

# SILVICULTURAL TREATMENT EFFECTS ON HEIGHT GROWTH

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IFC ANNUAL MEETING

MARCH 24, 2020

# BACKGROUND

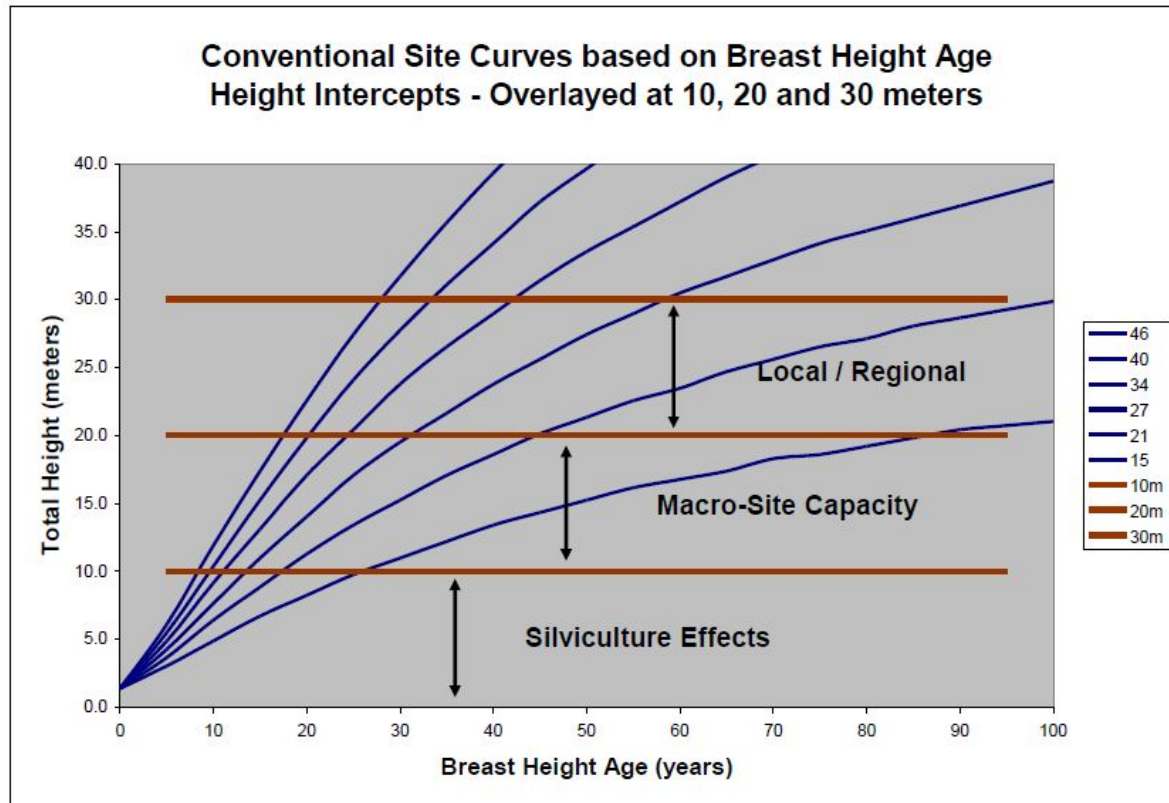


Figure 65. 10m Site Index index levels overlaid on traditional breast height site curves.

- % Regen: 0-10 meter HT growth, as percentage of the 10m Site Index
- 10m Site Index: 10-20 meter HT growth
- % Shape: 20-30 meter HT growth, as percentage of the 10m Site Index
- CASH Card: 0-6 meter height growth
- Traditional Site Index = 10m Site \* 10 + 30
- Example: 5.0 meter site \* 10 + 30 = 80

# BACKGROUND

## FPS - Silvicultural Treatment Response Classification

CASH Card (Correct Age, Site, Height)

| Site Class    | CASH Card (Correct Age, Site, Height)                             |            |            |            |            |            |            |            |            |             |             |             |             |
|---------------|-------------------------------------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|-------------|-------------|-------------|
| 25yr          | 35                                                                | 40         | 45         | 50         | 55         | 60         | 65         | 70         | 75         | 80          | 85          | 90          | 95          |
| 50yr          | 40                                                                | 50         | 60         | 70         | 80         | 90         | 100        | 110        | 120        | 130         | 140         | 150         | 160         |
| 10m           | <u>1.0</u>                                                        | <u>2.0</u> | <u>3.0</u> | <u>4.0</u> | <u>5.0</u> | <u>6.0</u> | <u>7.0</u> | <u>8.0</u> | <u>9.0</u> | <u>10.0</u> | <u>11.0</u> | <u>12.0</u> | <u>13.0</u> |
| <b>%Regen</b> | <i>Number of Years to Achieve 20-foot Total Height (6 meters)</i> |            |            |            |            |            |            |            |            |             |             |             |             |
| <b>40%</b>    | 152                                                               | 76         | 51         | 38         | 30         | 25         | 22         | 19         | 17         | 15          | 14          | 13          | 12          |
| <b>52%</b>    | 117                                                               | 59         | 39         | 29         | 23         | 20         | 17         | 15         | 13         | 12          | 11          | 10          | 9           |
| <b>64%</b>    | 95                                                                | 48         | 32         | 24         | 19         | 16         | 14         | 12         | 11         | 10          | 9           | 8           | 7           |
| <b>76%</b>    | 80                                                                | 40         | 27         | 20         | 16         | 13         | 11         | 10         | 9          | 8           | 7           | 7           | 6           |
| <b>88%</b>    | 69                                                                | 35         | 23         | 17         | 14         | 12         | 10         | 9          | 8          | 7           | 6           | 6           | 5           |
| <b>100%</b>   | 61                                                                | 30         | 20         | 15         | 12         | 10         | 9          | 8          | 7          | 6           | 6           | 5           | 5           |
| <b>112%</b>   | 54                                                                | 27         | 18         | 14         | 11         | 9          | 8          | 7          | 6          | 5           | 5           | 5           | 4           |
| <b>124%</b>   | 49                                                                | 25         | 16         | 12         | 10         | 8          | 7          | 6          | 5          | 5           | 4           | 4           | 4           |
| <b>136%</b>   | 45                                                                | 22         | 15         | 11         | 9          | 7          | 6          | 6          | 5          | 4           | 4           | 4           | 3           |
| <b>148%</b>   | 41                                                                | 21         | 14         | 10         | 8          | 7          | 6          | 5          | 5          | 4           | 4           | 3           | 3           |

**Method:**

- 1) Get ring count at stump and 20-foot height on tree. Select column for local Site Index.
- 2) **%Regen** = Early silvicultural height growth as % of Site Capacity Height Growth.
- 3) **%Regen** = In selected Site column, look up #yrs for (Stump age - 20ft height age).
- 4) Apply %Regen column to **localize FPS Growth Model** projections for this stand.

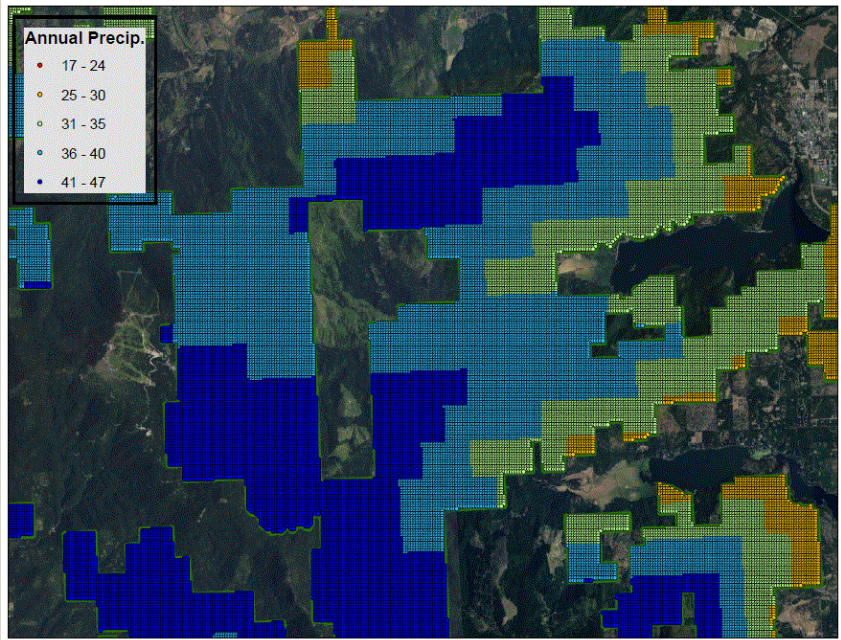


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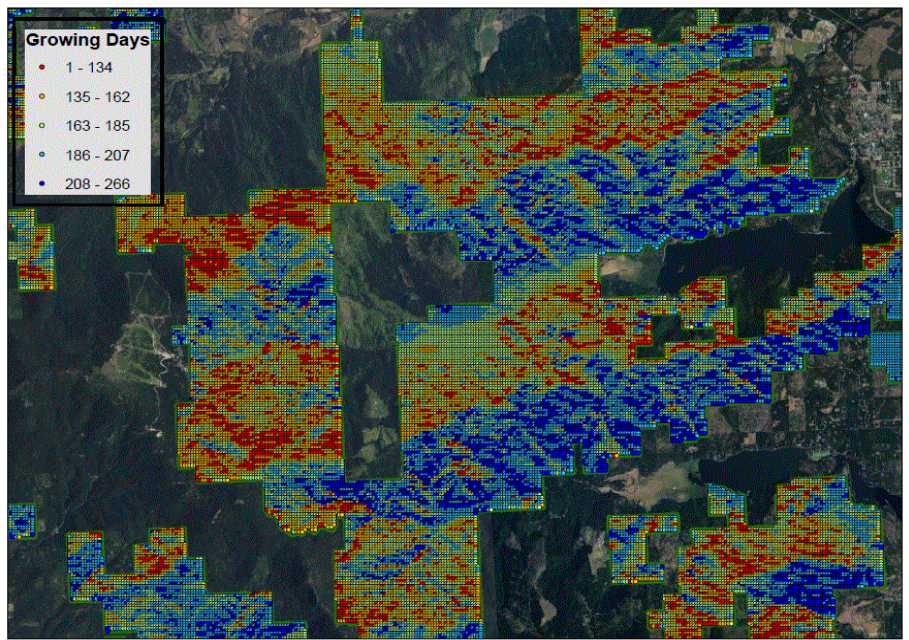
- “Typical threshold for silvicultural investment decisions is a height gain of at least 10 percent over the baseline stand.”
- “ Our field measurement methods are typically accurate to about the nearest foot.”

