

Nutrient Variation in Western Larch

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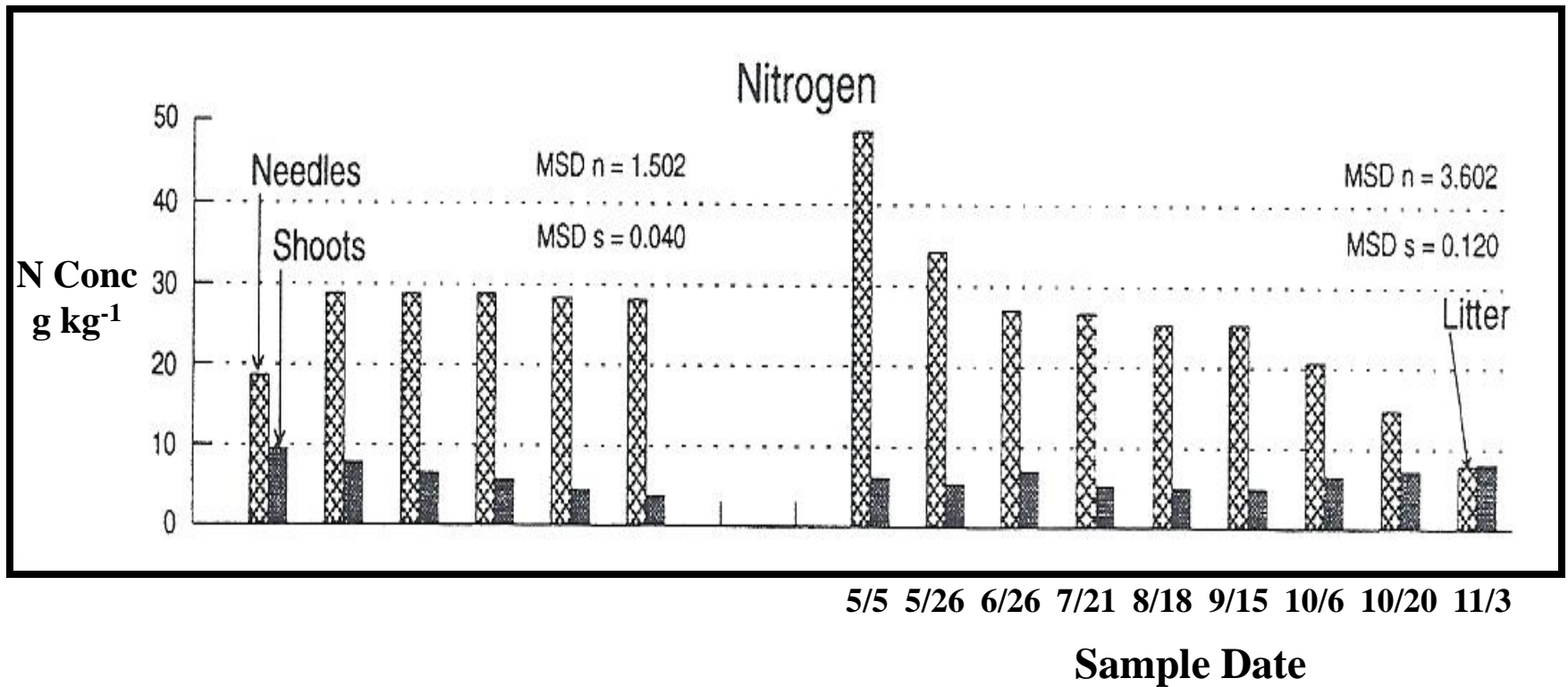
2011/2012

Purpose of Study

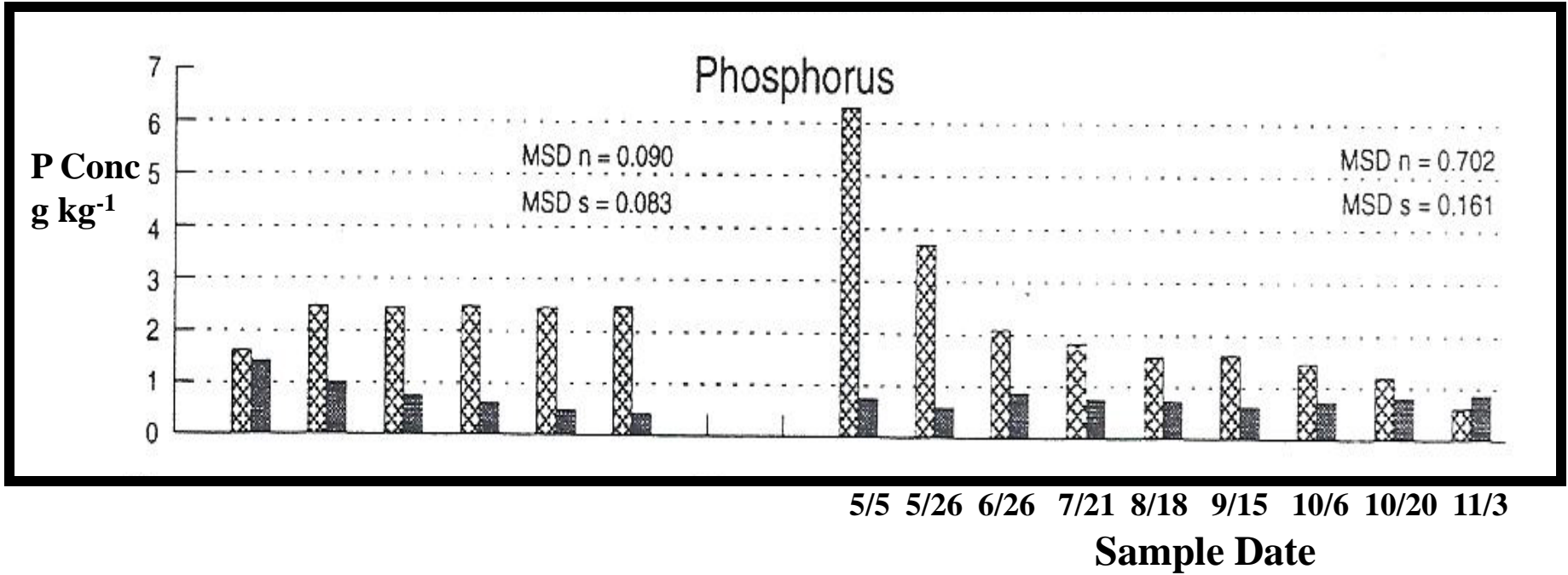
Determine the nutrient concentration variation
in Western Larch during the growing season

