

# THE BETTER CROP PROGRAM DEVELOPED FOR FARMERS AND GROWERS IN CHINA

## Part 03 | Promoting Grape Flower Bud Differentiation

### INTRODUCTION

The RLF Nutrition Education Centre has written a series of articles to not only help educate the staff Teams who go into the field, but in terms that clearly explain the principles of crop nutrition and fertiliser management for farmers and growers all across China. We are replicating some of these programs in this Series of articles because the message is such an important one.

Crop production is complex and comprehensive, and this article looks specifically at the issue of **understanding the important stages of bud differentiation in grapevines and how they can be better supported.**

### PROMOTING GRAPE FLOWER BUD DIFFERENTIATION



Good flowers bring good fruits – this is a truth that is well known and accepted.

For grape growers especially, the quality of flower at bud differentiation stage is directly related to the eventual grape yield and sweetness.

Growers take a series of measures to promote bud differentiation, such as phosphate fertiliser, boron fertiliser, rooting fertiliser and so on, however they still encounter the problem of a smaller flower, or no bud at all. In theory, these measures are effective for blooming flowers, but why is the effect not apparent?

## WHAT IS BUD DIFFERENTIATION?

The starting point of grape flower bud differentiation coincides with the starting point of the leaf bud.

When the environmental conditions are not conducive to the growth of leaves, but conducive to the flower bud, then that growth point will begin to differentiate in the flower bud's direction and eventually become a flower. This process takes many months – so what actually happens when the grapes start to differentiate, and you get to see the flowers?

This period is divided into two stages:

- the inflorescence differentiation stage, and
- the floral apparatus differentiation stage.

Grape inflorescence differentiation stage then has three characteristics:

- 1. Sustainability**

From the beginning, before and after flowering to the end of the second year after germination, lasting 10-11 months.

- 2. Long-term**

The differentiation of inflorescence primordia is only carried out in the current year, with the differentiation of floral organs undertaken in the spring of the following year.

- 3. Periodic**

Under suitable conditions, all can differentiate upwards, segment by segment.

This is followed by the flower bud differentiation stage which can be divided into two distinct steps:

- 1. From the full flowering stage** to about two weeks after flowering is a critical period for flower bud differentiation in the second year.
- 2. From the appearance of the current year's wound flow** until the growth of between 7-10 leaves when the current year's germ cells are formed during this period.

Therefore, the most common reason for the small inflorescence and a small number of flowers in grapes is flower bud differentiation failure.

A grape bud has either of two prospects:

- a good supply of nutrients, and a flower when the conditions are right,
- or a tendril when the conditions are not.

## HOW TO PROMOTE FLOWER BUD DIFFERENTIATION

The main reasons that affect the differentiation of grape flower buds in production are as follows:

- 1. Lack of adequate light**

Many European subspecies especially are planted in the greenhouse, often with a plastic cover that is too dirty to let enough light through. When grapes grow in the summer and autumn, they do not get sufficient light and the flower buds fail to differentiate.

## 2. Abnormal weather

The flower bud differentiation is significantly affected by temperatures higher than 30°C, or lower than 15°C. After sprouting in spring, the weather is intense and the flower buds degenerate more readily.

## 3. Insufficient nutrient supply

In general, the more abundant the nutrient supply, the better the growth. Phosphorus is the most sensitive to reproductive development, so it needs enough phosphorus, zinc, boron, and other elements for flower bud differentiation. Secondly, the thickness of new shoots is directly proportional to the growth of flowers. The RLF Technical Team always recommend that farmers spray with RLF **Fruits & Veggies Plus** once or twice before flowering, to help make the new shoots grow healthily. It demonstrates a remarkable flower-promoting effect.

## 4. Nutritional Conditions

If the vines are strong and solid, they are conducive to the differentiation of flower buds. If the nutrition is insufficient, branch growth is weak, and flower buds are more challenging to form. For grape vines with weak strength, RLF recommends that **Plant Milk High-P**, by fertigation, is applied to the roots to promote better flower bud differentiation. And then, in the middle and late grape growth stage, to use **Plant Milk High-K** to help grapes set more fruits and sit well.



The flower buds of the grapes sprayed with RLF **Fruits & Veggies Plus** were good and strong.



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