# BACKGROUND- SITE GRID

ANNUAL PRECIPITATION

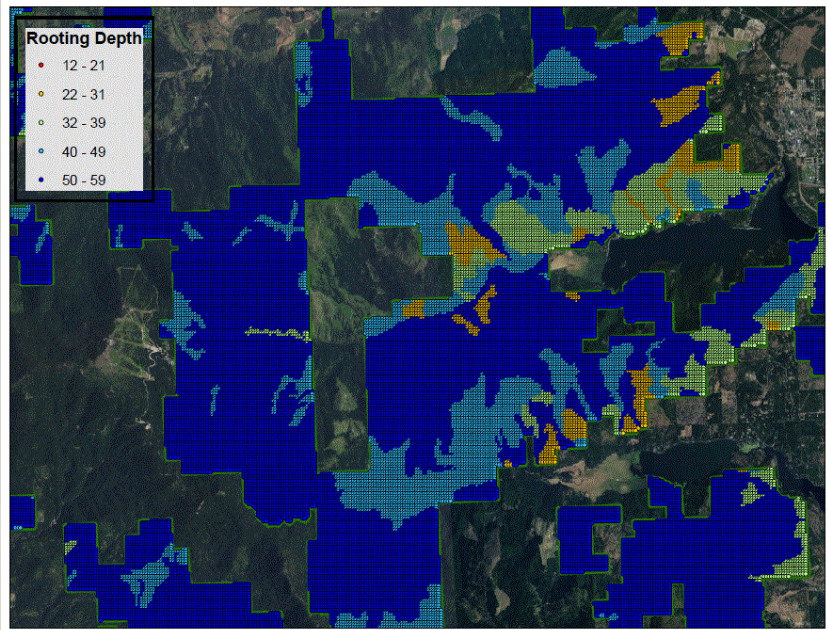


GROWING SEASONS DAYS

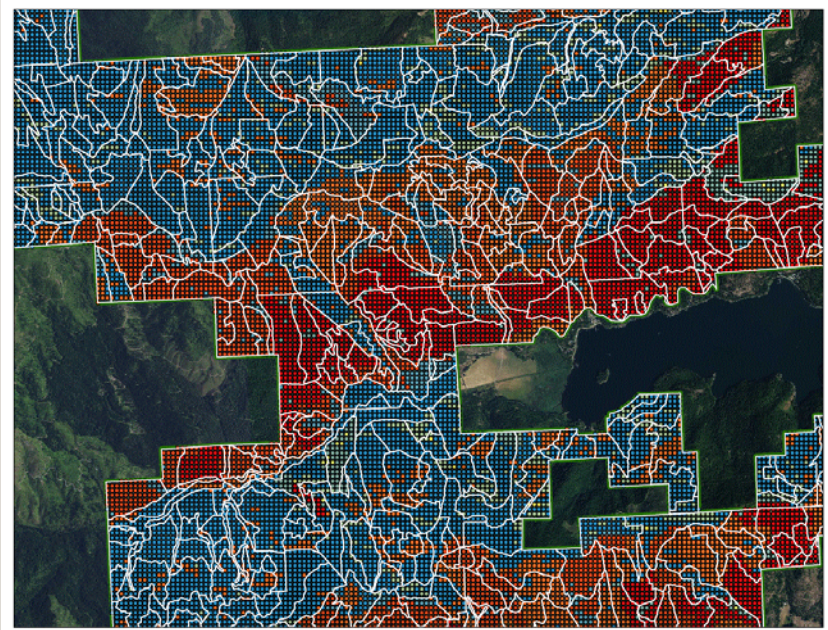


# BACKGROUND SITE GRID

## ROOTING DEPTH



## STRATA IN STANDS



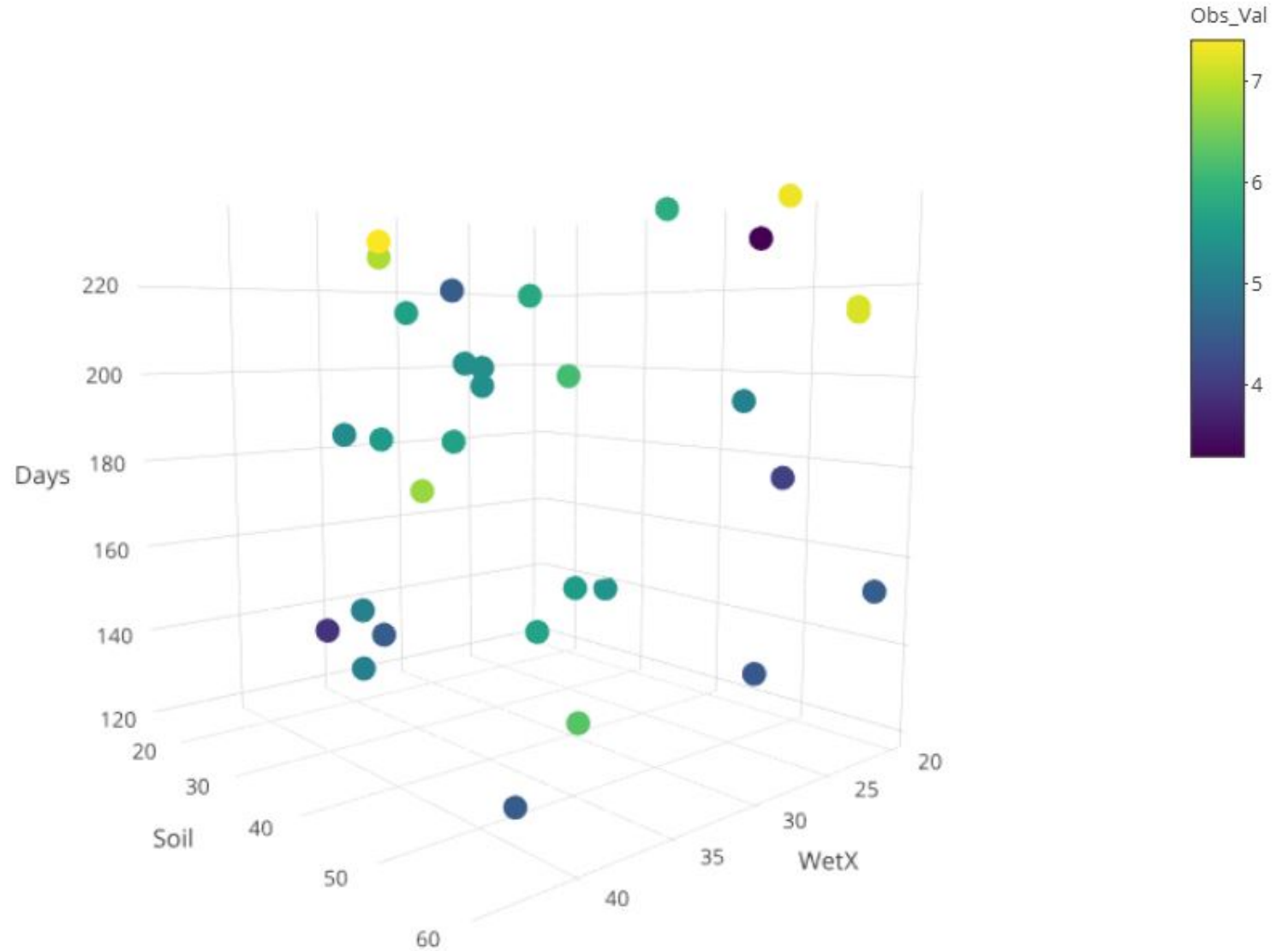
# BACKGROUND 10 M SITE TREES

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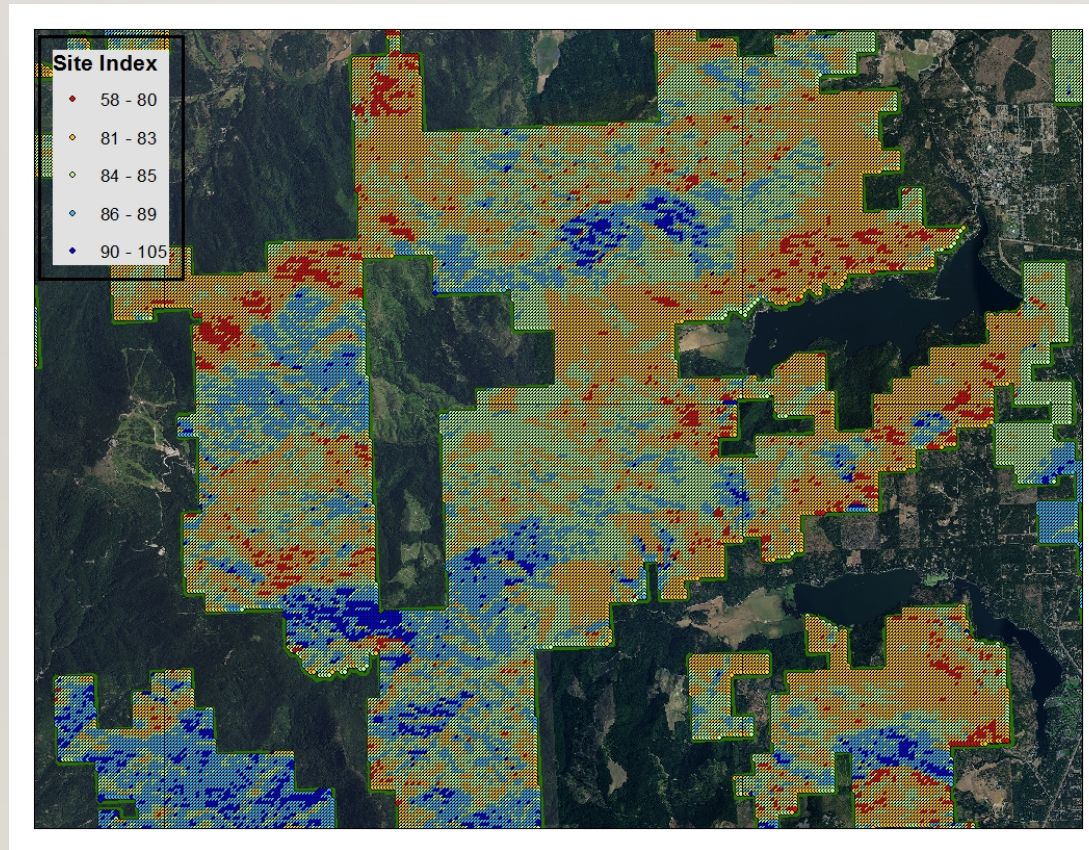
# BACKGROUND

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# BACKGROUND

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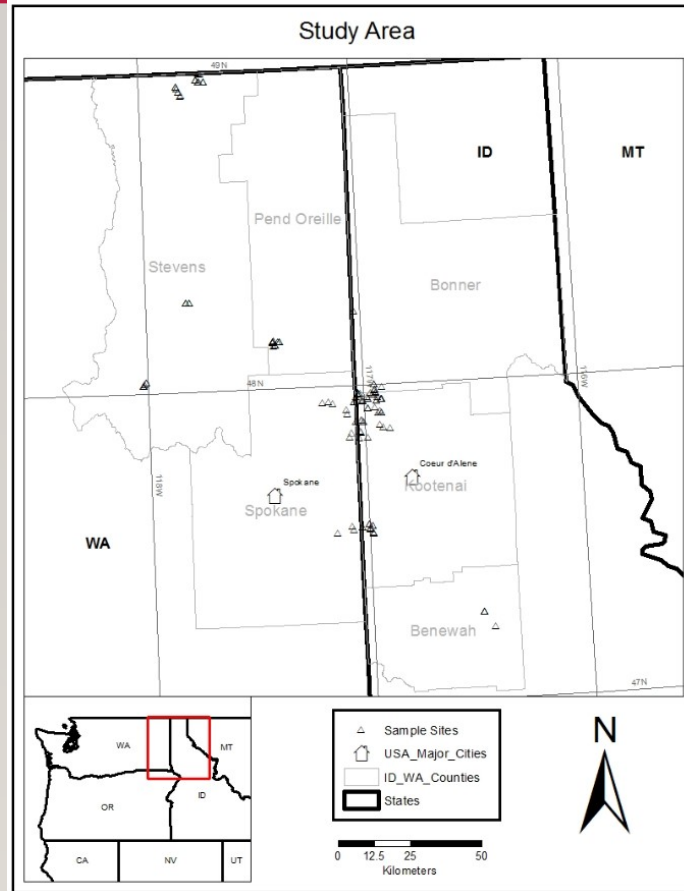


# SITE GRID

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| Class    | Day3    | WetA  | Soil  |
|----------|---------|-------|-------|
| 1        | 1-154   | 17-27 | 14-37 |
| 2        | 155-211 | 28-40 | 38-48 |
| 3        | 212-266 | 41-47 | 48-59 |
|          |         |       |       |
| Mean     | 182.78  | 33.74 | 47.85 |
| Std. Dev | 28.34   | 6.5   | 10.37 |
| Lower    | 154.44  | 27.24 | 37.48 |
| Upper    | 211.12  | 40.24 | 58.22 |

# STUDY AREA



- Cutdown 253 Total Trees: 60 DF, 87 PP, 106 WL
- Total of 1,049 taper measurements

# STAND HISTORY

SECTION 8, 9 & TOWNSHIP 53N RANGE 5W  
 SUBDIVISION ELEVATION 3500'



SLOPE Squash ASPECT SW  
 SLOPE MIN. MAX. AVG.  
 GROUND COVER: Heavy brush with  
 Open grass covered slopes.  
 SOIL CLASS: Clay  
 DEPTH A B C  
 WEATHER: Warm dry wind.  
 REMARKS:

| COLOR | SPECIES  | STOCK      | NURSERY  | NO     | COST/M |
|-------|----------|------------|----------|--------|--------|
