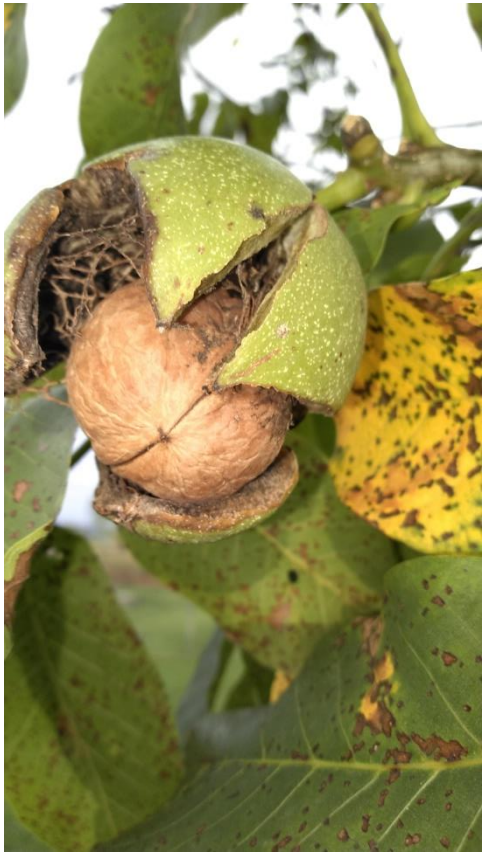
Success with Nut Trees

Carl Albers

English Walnut Project

- Winter hardy in zones 5 and 6
- Disease resistant (walnut blight)
- Late flowering to escape late spring frosts
- Matures nuts in average growing season
- Short stature and/or dwarfing root stocks (easier to prune/spray)
- Red kernels

- We are searching for superior Juglans regia growing in New York and the Northeast
- We need individuals interested in planting, caring for and evaluating potentially superior seedlings and grafted trees
- Carl Albers, cwalbers@yahoo.com, 607-346-5226.

