

Foliar applications of Lo-Biuret Urea and Potassium Phosphite to Navel Orange trees

Glenn Wright and James Walworth¹

Abstract

This experiment was established in January 2000 in a block of 'Washington' navel orange trees at Verde Growers, Stanfield, AZ. Treatments included: normal grower practice, winter low biuret (LB) urea application, summer LB urea application, winter LB urea application plus winter and spring potassium phosphite, winter LB urea application plus summer potassium phosphite, and normal grower practice plus spring potassium phosphite. Each treatment was applied to approximately four acres of trees. For 2000-01, yields ranged from 40 to 45 lbs. per tree, and there was no effect of treatments upon total yield. There was a slight effect upon fruit size and grade. Trees subject to summer LB urea application had significantly more fruit of size 56, compared to trees subject to winter LB urea, and untreated, and untreated trees had significantly more fruit of size 88 than did treated trees. Also, treated trees had slightly more fruit in the fancy grade than did untreated trees.

Introduction

Arizona citrus growers face increasing economic and political pressure to adapt best management practices for nitrogen fertilization. Foliar N fertilization offers an opportunity to apply a significant portion of the total tree N needs in a more efficient manner than traditional flood or ground applications.

Navel oranges typically do not bear in great abundance in the desert. Water stress during fruit set, and/or high temperatures during bloom or fruit set can cause yield reductions.² Recent research by Lovatt suggests that pre-harvest applications of foliar urea and potassium phosphite can increase yield and fruit set on 'Washington' navel oranges in the San Joaquin Valley³

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² Davies, F.S. 1986. The Navel orange. In: Janick, J. (ed.) Horticultural Reviews. AVI Publishing, Co., Westport, CT Pp. 79-99.

³ Lovatt, C.J. 1998. Managing yield with foliar fertilization. Calif. Citrograph 84:1.

Although relatively uncommon in Arizona, foliar macronutrient application to citrus is an increasingly common practice in California citrus groves. Research by Jones and Parker found that foliar urea application was a practical method of applying N as early as 1949⁴. Foliar N fertilization did not find widespread commercial acceptance because of the fact that a minimum of three applications per year would be needed to supply the tree's N requirements.

However, Sharples and Hilgeman⁵ suggested that a single application of urea applied to 'Valencia' orange foliage at the phenologically appropriate time might improve yield in Arizona trees.

⁴ Jones, W.W. and E.R. Parker. 1949. Application of urea to foliage of orange trees. Calif. Citrograph 34:463.

⁵ Sharples, G.C. and R.H. Hilgeman. 1969. Influence of differential nitrogen fertilization on production, trunk growth, fruit size, quality and foliage composition of 'Valencia' orange trees in central Arizona. Proc. First Intl. Citrus Symposium 3: 1569-1578.