Determine the optimum period for foliar
sampling

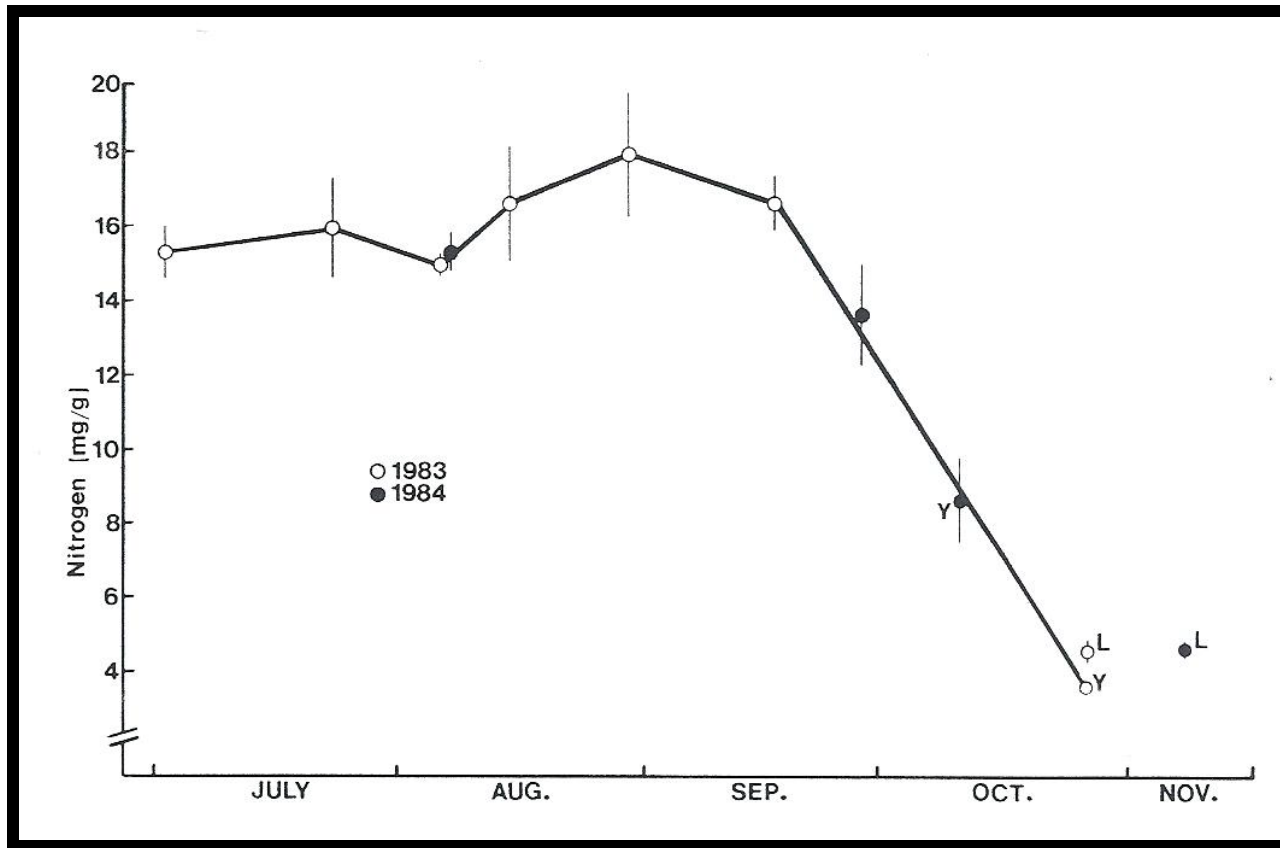
Previous Studies



Reproduced from:
 The effect of crown position and date of sampling on biomass,
 nutrient concentrations, and contents of needles and shoots
 in European larch
 Robert Myre & Claude Camiré
 Trees (1996) 10: 339 - 350



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 The effect of crown position and date of sampling on biomass,
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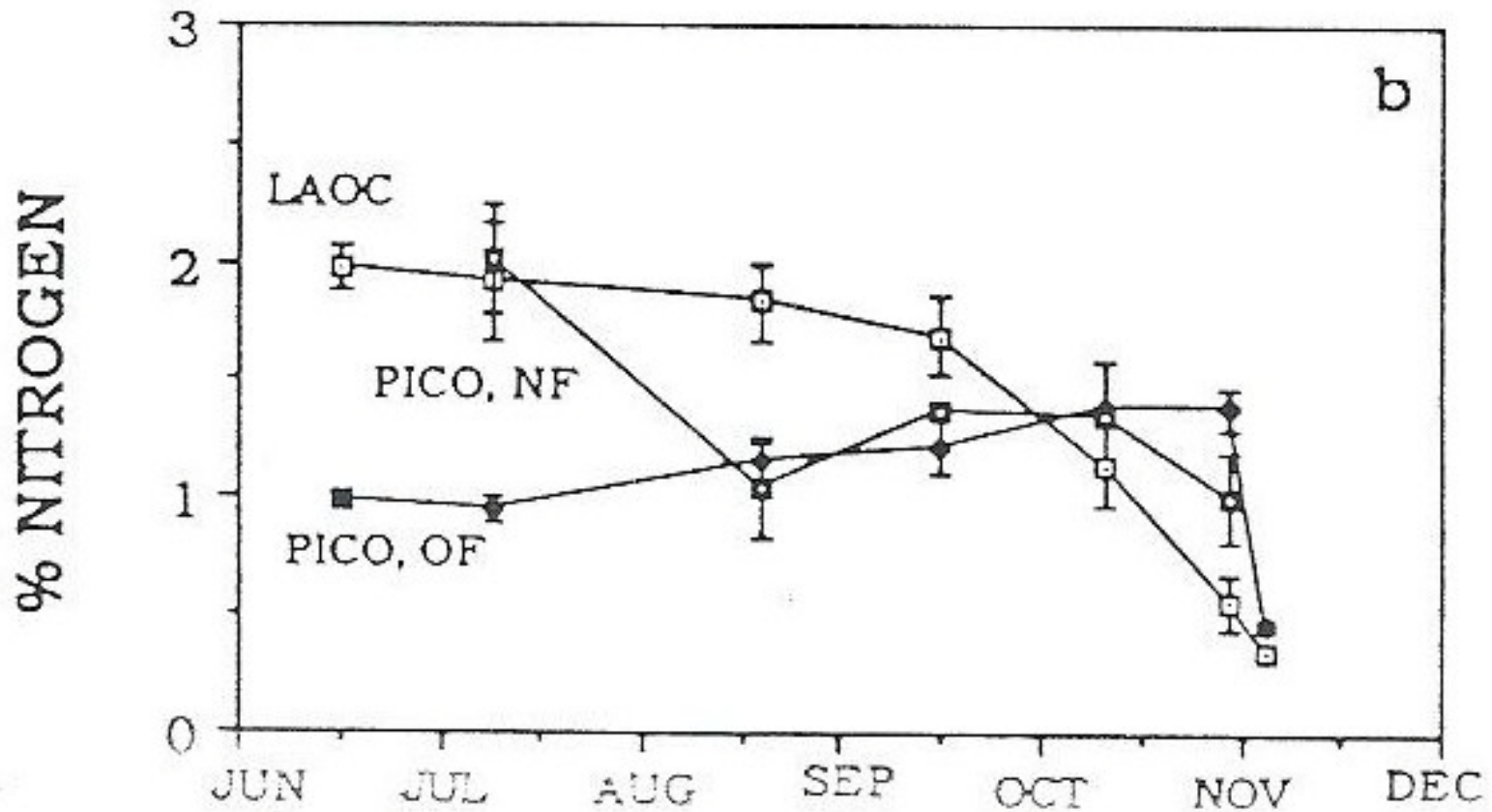


Reproduced from:

Larix laricina and *Picea mariana*: relationships among leaf life-span, foliar nutrient patterns, nutrient conservation, and growth efficiency

Lucy E. Tyrrell & Ralph E. J. Boerner

Canadian Journal of Botany, Vol. 65, 1987



Reproduced from:

Aboveground production of N & P use by
Larix occidentalis and *Pinus contorta* in
the Washington Cascades, USA

