

## Effect of Hydrogen Cyanamide (Dormex) and Potassium Nitrate on Bud Break, Production and Quality of 'Perlette' Grape in Jericho in the Jordan Valley

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### ABSTRACT

The effect of two concentrations (2.5% and 5% v/v) of Dormex (e.i 49% hydrogen cyanamide), and potassium nitrate (5% v/v) on bud break, production and quality of *Vitis vinifera* L. 'Perlette' grape grafted on 'Richter 110' was studied. The experiment was conducted at the Agriculture Experimental Station, Department of Agriculture at Jericho in the Jordan Valley. The assigned concentrations of the chemicals were applied immediately after pruning. Each treatment was applied to 10 different vines; another 10 vines were sprayed with distilled water as a control treatment. After two months of application, significant bud break percent 87.7% was obtained using 5% Dormex application, followed by 5% potassium nitrate and 2.5% Dormex that resulted in 55.3 and 52 % bud break, respectively. Higher cluster number was obtained with 5% Dormex, however, average cluster weight was not significantly different among all treatments. Potassium nitrate at 5% resulted significantly in similar average production per vine compared to the Dormex treatments. All treatments gave higher average production per vine than the control. The total acidity of the berries was significantly higher with 5% potassium nitrate over the control, however, berries pH, brix, total soluble solids and specific gravity were not affected by the chemicals used.

**KEYWORDS:** Cilling. *Vitis vinifera*. Bud. Dormancy.

### INTRODUCTION

Grapevine is the second important fruit crop in Palestine. It covers about 8,000 hectares (PCBS, 1999). The majority of the grapes are planted in the southern region of the West Bank. Most of the grown cultivars are seeded grapes that are mainly used as a table grape. Recently, there has been an increase in seedless grape plantation. Seedless grapes are planted under irrigation mainly at Jericho in the Jordan Valley. The Jordan Valley is characterized by hot summer and warm winter, and therefore, lacks adequate chilling requirement (Table 1). 'Perlette' grape, the dominant seedless cultivar planted in this region, is characterized by early maturity and heavy

production. Lack of adequate chilling causes delayed bud break and subsequently fruit ripening. Grapevine exposed to insufficient winter chilling exhibited delayed and erratic bud break, therefore, decreased shoot and cluster counts and less fruit uniformity and development (Dokoozlian et al., 1995).

The exact temperature and duration of chilling required for optimum bud break of 'Perlette' grapevine has not been established. However, 'Perlette' bud break was most rapid and uniform when cuttings were exposed to 800 hours of chilling in California (Dokoozlian et al., 1995).

Early ripening of seedless grapes in this area is achieved by the use of bud break agents. Several materials have been used to induce bud break in deciduous fruit trees. Among these chemicals are cyanamide salts, thiourea, potassium nitrate, gibberellins, cytokinins and mineral oils (Dozier et al., 1990; Erez, 1987). Commercial oil was the first chemical used to

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