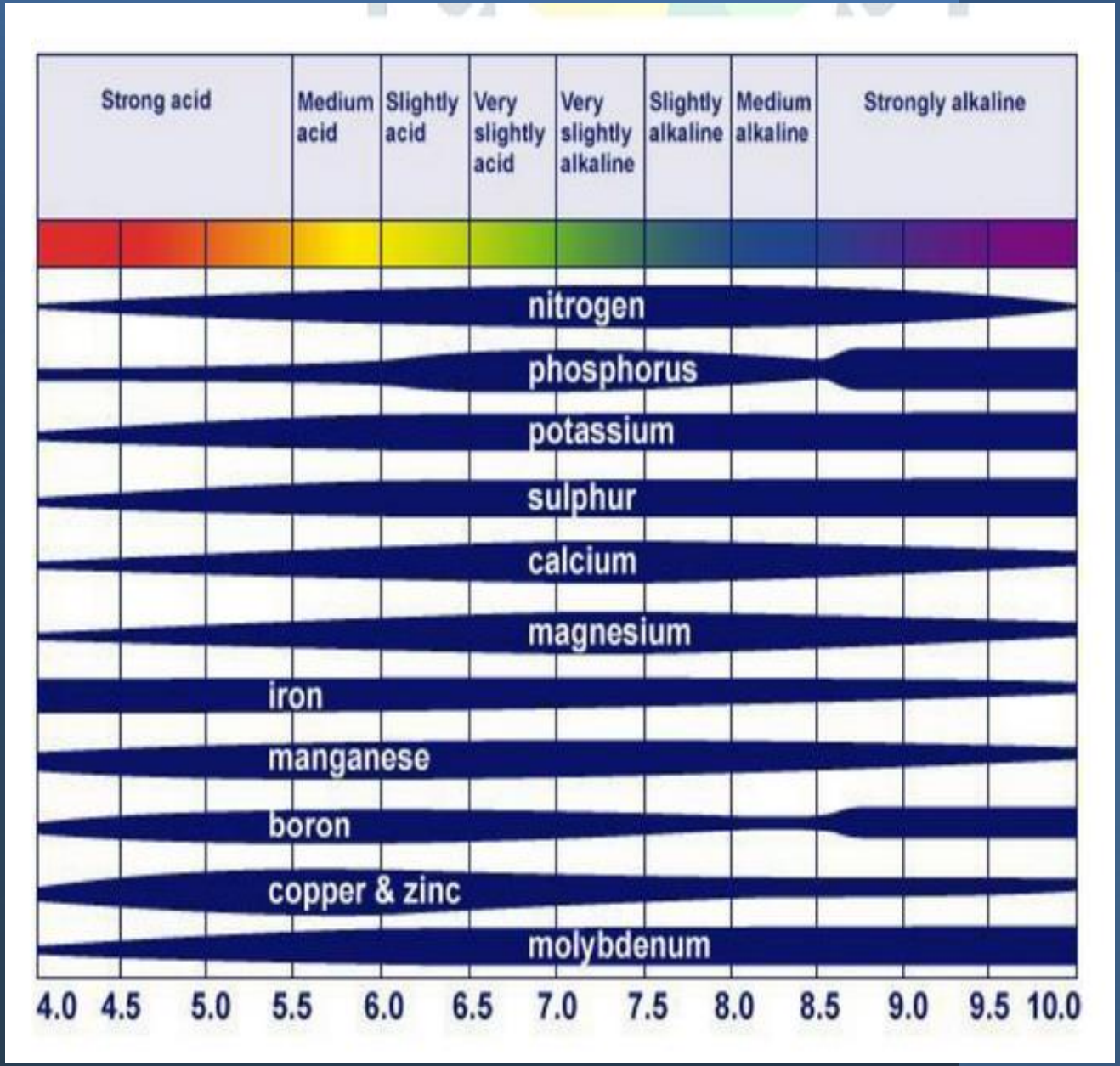


Understanding the Ecology and Control of Insect Pests and Diseases of Nut Tree Species

Site Selection and Spacing Depends
on Species Choice and Goals

Cutting the Time from Planting to Nut Production

- Adjust soil pH to 6.5; 5.8 to 6 for chestnuts
- Keep weed (grass) competition to a minimum
- Soil test and supply essential nutrients as needed to include boron and zinc
- Water during dry spells
- Control insect pests such as potato leafhopper
- Year round green cover to build soil organic matter and structure
- Slowly increase nitrogen applications as tree size increases – do this early in the growing season



(Source: Roques et al., 2013)

Even Application of Limestone is a Challenge

Cover Crops

Help Control Weeds, Reduce Compaction and Increase Soil Structure

Deep Ripping

Straight shank, Not too wet or dry, Slightly off contour

100 Series

200 Series

300 Series

Orchard Floor Management

Diverse Perennials Enhance Soil Structure

Zinc for Nut Trees

- Critical for nut set and good yields. Essential for cell division, water uptake and disease resistance
- Often deficient in soils and even moderate deficiency reduces crop yields
- Tied up in soils with high pH and/or high phosphorus levels
- Monitor zinc requirements using soil and tissue analysis
- Zinc is best applied as a foliar spray of zinc sulfate just after pollination at a rate of 1 to 2 table spoons/gallon for young trees
- Follow with two additional applications at 2 to 3 week intervals.

Sources: 'Nut Tree Growing in Kentucky', University of Kentucky and 'Mineral Nutrition and Plant Disease' edited by Datnoff, Elmer and Huber

Foliar Boron for Nut Trees

Numerous studies show yield and quality increases in chestnut, hazelnut (fewer blanks) and walnut when adequate levels of boron are available to the growing crop. Boron deficiency in NYS soils is common.

Possible functions of boron include sugar transport, membrane integrity and cell wall structure, and perhaps the function of plant hormones (Source: "Walnut Production Manual, University of California.")

Boron deficiency inhibits root elongation, sufficiency improves pollination and fruit set, and fruit quality, and is important for nitrogen fixation by Rhizobia bacteria and Frankia actinomycetes (Source: Nutrition Farming, Graeme Sait.)

"One of the characteristics boron is known for is to facilitate rapid nutrient transport to the sugar sinks. This effect can be very valuable to speed up crop maturity and senescence while also increasing harvest quality" (Source: John Kempf, Advancing Eco Agriculture.)

Apply boron if soil testing and/or leaf tissue analysis indicate inadequate levels – below 80 ppm leaf tissue in walnuts, less than 30 to 80 ppm in hazels, and below 20 to 100 ppm in chestnuts.

For foliar application of boron mix 1 to 2 teaspoons of Solubor per gallon of water.

June is the optimum timing for foliar applications of boron in hazelnuts; July/August for chestnuts (Source: "The Hazelnut and Chestnut Handbook" by Jeff and Dawn Zarnowski) June for walnuts (Source: "Growing Walnuts in Oregon", Oregon State University.)

Biochar

- Long lasting organic matter
- Raises soil pH
- Home for microbes
- Nutrient sink
- Increases soil water holding capacity
- Kiln panels 4-feet top edge, 3-feet bottom edge, floor is 3’x3’, D-ring handles make flipping kiln easier
- Must douse completely to prevent char from turning to ash
- Kiln is heavy when filled with water

Making Biochar

- Good use for poor quality wood
- Use dry wood
- Each piece should be similar in size
- Uniform size results in uniform product

Flame Cap Kiln

WilsonBiochar.com

Finished Product

- Uncrushed
- Commercial operations crush using a hammer mill
- When finely powdered increases surface area