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BENEFITS OF *ASCOPHYLLUM NODOSUM* MARINE-PLANT EXTRACT APPLICATIONS TO ´THOMPSON SEEDLESS´ GRAPE PRODUCTION

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Abstract:
The effects of *Ascophyllum nodosum* marine-plant extracts on 'Thompson seedless' grape (*Vitis vinifera* L.) production and yield variables was studied from 2002-04. Performed in cooperation with a commercial orchard near Selma, California, the randomized complete block design used five replicates and examined several experimental products and several standard *Ascophyllum* treatments (ATAN 0029). Given the preliminary nature of the experimental products, only the *Ascophyllum* treatments are discussed. Dose rates for the *Ascophyllum* treatments varied from 1 to 2 L/ha whereas the number of applications ranged from 4 to 8 applications per treated plot. Over this 3-year period, *Ascophyllum* extracts consistently outperformed the controls (regular crop management program) and produced better quality fruit and higher yields. Results in 2002 indicate increases in berries per bunch, berry size, rachis length and the number of primary bunches per plant with 4 and 8 applications of 2 L/ha. Treated fruit also performed better in storage than control fruit. In 2003, there was an increase of at least 58.4% in both grade #1 and #2 fruit, an increase of 7.7% in average berry size and 26.5% in berry weight in response to 4 or 8 applications at 2 L/ha. In 2004, yields for treated plots were again greater than the controls (60.4%), due in part, to increases in berry weight (38.8%) and size (12.4%). Overall, increases in grower return-on-investment (ROI) were realized in each of the three years. The beneficial impact of these extracts is thought to be associated with compounds that may include, but are not limited to the betaines, oligosaccharides, polyamines, cytokinins and/or other hormones. Fractionation chemistry research is currently underway on *Ascophyllum* extracts in order to identify individual or specific active ingredients. These fractions will then be examined in a series of closely monitored bioassays before being further tested on 'Thompson' seedless grapes.