Bud Failure in Thompson Seedless

(Notes taken by A. N. Kasimatis from a talk presented by Dr. A. J. Winkler at the Kern County Grape Institute, December 14, 1960, Bakersfield.)

Bud failure follows years of poor cane maturity. This condition is related to red cane in Thompson Seedless but is a more severe form. With bud failure the canes have a normal light brown color; with red cane, the canes develop a reddish tinge. Red cane occurs when the vines grow late in the season until hit by a light frost. The widespread occurrence of red cane in the San Joaquin Valley in 1938 resulted from the very heavy crop of 1937 which allowed little storage of carbohydrates.

When the canes are only partially matured they are subject to low temperature injury during the late fall. The effects are more severe if the low temperatures occur early. Even when low temperatures do not happen, poor wood maturity can result in damage.

What are the possible causes of bud failure?

1. Overcropping
   This condition results in a delay in fruit maturity and hence a shortening of the time for the vines to store carbohydrates.

2. Defoliation
   Early defoliation by leaf hoppers, grape leaf folders, red spiders, etc. reduces the leaf surface and hence affects the storage of reserves.

3. Diseases
   They are a slight factor since most fungus diseases in California do not seriously reduce the leaf surface.

4. Virus disease
   Pierce's disease severely disrupts the normal vine processes and results in poor wood maturity.

Leafroll virus also interferes with the translocation of materials and hence affects bud push to some degree.

5. Vigorous growth
   With an excess of nitrogen fertilizer and irrigation the vines continue growth late in the season. Wood maturity is delayed and low temperature injury may occur.

Grapes have a relatively low requirement for nitrogen. The nitrogen is needed during the period from bud push through bloom, and little is desired during the fall. The requirements follow the normal growth cycle—high level of growth early, tapering off with bloom, and gradually tapering off as the fruit matures and ripens.

Nitrogen applications should be made early, preferably before growth commences. Late applications, unless there is a severe nitrogen deficiency, usually result in problems of fruit and wood maturity.

Why does bud failure occur in certain vineyard areas?

Growers were advised to:

1. Compare the nitrogen level in these trouble spots with that of adjacent good vines.

2. Check the crop level in the problem areas, and

3. Check for soil uniformity.

Dr. Winkler concluded by reminding growers that good vineyard practice resulting in normal growth and normal crops would minimize bud failure problems. Again he emphasized the importance of controlling insects and using moderate fertilizer and irrigation programs.