

# ProGibb LV Plus® Plant Growth Regulator

## Grower Experiences After Two Seasons of Use

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**O**n March 27, 2018, the plant growth regulator ProGibb LV Plus® (gibberellic acid; GA) became available for use on avocados in California under a special local needs (SLN) registration for the purpose of increasing fruit set and fruit size. Since growers have now had a chance to potentially make three applications of GA and harvest two crops that have been treated with the product, we wanted to see what your experiences have been.

### **GA History and Effects on Avocados**

UC Riverside Emerita Professor and Plant Physiologist Dr. Carol Lovatt spent many years studying GA and its effects on avocado yield. Her research showed that GA application improves avocado fruit set, yield and size when applied at the cauliflower stage of inflorescence development. The recommended application timing is to apply GA when 50% of the inflorescences on 50% of the trees are at the cauliflower stage. This means that 25% of the bloom will be at an earlier stage of inflorescence development and 25% will be approaching full bloom (open flowers). Being slightly late in applying the treatment affords better efficacy than being too early, but applications at full bloom are not effective.

Under the SLN registration, ProGibb LV Plus® is the only GA product that can be used. It can be applied one time per year at a rate of 12.5 fluid ounces (25 grams of active ingredient) per acre. For ground sprays, the SLN stipulates 100 gallons per acre spray volume, and 75 gallons per acre for aerial applications. The 100 gallons per acre for ground sprays was an error that arose somewhere in the registration process since all of Dr. Lovatt's trials were conducted at 250 gallons per acre. Most county agricultural commissioners have been allowing the greater spray volume upon request. The Ventura County agricultural commissioner has issued a blanket approval to use up to 250 gallons per acre. It is important to note that only

the spray volume may be adjusted, the product rate remains 12.5 fluid ounces per acre regardless of spray volume.

The current SLN registration is valid until March 31, 2023. A full registration is in process and will be completed before the SLN registration expires. Once a full registration becomes available, it is possible that generic products will enter the market and become available for use, but until then, only ProGibb LV Plus® can be used.

### **Grower Experiences**

The California Avocado Commission (CAC) developed a grower survey that was distributed in March 2020 to learn about growers' experience using GA or why they have not tried using it. If growers have tried GA, they were asked about when they used it (2018, 2019, 2020), how they applied it, whether they tank-mixed anything with GA, and what they saw in terms of yield and fruit size. We also asked growers to share any concerns they have about the product or label changes that would make usage easier.

In total, the survey respondents represented almost 3,000 acres or about 5% of the total California avocado acreage. For those who responded that they have not tried GA, the top reason listed for not trying it was uncertainty about whether it can be used in organic production. ProGibb LV Plus® is National Organic Program compliant and is registered with the Organic Materials Review Institute (OMRI). The current OMRI certificate can be downloaded from the Agrian database ([home.agrian.com](http://home.agrian.com)).

For the respondents who have used GA, less than half applied GA in 2018, nearly 80% applied it in 2019, and 94% applied it in 2020. Across all three years, one-third of the applications were made by ground and two-thirds were aerial. For those making ground applications, all respondents used 100 gallons per acre spray volume in 2018 and 2019, and 20% said they used less than 100 gallons in 2020. Somewhat



*Cauliflower stage of inflorescence development.*



*Inflorescence development slightly beyond cauliflower stage, but still okay for gibberellic acid treatment.*

surprisingly, no one reported using more than 100 gallons per acre, despite that being a common request over the past two years.

Consistently, 20% of users have tank mixed something other than the recommended surfactant with GA in each of the three years. Boron, phosphites, and micronutrients (manganese, zinc and iron) have been the commonly reported tank mixes. It should be noted that the use of boron in combination with GA is not recommended on a large scale. Both GA and boron are bloom/fruit set enhancers and it is unknown if they work synergistically or antagonistically. In trials in Mexico, the combination resulted in flowers with double pistils and malformed fruit. The combination of GA with boron and urea is being tested in California, but a harvesting error caused the data from the 2019 application to be lost. As soon as data are available from California they will be shared. In the meantime, the combination of GA and boron or GA and urea should be used with caution.

In 2018, about 60% of users reported leaving some trees untreated for comparison, but in 2019 and 2020 only 40% reported leaving untreated trees. When using a new product like GA it is always best practice to leave some trees untreated for comparison. This allows you to see whether the product is effective under your treatment conditions. Additionally, even though GA is very safe and no ill effects were observed in trials even at very high rates, it is a precautionary step in the event something should go wrong with the application — especially if trying unproven tank mixes. Once you have used the product a few times and are comfortable with its performance, the entire grove can be treated.

To date, no users reported any negative effects of GA ap-

plication. For those who applied GA in 2018, 40% reported a yield increase and 60% reported that yield remained the same at harvest in 2019. However, for 2019 applications, 60% reported a yield increase and only 40% reported that yields stayed the same. This may be because some applications were made too late in 2018 due to the SLN registration not being available until the end of March. Increased fruit size has been reported by about 50% of users following both 2018 and 2019 applications.

The overwhelming majority of users, 86%, report that they are satisfied with GA and plan to continue trying it on their groves. For those who reported not being satisfied with the results, the lack of a response and the difficulty of timing the application were the reasons given for their lack of satisfaction. The timing is a known issue, especially when erratic weather patterns cause bloom to be protracted and it can be very difficult to determine the best time to spray.

Aside from sound data on the safety of tank mixes, factors around the application timing or the ability to make multiple applications per year were the top changes users would like to see going forward. As we work with Valent BioSciences Corporation on the full registration, this is valuable information to have.

We appreciate all the growers who took the time to complete the survey. The information you shared with us is invaluable. It appears that for most who have tried GA in the last couple of years the response has been positive. We hope this will encourage those of you who have not yet tried it to consider making some test applications in 2021. As more growers use this new tool and share their experiences with us we will report back to you for everyone's benefit. 🍌