| 1-1   | P.P. 2-0 | Lot #1 IEP | WEBSTER  | 39,200 | 511.05 |
| 1-2   | P.P. 2-0 | Lot #7 IEP | Webster  | 2,700  | 35.20  |
| 1-3   | P.P. 1-1 | Lot #5     | IDAHO    | 8,200  | 106.90 |
| 1-4   | G.P.     | Lot #2     | WEBSTER  | 39,925 | 520.50 |
| 1-5   | D.F. 3-0 |            | MT. HOME | 33,600 | 438.04 |
|       | W.P. 2-0 |            | MT. HOME | 4,000  | 52.15  |

TOTAL 127,625 \$1,663.84

ACRES PLANTED 256

TREES PER ACRE COUNT 499 PLOTTED

REMARKS: Actual cost paid to the nurseries per thousand trees. This price includes rabbit repellent.

(2)

TOTAL RODENT CONTROL COSTS INCLUDING MATERIAL & EQUIPMENT 156.04

## LABOR

| NO. MEN          | MAN HOURS | RATE | TOTAL COST | NO. CREWS                         | MAN PER CREW |
|------------------|-----------|------|------------|-----------------------------------|--------------|
| 284              | 2216      |      | 5,899.41   | 3                                 | 5            |
| Contracted price |           |      | 1,967.39   | TOTAL MAN HOURS 2216              |              |
|                  |           |      |            | PLANTING MAN HOURS 1790           |              |
|                  |           |      |            | TRAVEL MAN HOURS TOTAL 426 DAY 19 |              |
| REMARKS:         |           |      |            | TREES PLANTED                     |              |
|                  |           |      |            | PER MAN/DAY 350                   |              |

(2) Includes Planting time only.

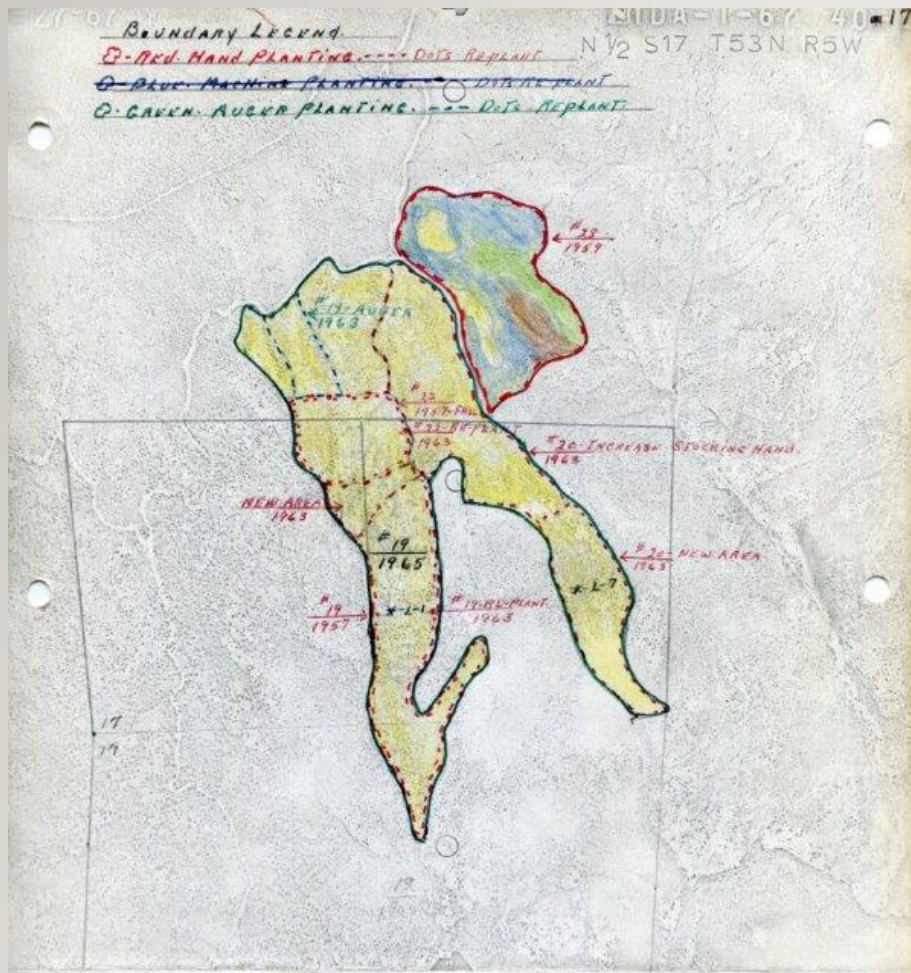
(3)