By Gower, Grier, & Vogt
Tree Physiology, 1989

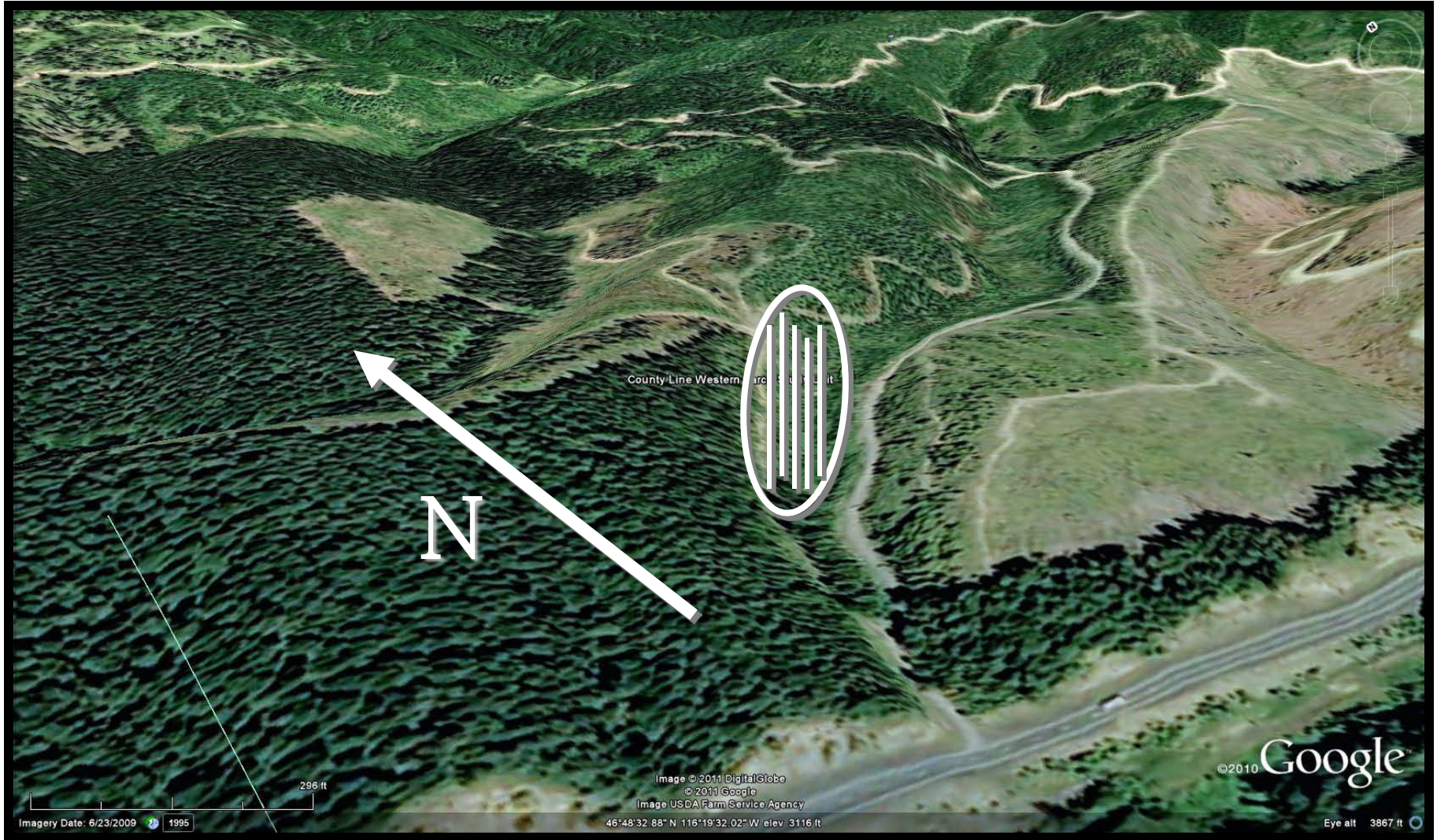
LAOC – *Larix occidentalis*

PICO, NF – *Pinus contorta* (current needles)

PICO, OF – *Pinus contorta* (older needles)

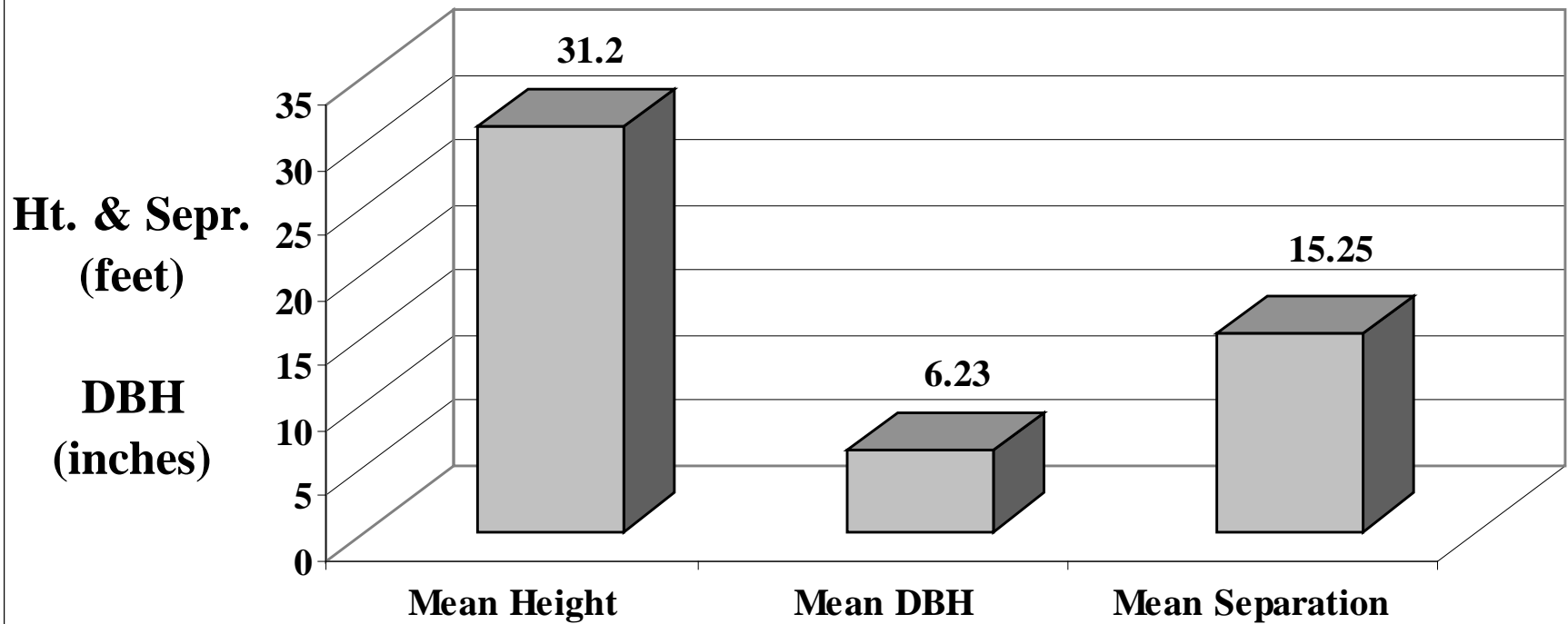
Study Sites

County Line Sampling Site – Elev. 3100 ft.

