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Promalin®

Some commonly asked questions on the use of Promalin on apples:

1. What's the ingredient in Promalin?

Promalin has two ingredients. The first is a mixture of two natural gibberellins commonly found in plants: Gibberellins 4 and Gibberellins 7. The second is a compound also found in nature classified as a cytokinin, 6-Benzyladenine. Gibberellins and cytokinins are growth regulators specific to plants. While 6-Benzyladenine is made by chemical synthesis, the gibberellins are produced by the process of fermentation, where a pure strain of the fungus *Gibberella fujikorai* is grown in an aseptic medium. The unsurpassed quality of Promalin stems from the highly sophisticated process and unique quality control procedures that VBC uses to manufacture gibberellins.

2. How does Promalin work?

The two ingredients in Promalin contribute to increase fruit size: 6-BA stimulates cell division, and GA4+7 causes cell expansion. These effects only take place in plant tissues and only during the very early development of the fruitlet. The result is a larger fruit with more cells and larger cells. In addition, the gibberellins help reduce fruit russet and improve overall fruit finish.

3. What are the ideal spraying conditions for Promalin applications?

- a) Temperature: For Promalin to be absorbed and work in the tissue, the plant metabolism must be active. Thus, very low and very high temperatures must be avoided. Best results are obtained at temperatures above 60°F and below 90°F.
- b) Slow drying of the spray material allows for higher penetration of Promalin into the plant tissue. Avoid low relative humidity (less than 40%) and windy conditions. Early mornings and late evenings are usually desirable spraying times, as long as the temperature is adequate.

4. What is the effect of Promalin on fruit quality, i.e., color, flesh firmness, storageability, and flavor?

The main effects of Promalin are: increased fruit size, improved fruit shape, and modulated production (reduced alternate bearing). But indirectly, Promalin has a positive effect on the quality factors listed above.



Color: Promalin will produce larger fruits, so thinning can be more aggressive. When growers thin to a single fruit per spur, or generally leave fewer fruits, color is generally improved.

Flesh firmness: Promalin does not directly affect fruit firmness. However, Promalin treated fruit that are properly thinned will tend to be of similar size and develop more uniformly, leading to less variability in fruit firmness throughout the tree. It must be remembered, however, that larger fruit tend to be softer than smaller fruit, whether they were treated with Promalin or not.

Storageability: Storage problems are closely associated with fruit of differing physiological maturity at the time of harvest. The use of Promalin with adequate thinning helps produce a uniform crop that will store better.

Flavor: Flavor is not affected by Promalin but a uniform crop of evenly sized fruit will have uniform consistent good flavor if properly harvested and handled.

5. What are the effects of Promalin on bees and other beneficial insects?

Promalin exhibits extremely low toxicity to bees and other beneficial insects. Promalin has been commercially applied at the peak of bee activity (bloom time) for 20 years in the US and in many other countries without any problems.

6. What is the effect of Promalin applications on alternate bearing?

The use of Promalin can help alleviate the alternate bearing problem when used in combination with a good thinning program and other cultural practices. 6-BA is known to stimulate flower bud induction and increase return bloom the following year. Also, depending on the rate and variety, 6-BA will thin some of the weak fruitlets that normally produce small fruit; this reduces the inhibition effect that this year's crop has on the formation of flower buds for next year's crop.

7. How do I use Promalin to prevent russet?

To reduce russet, Promalin increases the elasticity and production rate of the outer epidermal cells of the expanding fruit. Promalin will help reduce russet at the normal timing for fruit type and size enhancement effects. However, when russet reduction is the main objective, the products of choice are ProVide or Regulex.

8. Can Promalin increase fruit weight and quality?

These are the two main reasons why Promalin is used worldwide. There is plenty of evidence that indicates that Promalin will improve fruit size, total crop yield, and shift the packout of fresh fruit towards the larger categories. In addition, Promalin will reduce skin russet and improve the fruit finish.

9. What kind of application equipment is necessary for Promalin? What's the best droplet size?

Promalin applications utilize the same spraying equipment commonly used in apple orchards. However, since thorough coverage of the canopy is essential, best results are obtained with Airblast (atomizer) type sprayers that deliver a fine mist (around 100-micron droplet size). Water volumes range between 75 and 200 gallons per acre (750 and 2000 liters per hectare), with most growers using 100 gallons per acre (1000 liters per hectare). Many people use the tree-row-volume (TRV) concept successfully. Water volume also depends on wind, temperature, and relative humidity. Eighty percent of the spray should be directed to the upper two-thirds of the tree canopy.



10. Do adjuvants enhance Promalin efficacy?

Promalin is formulated to be used without the addition of any additives.

In many years of research we have found that adjuvants (spreader-stickers, surfactants, etc.) only help in some specific situations. When spraying conditions are ideal, and with good quality water, it is hard to notice the effect of adjuvants. In adverse spraying conditions (windy, dry, high temperatures) it is possible that a non-ionic surfactant may help improve coverage and increase absorption.

Also, a pH corrector is only necessary if the pH of the water is 8.5 or higher. Caution should be exercised since some surfactants and other additives may cause russet or phytotoxic reactions.