## MATERIAL & EQUIPMENT

| ITEM     | QUANTITY | COST PER UNIT | PURCHASED/RENTED FROM | TOTAL COST |
|----------|----------|---------------|-----------------------|------------|
| Horse    | 1        | \$5.50/day    | Martin Fraker         | 104.50     |
| Chainsaw | 1        | .75/hour      | Martin Fraker         | 49.13      |

PRORATED COSTS

# STAND HISTORY



THIS AREA WAS PLANTED IN 1965 AS #19 HAND & AUGER TO FILL IN THE UNSTOCKED GROUND. ALL OF THE OLD PLANTATIONS THAT WERE PLANTED THRU ARE NOW COMBINED INTO #19, EXCEPT THE MACHINE AREA WHICH IS #20. THE CORRECT SPECIES DISTRIBUTION IS UNKNOWN IN #20

DATE STARTED 4-15-65  
 DATE COMPLETED 5-26-65  
 TOTAL PLANTING DAYS 22  
 PLANTATION COST #19  
 UNIT Brickel Creek  
 PLANTING METHOD Hand & Auger  
 PHOTO NO. IES 6R 9 & 10 IBS 5-

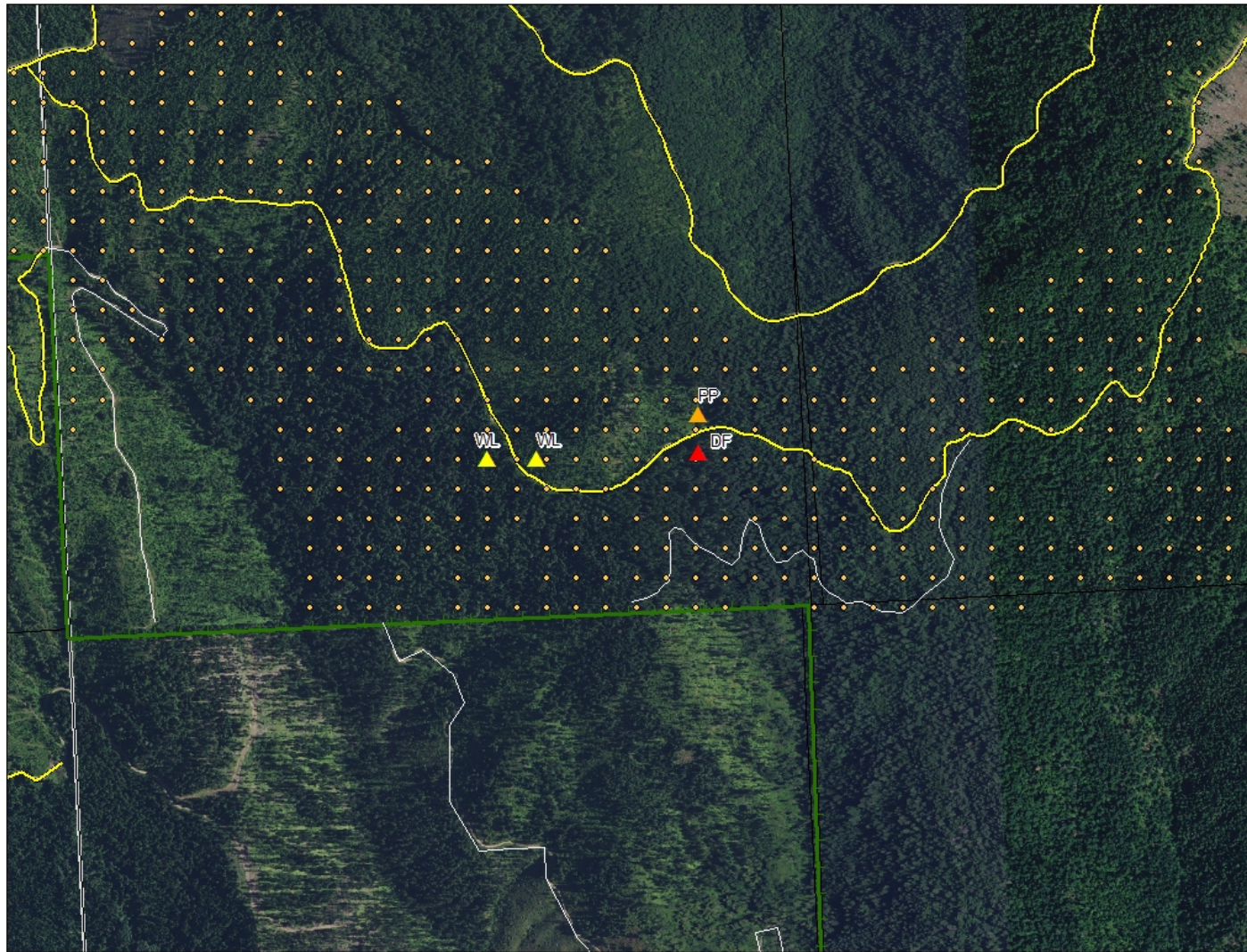
## SUMMARY

### COSTS

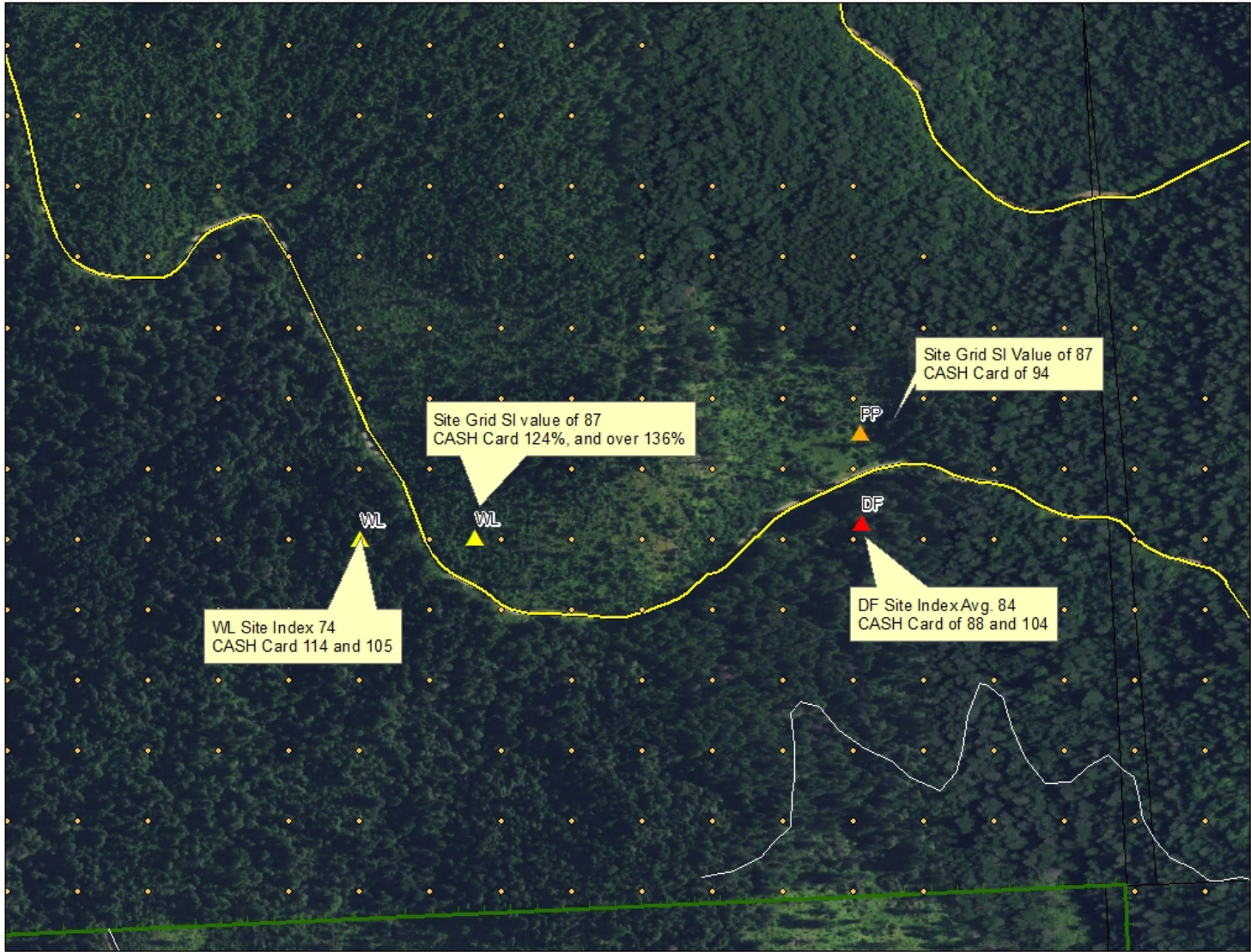
SEEDLING COST \$1,663.84  
 SITE PREPARATION 370.72  
 SOLENT CONTROL 970.05  
 LABOR 7,866.80  
 MATERIAL & EQUIP. 76.66  
 FERTILIZATION  
 CULTIVATION  
 PRO-RATED COSTS 375.00  
 ADJUSTMENTS  
 SEED COLLECTION  
 TOTAL \$11,323.07  
 ACCT. DEPT. TOTAL  
 REMARKS:

TOTAL SEEDLINGS PLANTED 127,625  
 TOTAL ACRES PLANTED 256  
 AVERAGE NO. TREES/A. 499  
 PLANTATION WRITE OFF OR EXPENSE DATA  
 EXPLANATION:  
 FOLLOW UP JOBS TO BE DONE  
 Survival count to be taken

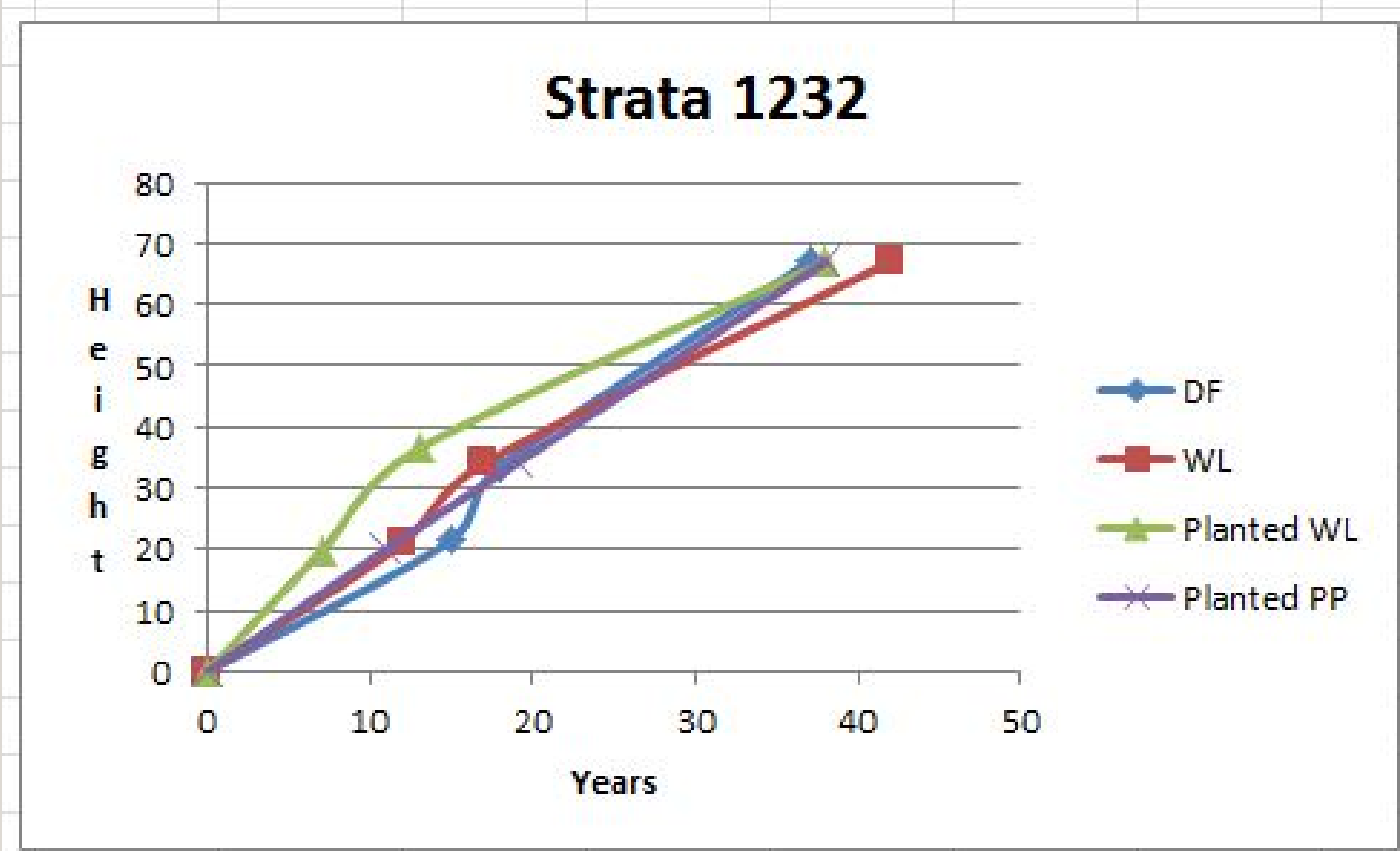
# 10 METER SITE TREES 2019 WITH CASH CARD TREES



# CASH CARD TREES

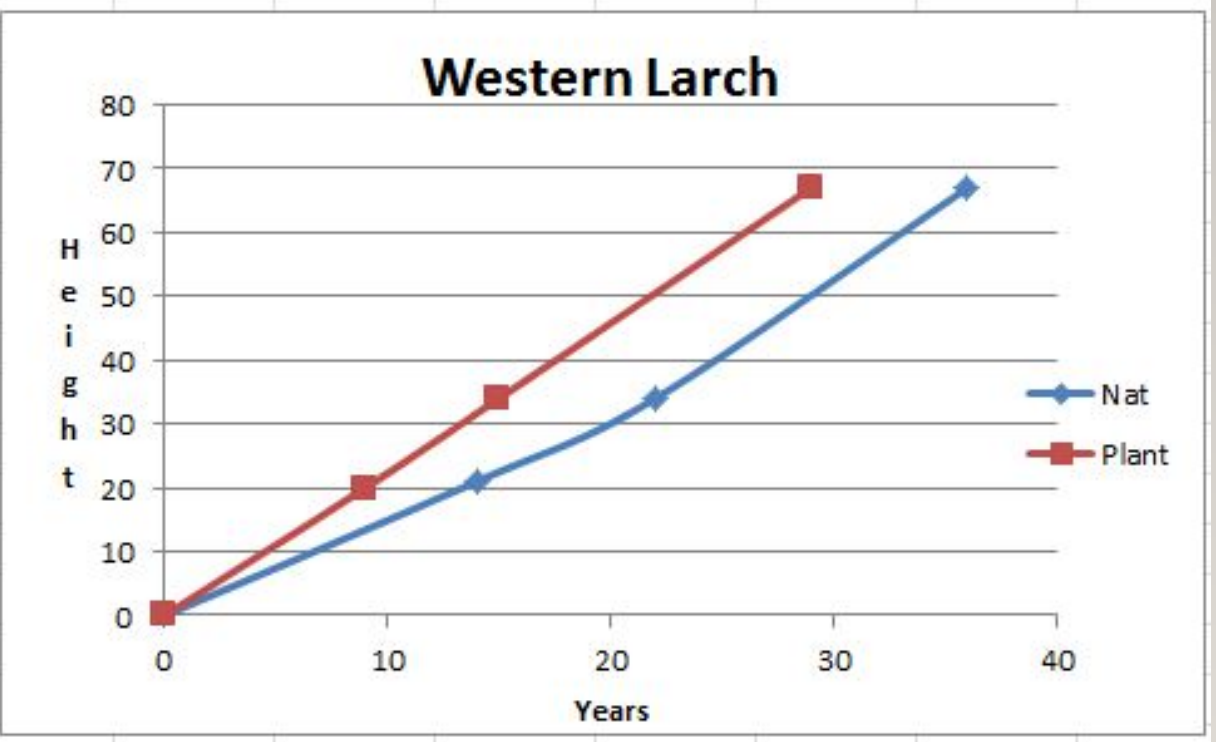
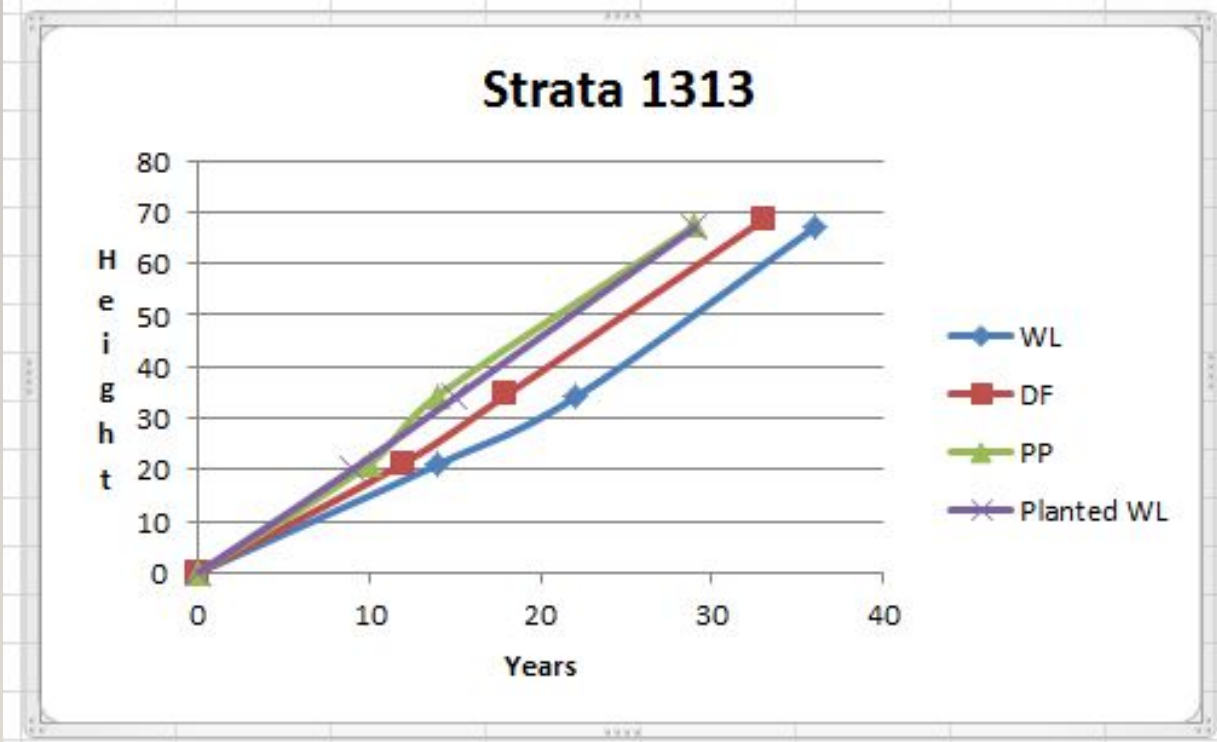