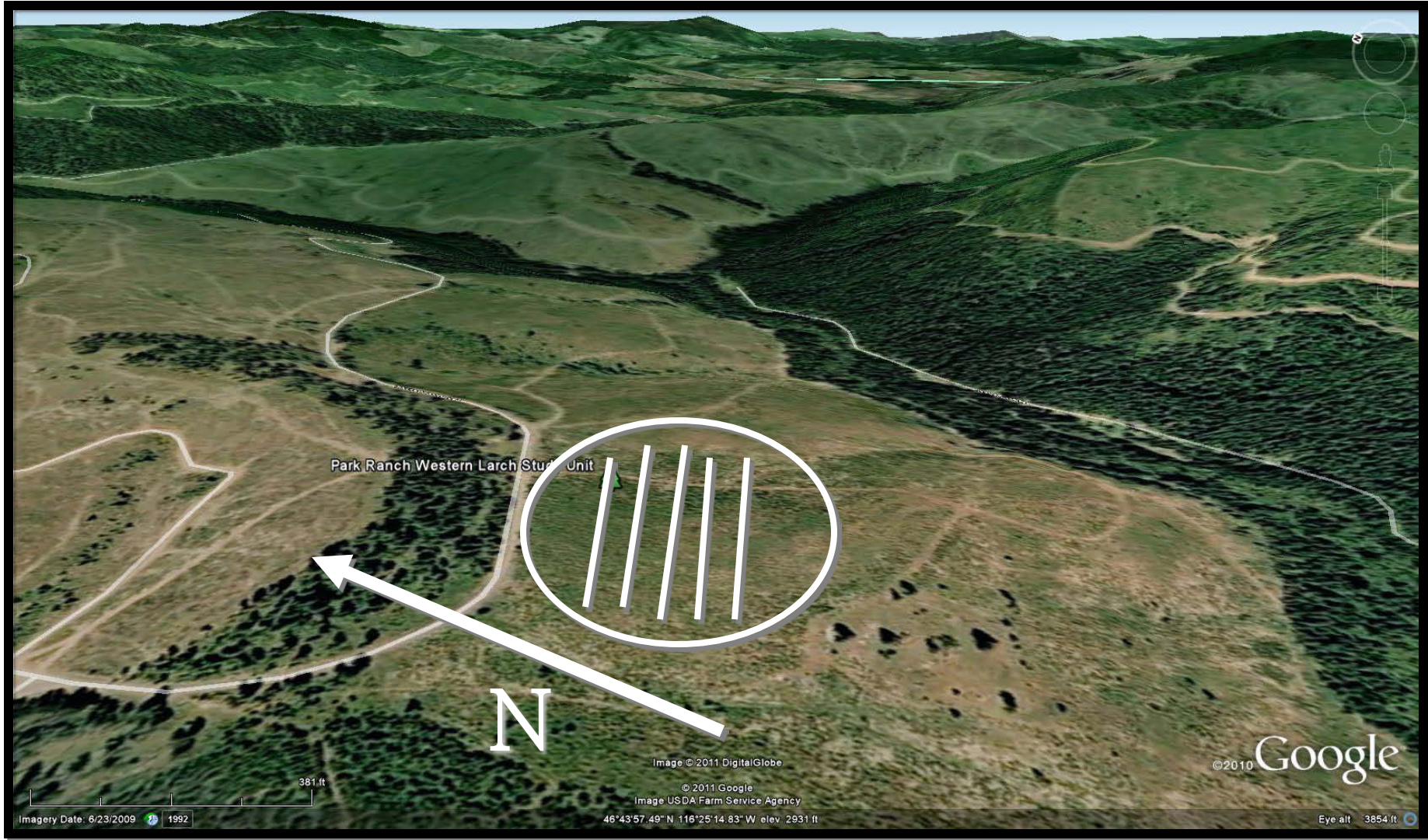


Soil & Geology: Ash/Loess over Granite/Gneiss

County Line Samples

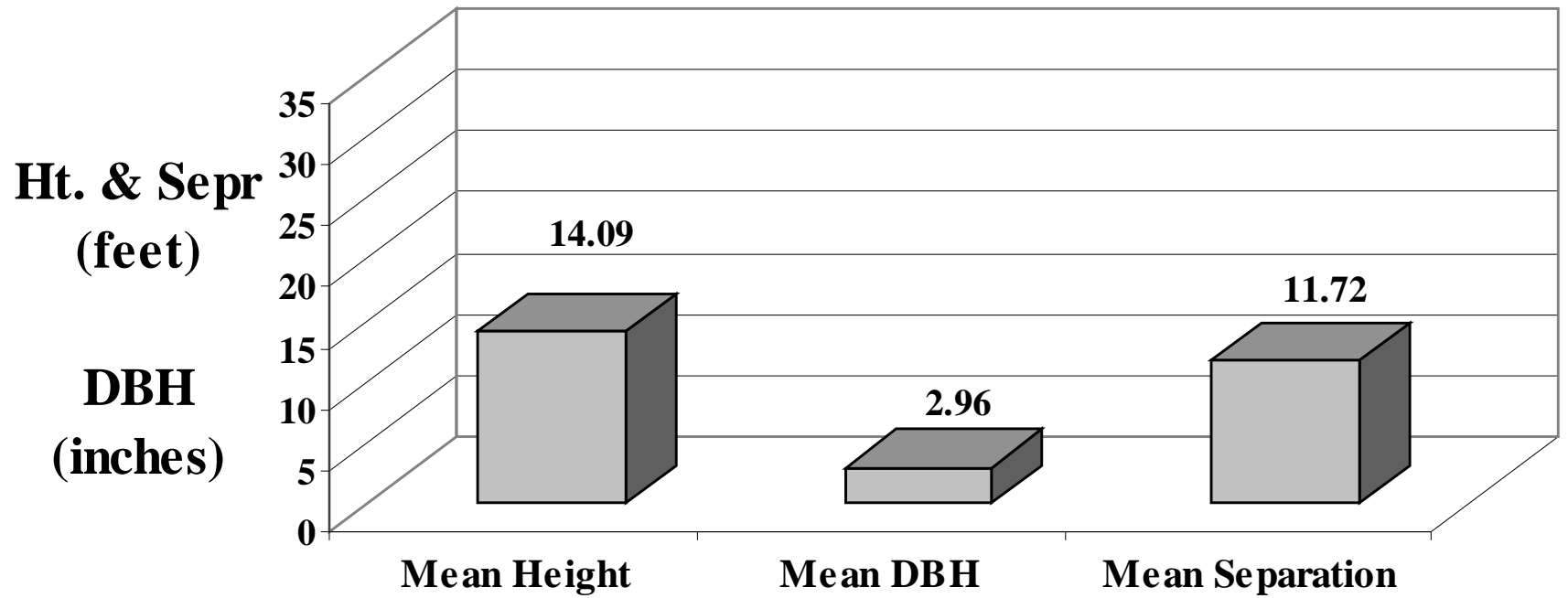


Park Ranch Sampling Site – Elev. 2900 ft.

