best approach would be to use these recommendations in conjunction with soil and tissue tests in addition to his/her own common sense.

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