# STRATA 1232



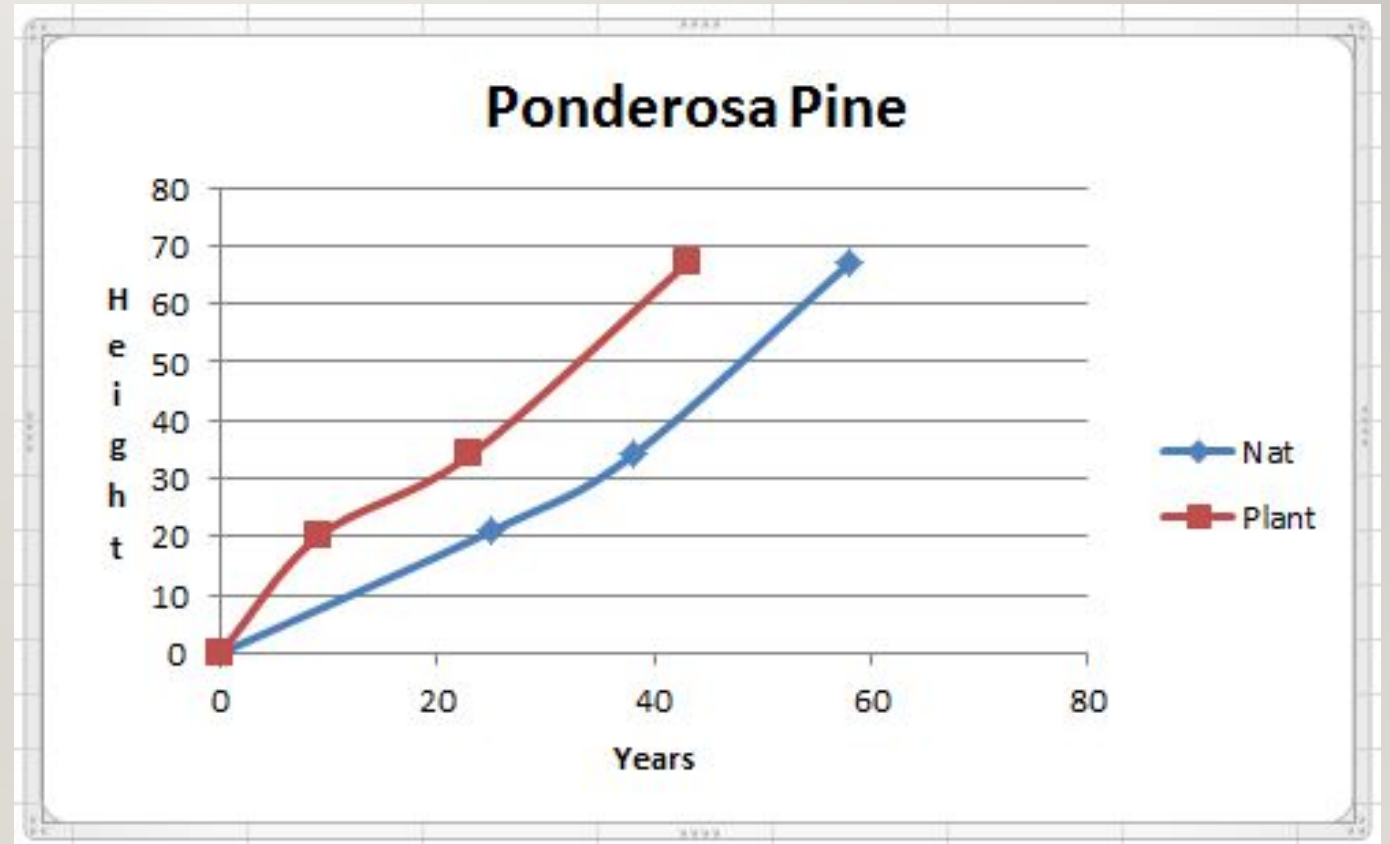
# STRATA 1313

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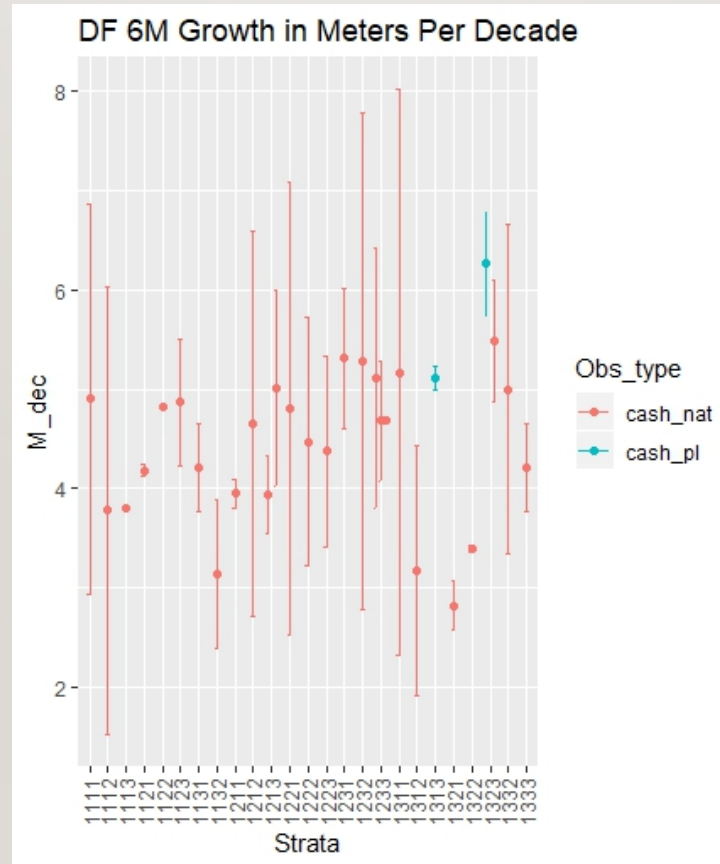