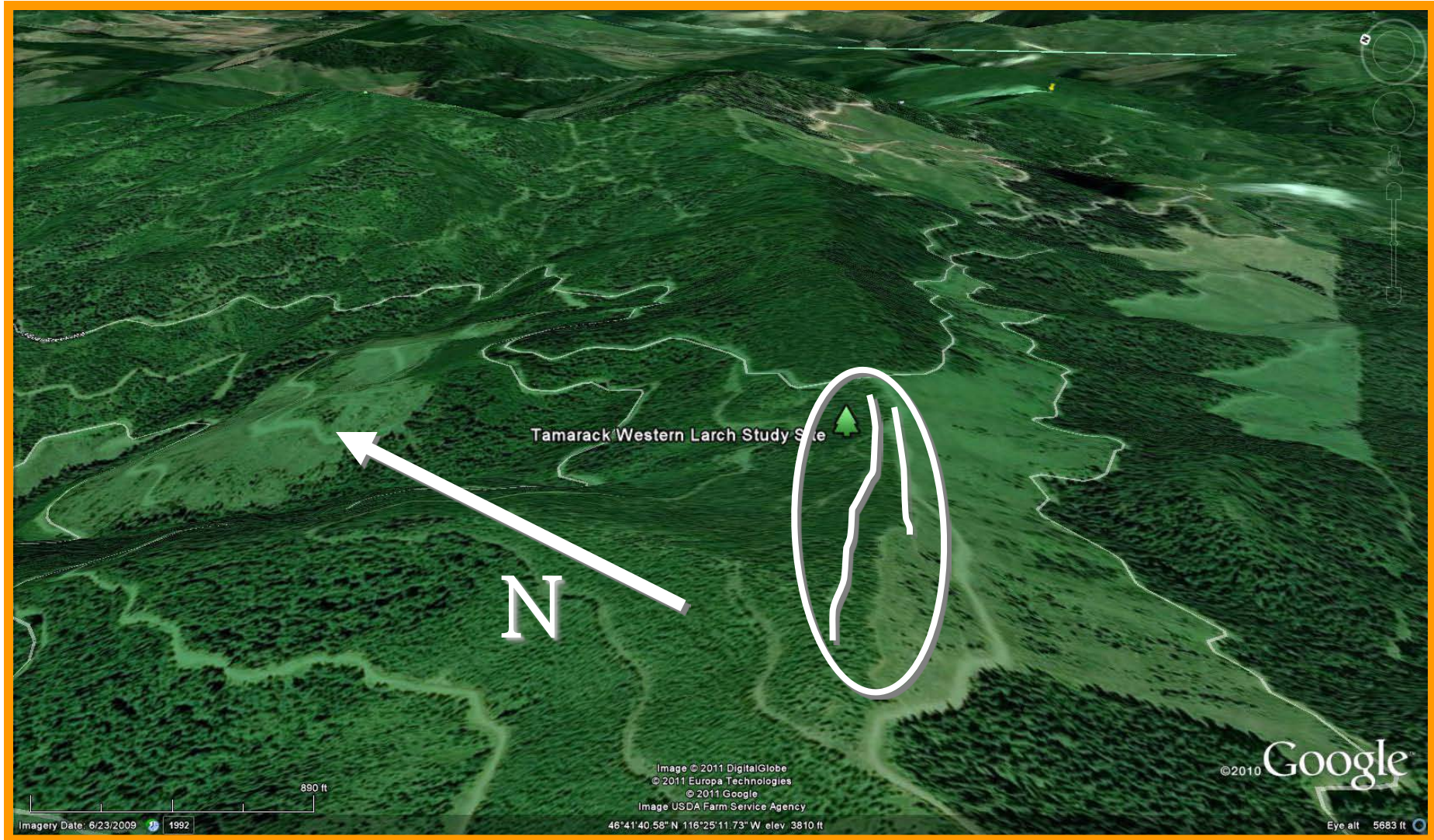


Soil & Geology: Loess over Schist

Park Ranch Trees

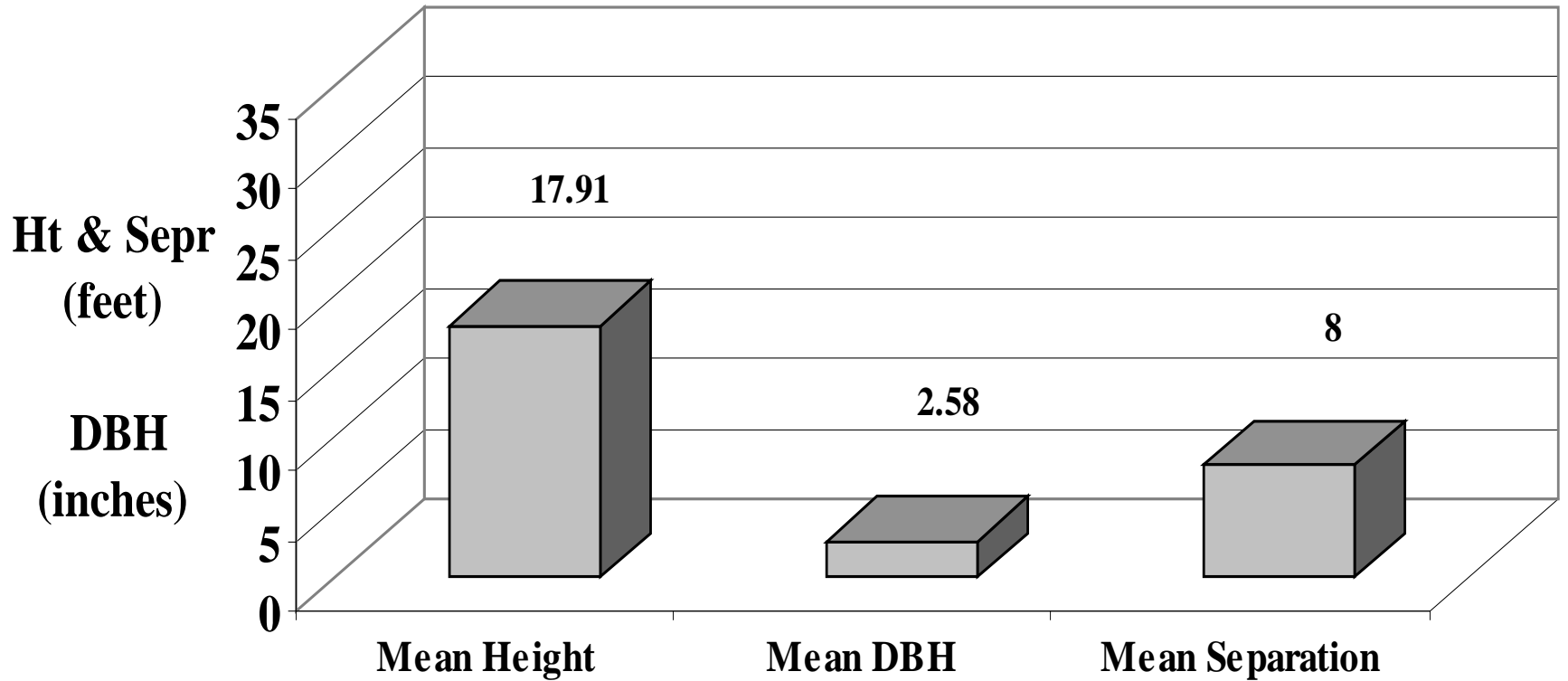


Tamarack Ridge Sample Site – Elev. 3800 ft

