Sunburn protection for
newly-grafted Payne walnuts

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BECAUSE SCIONS and rootstocks are sensitive to heat, they sunburn readily following grafting. When walnut rootstock is grafted, either the year planted or the following year, ordinary whitewash or a 50% solution of interior latex paint and water have commonly been applied for sunburn protection. In orchards where these sunburn treatments have been applied, erratic growth and poor grafting frequently occur, suggesting the whitewash treatment might be responsible. The experiment reported here was conducted to determine the influence of a sunburn protection treatment on growth of newly grafted trees.

Payne walnut was grafted in the nursery to one-year-old black walnut rootstock. The following three treatments were used, each replicated twenty times (20 trees): (1) 50% solution of interior white latex paint applied to rootstock, graft union, and scion; (2) 50% solution of interior white latex paint applied to graft union only; and (3) no sunburn treatment. Materials were applied once, immediately following grafting. Total shoot growth on May 1 and June 6, and trunk diameter at digging were noted.

Unpainted trees leafed out in mid-March. Leafing was variable in painted trees, many leafing out 2 to 3 weeks following controls. Growth differences between treatments in the first week of April are shown in the photos.

On May 1, trees painted only at the graft union had the least growth, an average of 7.9 inches. Those with the entire stock/graft union/scion painted averaged 12.1 inches. In both these treatments shoot growth was variable, and 15% of the grafts died. The untreated trees had an average of 34.2 inches of new growth, significantly different from the painted trees, and all grafts were successful.

Growth differences

On June 6, similar relative differences in shoot growth were measured. Painted trees averaged 39.5 inches; partially painted trees averaged 48.7 inches; and unpainted trees averaged 92.4 inches. Unpainted trees were growing faster between these dates than painted ones. Although no measurements were made at the end of the season, growth on painted trees did not appear to equal that of the unpainted trees.

Trees painted for sunburn protection had significantly smaller trunk diameters than unpainted ones. In early December average cross-sectional trunk diameter three inches above the graft union was .57 inches for the partially painted trees, .64 inches for the painted trees, and .86 inches for the unpainted trees.

Protective sunburn treatments of a 50% solution of interior white latex paint and water significantly reduced shoot growth and trunk caliper of newly grafted Payne walnuts, regardless of whether the entire tree or just the graft union was painted. Graft mortality may also be associated with painting.

Sunburn protection treatments, regardless of material, cool the bark surface by reflecting the sun's heat. It is this cooling effect that affects tree growth. Delayed and erratic growth due to less favorable temperatures can be expected. Delayed healing of the graft union occurs when it alone is protected. Slower and more erratic growth of the scion results. Although no difference in graft mortality occurred between painted treatments, it is suspected that there may be more risk when the graft union alone is painted. The painted top has more favorable temperature conditions for growth than the union, which may be slow to develop. Unseasonably warm weather may cause more graft mortality early in the growing season.

It is important to protect young, newly grafted walnut trees from sunburn in orchard situations. However, this experiment shows that shoot growth should be allowed to begin and graft unions to knit before applying a protective material.

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Photos above show effect of sunburn protective treatment on early shoot growth of Payne walnut—left photo, trees painted at union only as indicated; right photo, trees treated stock/union/scion.