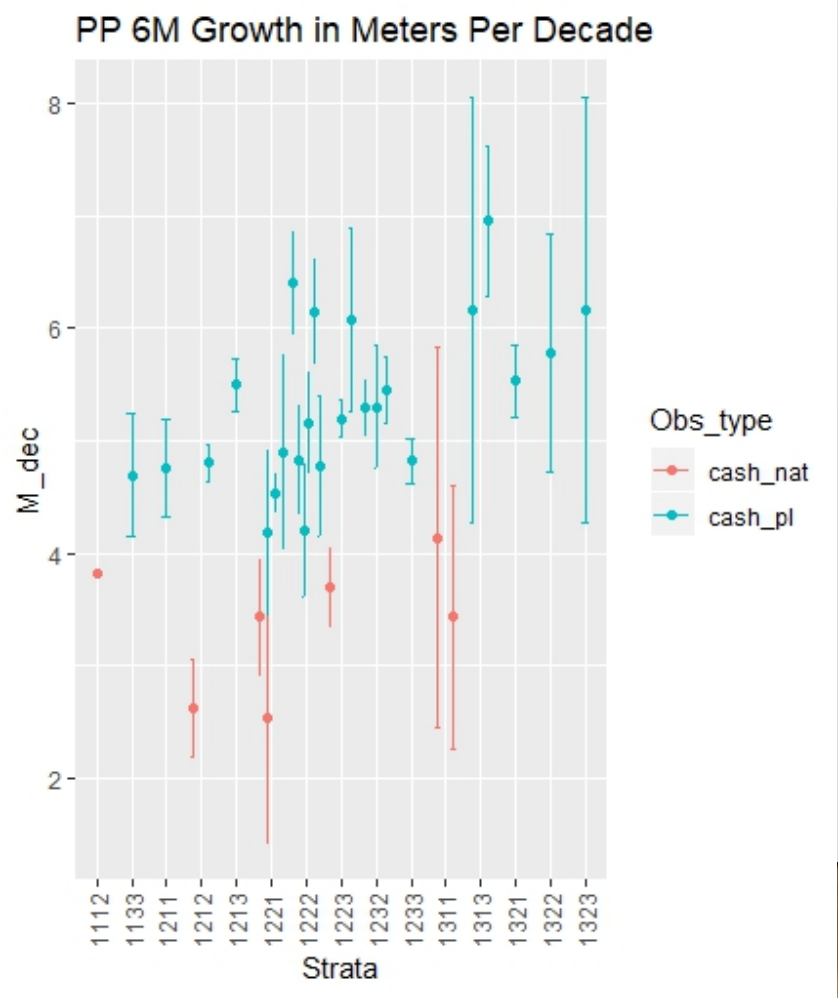
# 10 METER SITE TREES 2019



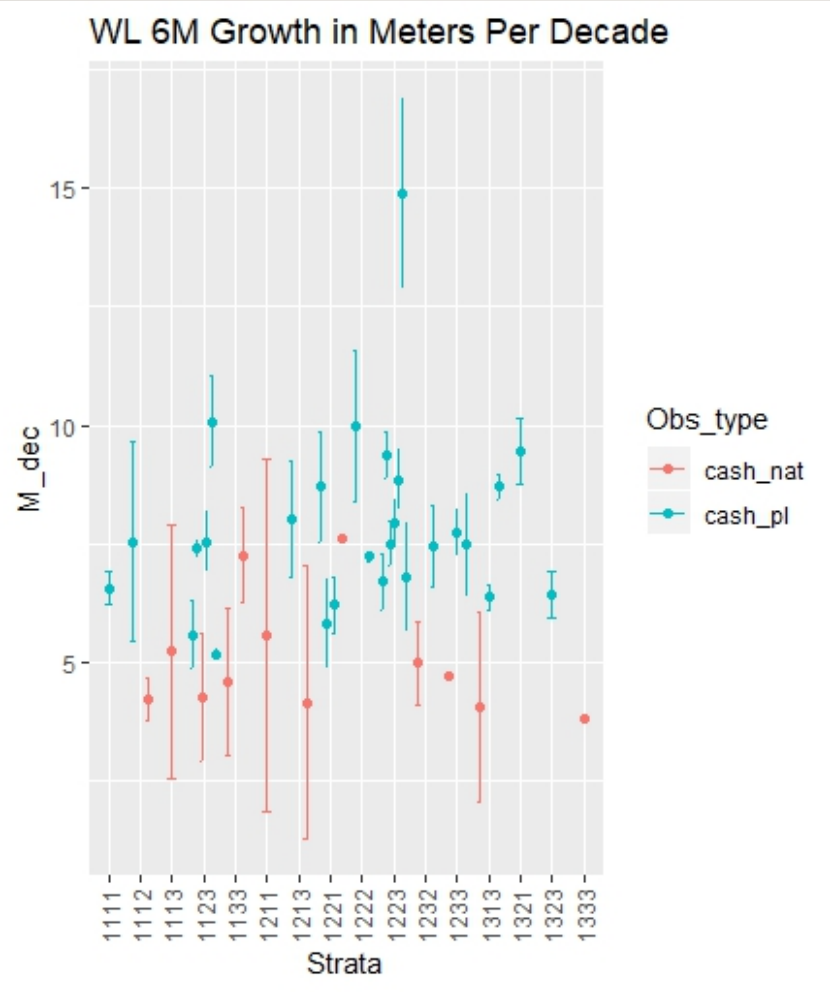
# DOUGLAS-FIR NATURAL VS PLANTED



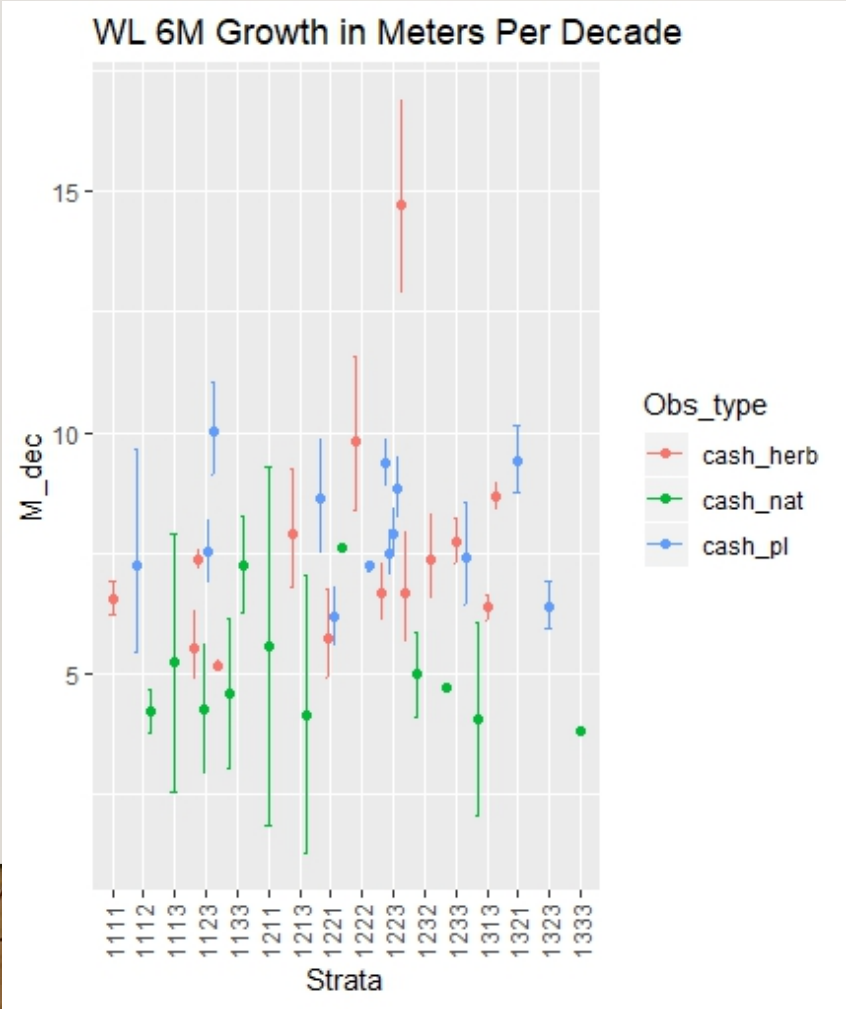
# PONDEROSA PINE NATURAL VS PLANTED



# WESTERN LARCH NATURAL VS PLANTED



# WESTERN LARCH PLANT ONLY, NATURAL, HERBICIDE



# CONCLUSION

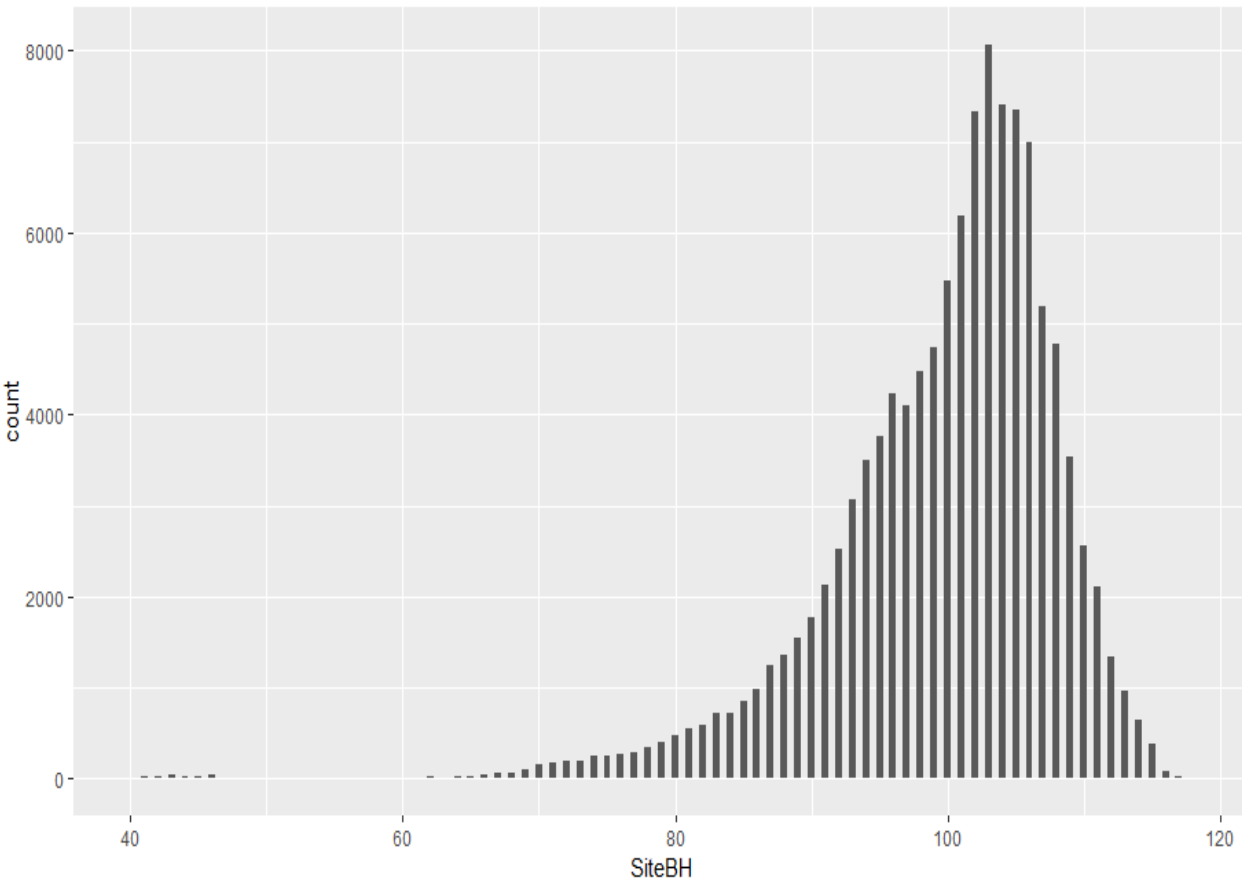
The screenshot displays a forestry management software interface. On the left, a dialog box titled "Silvicultural Regimes (Max 360) and Treatments per Regime (Max 12)" is open. It contains various configuration options for regimes and treatments, including fields for Regime Label, Treatment #, Time of Treatment, Type of Treatment, Thinning Method, and Thinning Target Residual Level. A red box highlights the top section of the dialog, including the Regime Label and Treatment # fields.