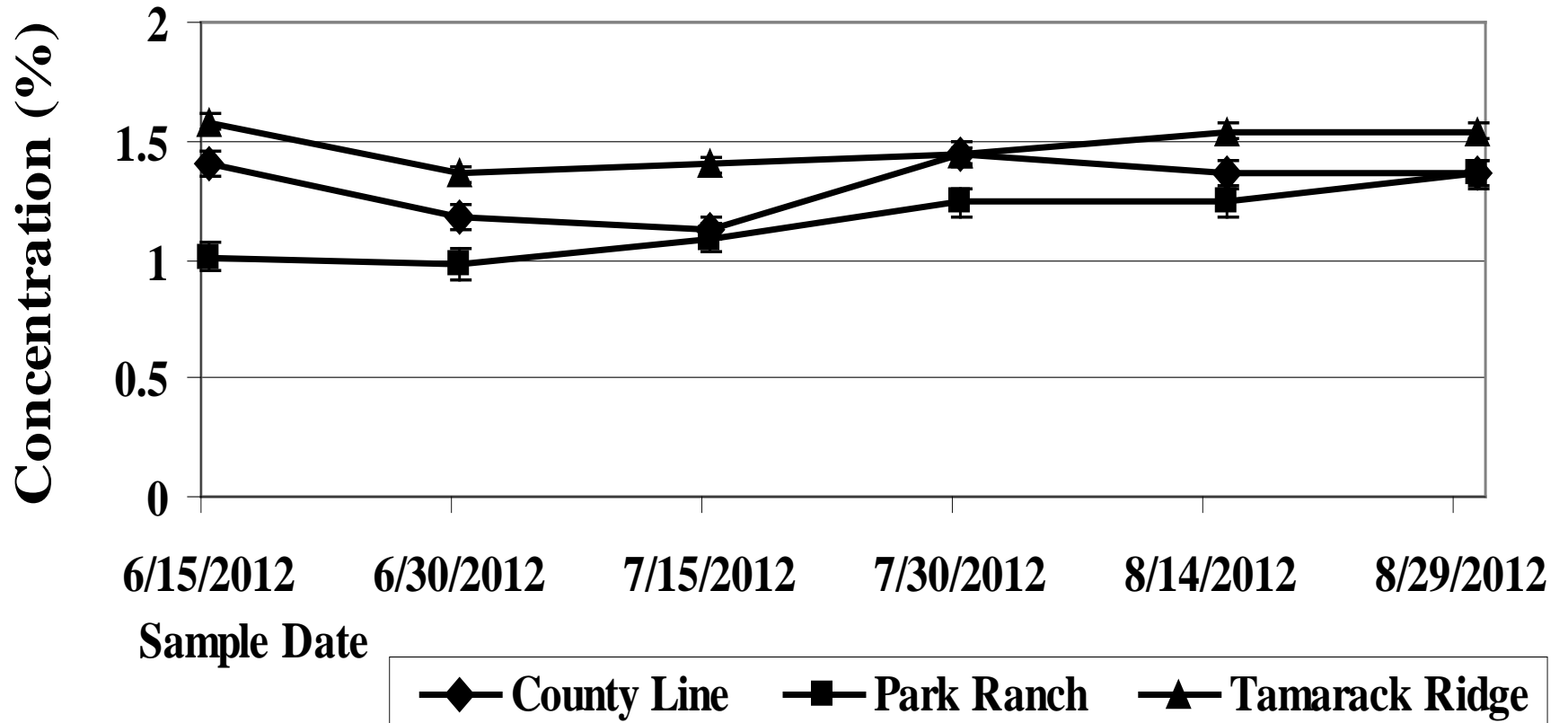


Soil & Geology: Ash over Schist

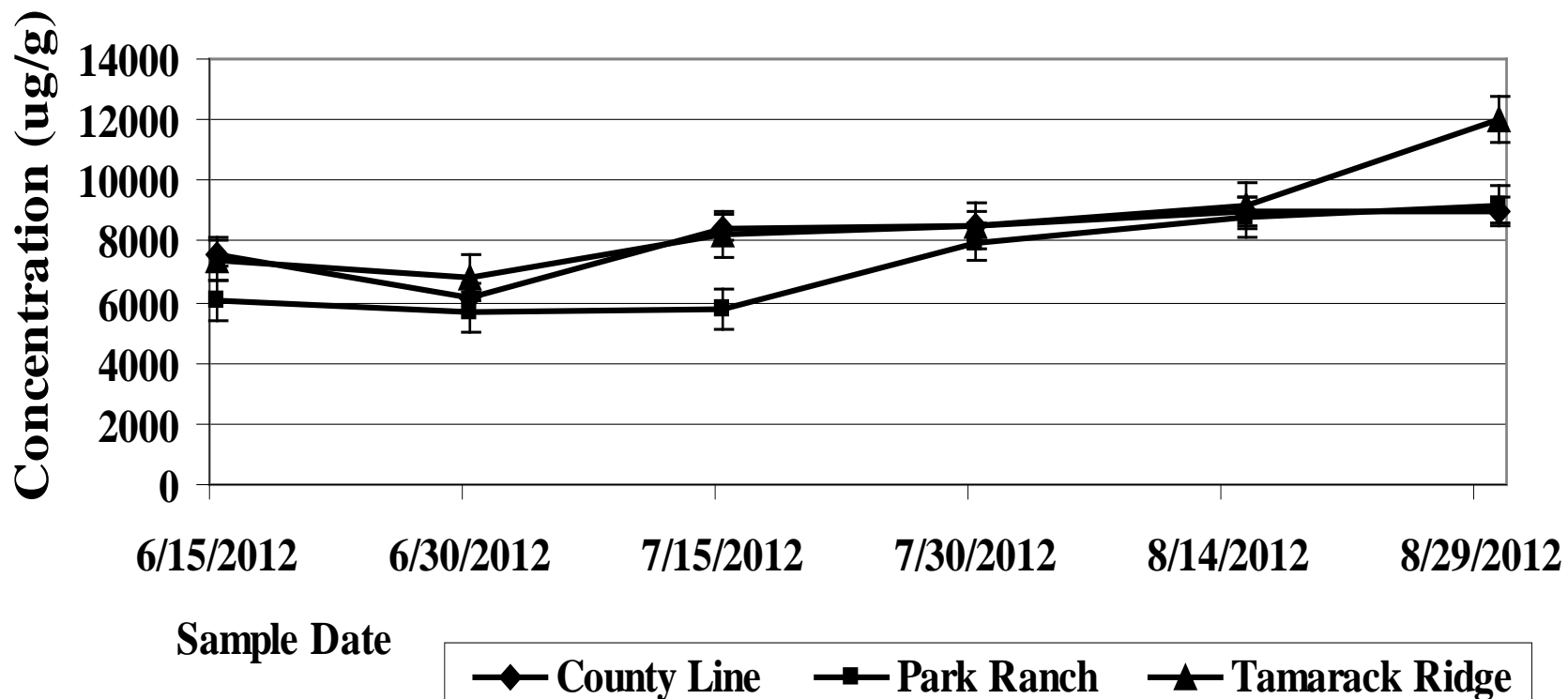
Tamarack Ridge Trees



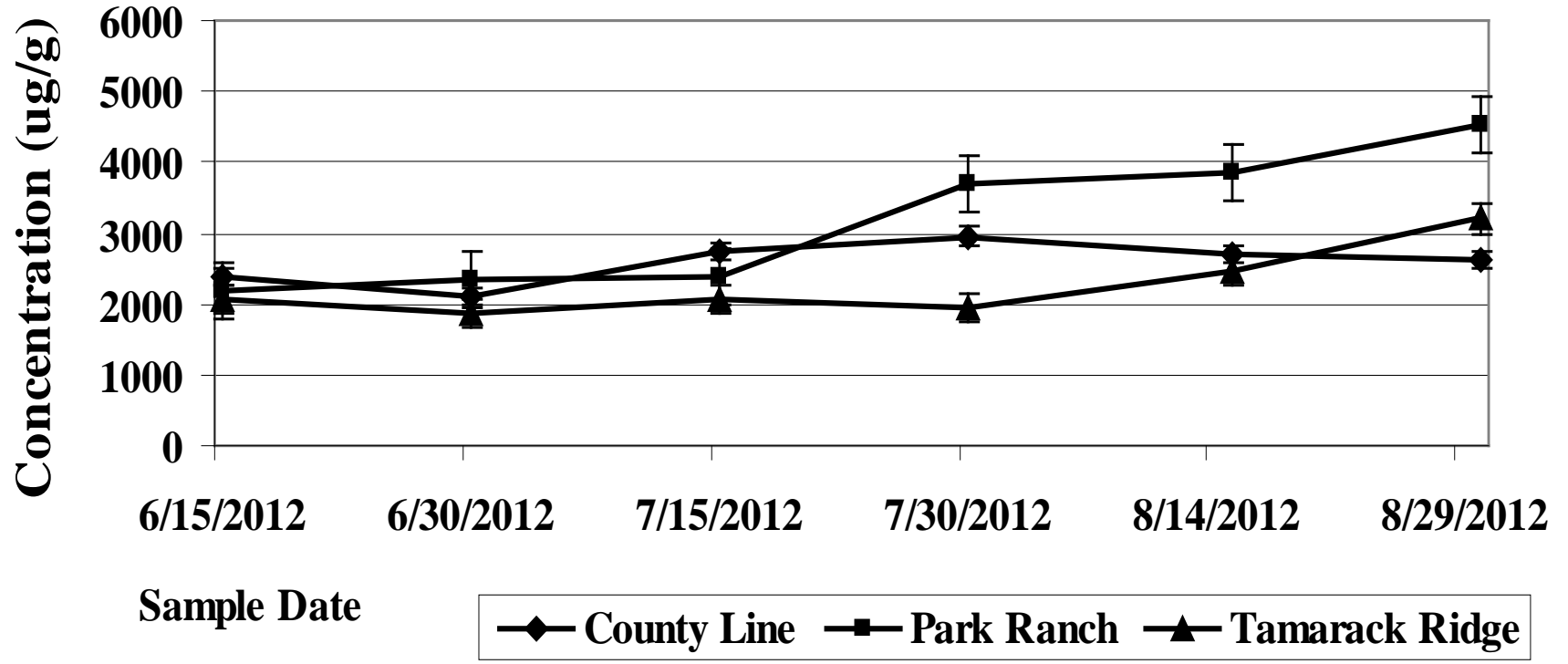
