

Google Data Analytics Capstone Project - Final 'Growing-Gnomes' Report

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Analysis Findings & [Dashboard](#)

After an in depth analysis of the datasets I've come to the following conclusions:

Regarding the test parcel located in iceland:

There are 3 different tree species that **survived** the 4 year trial, those are

- *Red Spruce*, from the *Picea* genre, composing **44.5%** of the surviving trees
- *White Pine*, from the *Pinus* genre, composing **36.5%** of the surviving trees
- *Black Birch*, from the *Betula* genre, composing **19%** of the surviving trees

Such test parcel, had a **59.96%** of overall survival, which shows a positive trend and a promising outcome for the upcoming afforestation project, with *Red Spruce* being the most suitable for population enrichment as per **562** trees survived, and *Black Birch* being the most suitable for range expansion as **225** survived the test period.

Such trees were located in the following subplots:

- | | | |
|------|------|------|
| • 18 | • 25 | • 24 |
| • 21 | • 5 | • 12 |
| • 10 | • 11 | • 7 |
| • 3 | • 22 | • 13 |
| • 6 | • 23 | • 15 |
| • 17 | • 4 | • 20 |
| • 16 | • 2 | • 8 |

I recommend analyzing such subplots to consider both the geographical and soil conditions as they seem to be optimal.

Also is worth mentioning that the following subplots yielded healthy trees, by the DBH (diameter at breast height) measures:

- | | | |
|------|------|------|
| • 3 | • 12 | • 6 |
| • 9 | • 15 | • 8 |
| • 5 | • 16 | • 11 |
| • 19 | • 21 | • 13 |
| • 25 | • 10 | • 7 |
| • 23 | • 4 | • 22 |
| • 17 | • 2 | • 20 |
| • 18 | • 24 | |

Thanks to the analysis I encountered other tree species that can survive in subarctic conditions as they naturally exists in countries like Norway, Sweden and Finland, such trees are:

Betula Pendula, present in *Finland*

Betula Pubescens, present in *Finland, Norway and Sweden*

Picea Abies, present in *Finland, Norway and Sweden*

Pinus Sylvestris, present in *Finland, Norway and Sweden*

Sorbus Aucuparia, present in *Norway*

These species compose more than 5% of the total forest population, and present a positive mean of DBH, which indicates growth and positive response to the environment, as it follows:

Main tree species in Finland:

Pinus Sylvestris **35.7%** - DBH 0.88
Picea Abies **27.9%** - DBH 0.79
Betula Pubescens **24.6%** - DBH 0.69
Betula Pendula **11.8%** - DBH 0.74

Main tree species in Norway:

Betula Pubescens **38.1%** - DBH 0.62
Picea Abies **28.6%** - DBH 0.79
Pinus Sylvestris **24.7%** - DBH 0.90
Sorbus Aucuparia **8.5%** - DBH 0.87

Main tree species in Sweden:

Pinus Sylvestris **44.6%** - DBH 0.81
Picea Abies **44.3%** - DBH 0.79
Betula Pubescens **11.1%** - DBH 0.58

Conclusion

Based on the findings of overall analysis, I find quite feasible an afforestation project based in Iceland, as the tree species mentioned above have shown positive reaction to subarctic environments and have proven to be quite resilient to adverse conditions. As far as an expected growth, an approximation can be found in the RomanianSubArctic dataset, as it shows the overall growth and density of the forests located in mountainous and subarctic regions of the country, and it can be used as an example or control population.