On the right, two data tables are visible. The top table, titled "ADMIN", lists various site attributes such as ELEV, ASPECT, SLOPE, GDAY, PRECIP, Root\_Dep, LOG\_SYS, HAUL\_LEN, Xgis, Ygis, Birth, and Origin. A red box highlights a portion of this table, specifically the Birth and Origin columns for several records.

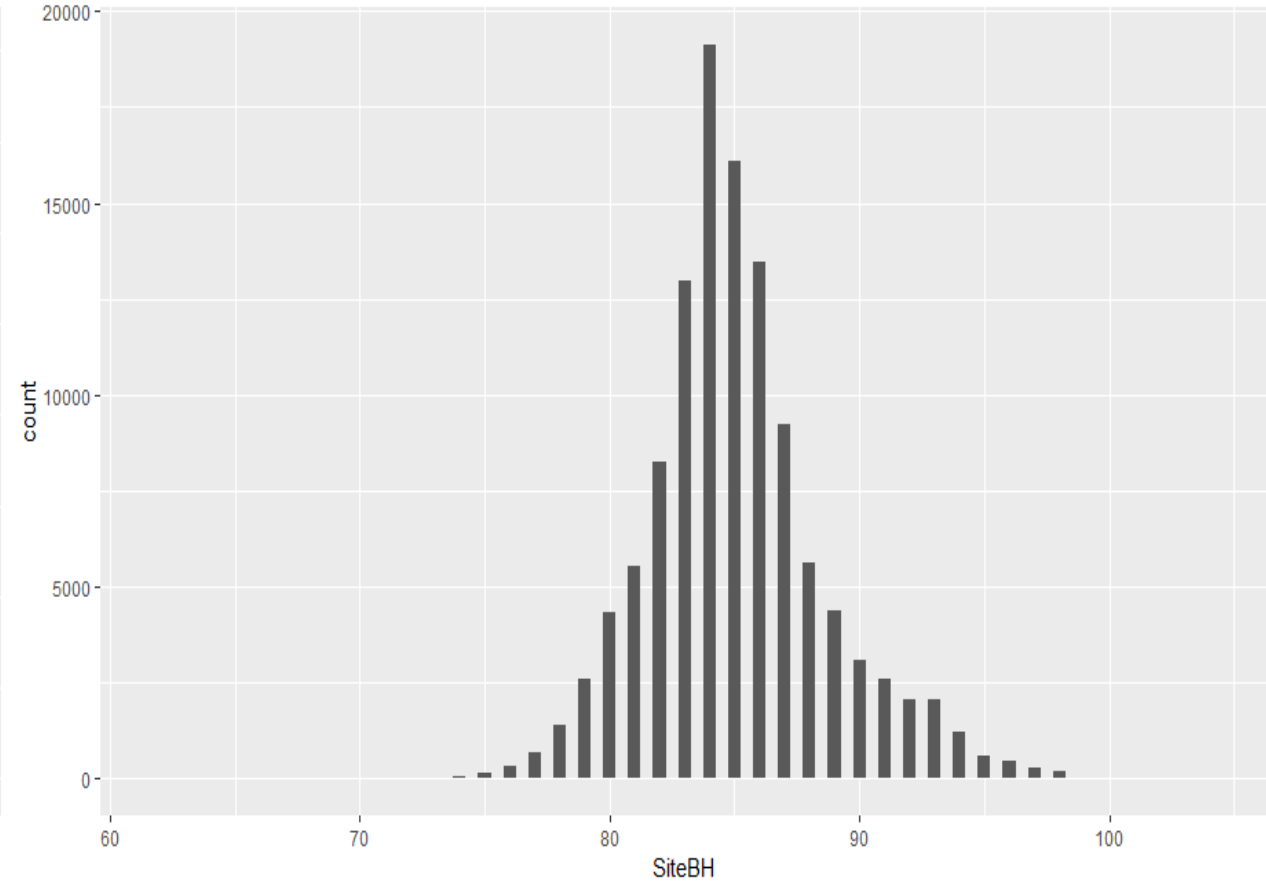
The bottom table, titled "SILVICS", lists silvicultural regimes with columns for Bas, REGIV, GRP, TRT\_NB, Rege, PctH, PctSl, TRT\_K, TRT\_V, THIN\_ME, THIN\_I, THIN\_L, THIN\_LV, THIN\_S, FERT\_RAT, COS, and Click to Add. A red box highlights a portion of this table, specifically the PctH and PctSl columns for several records.

# CONCLUSION: CALIBRATED SITE GRID

BH Site Index IEP Site Grid Uncalibrated

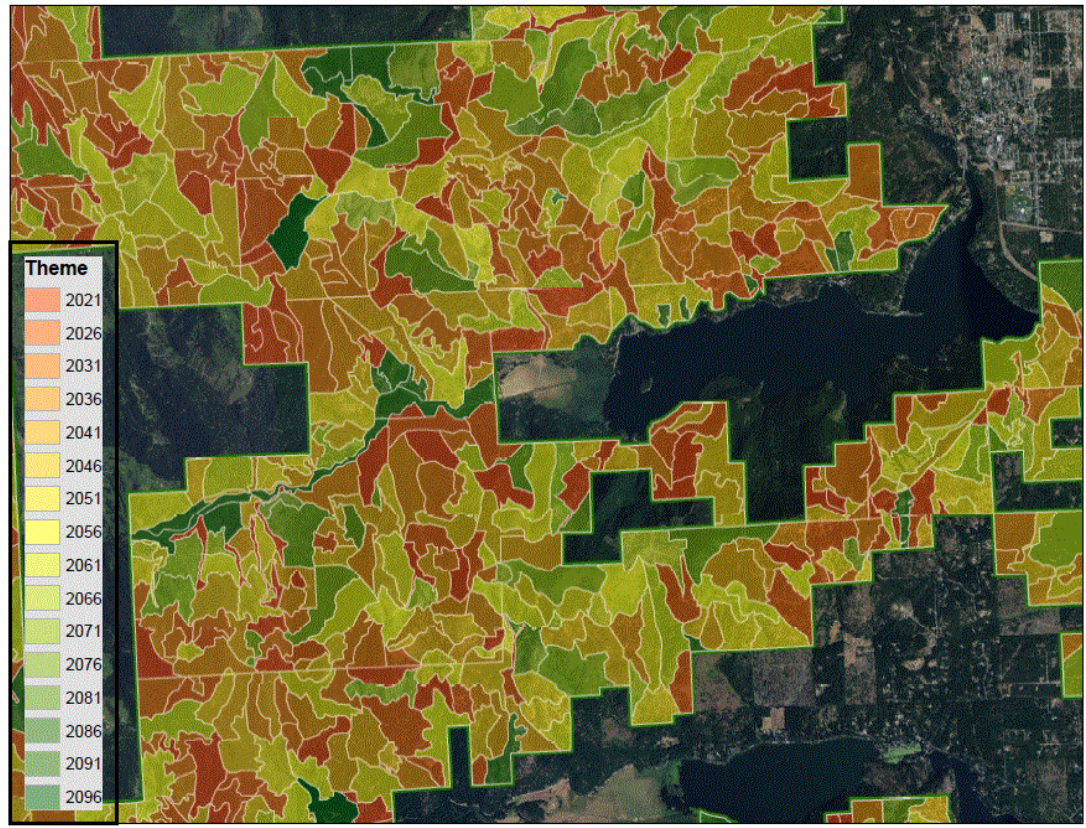


BH Site Index IEP Site Grid 2017



# CONCLUSION: HARVEST SCHEDULER

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# QUESTIONS....

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