Nitrogen Concentration - Short Shoots



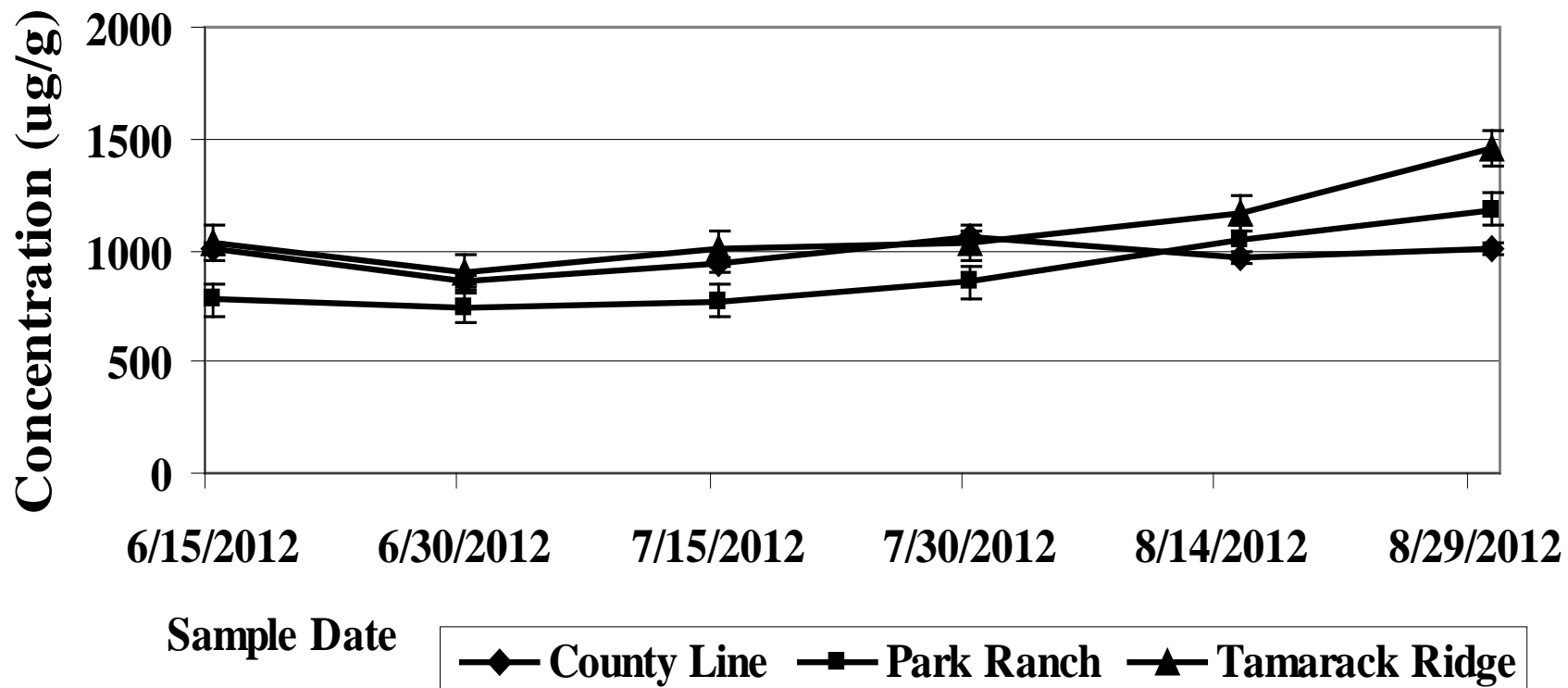
Potassium Concentration - Short Shoots



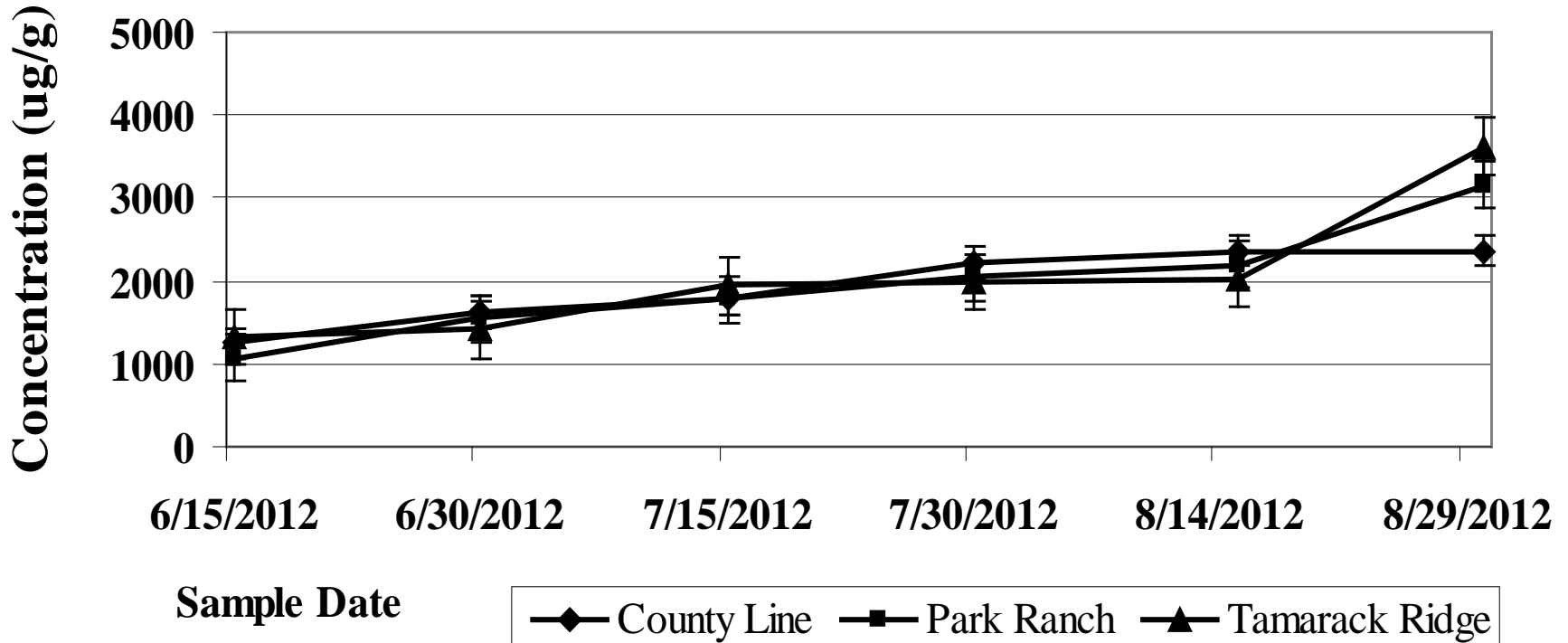
Phosphorus Concentrations - Short Shoots



Sulphur Concentration - Short Shoots

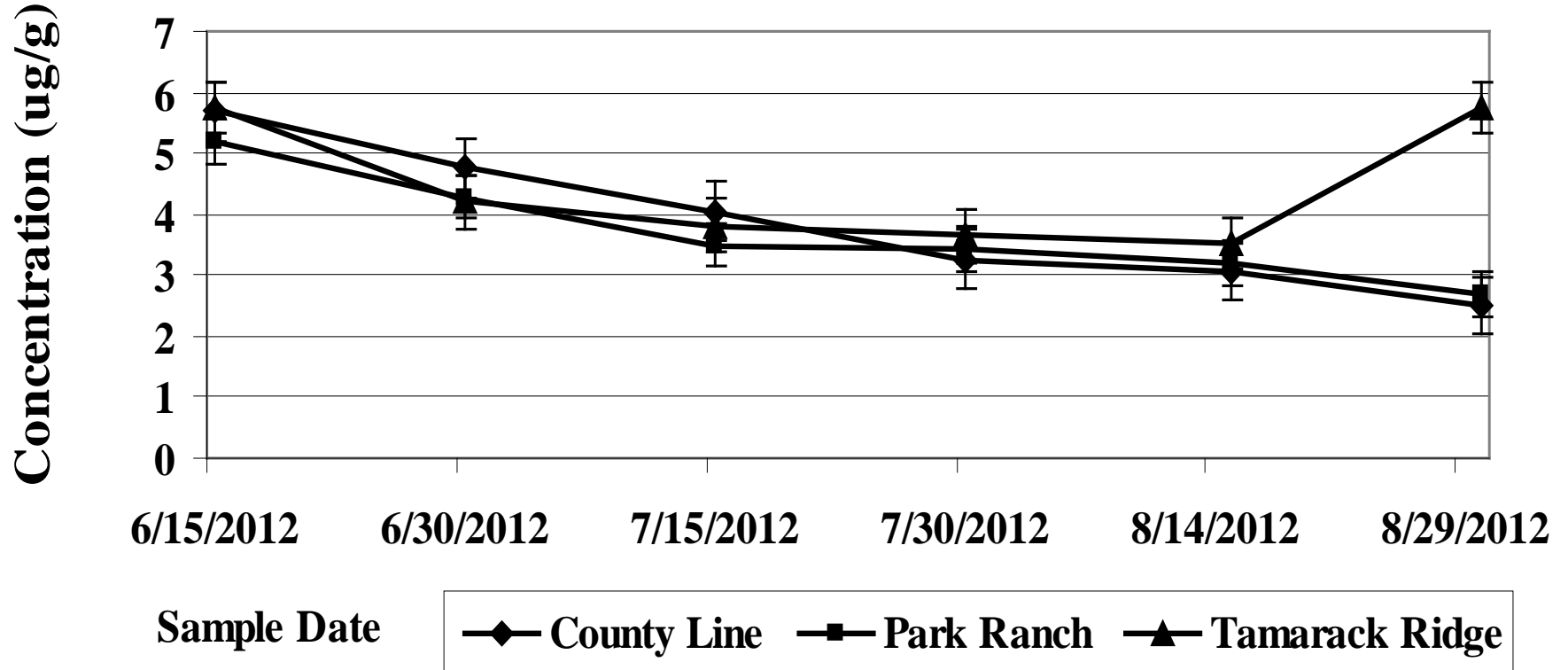


Calcium Concentration - Short Shoots



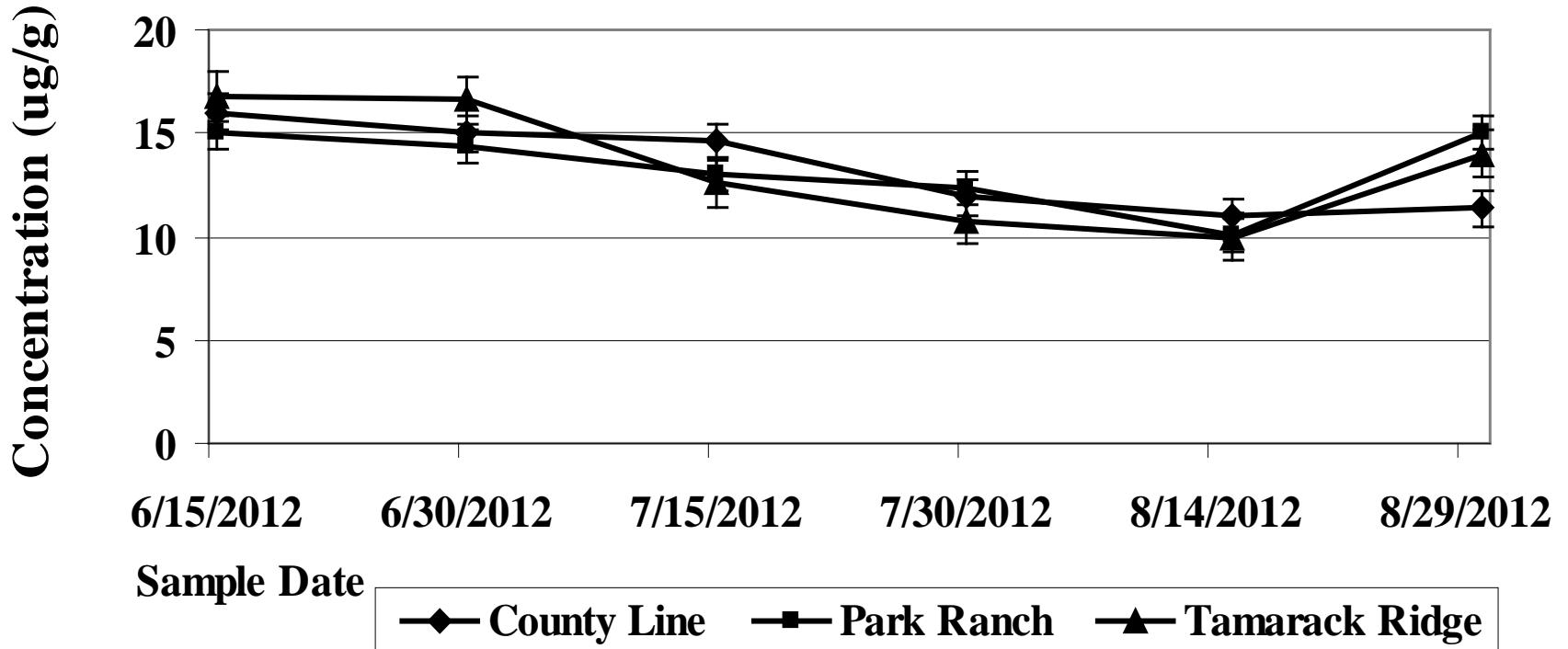
Mg, Fe, & Mn also showed increasing concentration

Copper Concentration - Long Shoots



Zn also showed decreasing concentration

Zinc Concentration - Long Shoots



Ca (*LS & SS*) **Zn** (*LS & SS*) **Cu** (*LS*) **Fe** (*LS & SS*)

Mg (*LS & SS*) – *Tamarack Ridge site only**

Summary

Most stable sampling is early to mid-August

Some nutrient concentrations varied significantly throughout the growing season

An unexplained sharp rise in
(K, Ca, Cu, Fe, Mg, & Zn)
appears during the second half of August

Future Study Goals

Begin foliar sampling earlier in the season

Continue sampling through mid/late Fall