9 WAYS to Make CRF Work for Your Color Crops

HOW CAN USING CONTROLLED-RELEASE FERTILIZERS HELP GROWERS PROVIDE HEALTHIER, MORE BEAUTIFUL PLANTS FOR END USERS?

By Fred Hulme

Water-soluble fertilizers (WSF) are the principal fertilizer type used by greenhouse growers. WSF are made from soluble nutrient raw materials that are mixed into stock tanks and delivered via injectors through an irrigation system. Controlled-release fertilizers (CRF) are an alternative fertilizer technology made from coated particles of WSF that will release nutrients to the root zone over a defined longevity based on temperature. CRFs can be a highly efficient and effective means to deliver nutrients to color crops in combination with WSFs, or even as the sole fertilizer source. If the correct CRF products and rates are selected to meet cropping objectives, CRF can provide many benefits including reduced fertilizer and labor costs, improved crop quality, simplified production, reduced nutrient leaching and higher post-production value — both at the retail garden center and in the consumer's backyard. Here are a few guidelines for greenhouse growers to use when adding CRFs to their fertilizer programs:

1 Consult with your fertilizer provider.

If you have never used CRFs in color crop production before, it is best to first consult with a representative from your fertilizer provider. For best results, select a 100-percent-coated, homogenous product that delivers N-P-K and other essential elements in a controlled-release manner over the cropping cycle. While such products can be more costly than other available blended fertilizer for-

Table 1: Osmocote Longevities Based on Average Soil Temperatures

	Constant Average Soil Temperatures			
Longevities Types @ 70° F	**60° F**	**70° F**	**80° F**	**90° F**
Osmocote® 3 to 4 months	4 to 5 months	3 to 4 months	2 to 3 months	1 to 2 months
Osmocote® 5 to 6 months	6 to 7 months	5 to 6 months	4 to 5 months	3 to 4 months
Osmocote© 8 to 9 month	9 to 10 months	8 to 9 months	6 to 7 months	5 to 6 months

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mulations, they also provide safety, deliver a sustained and consistent diet of all required nutrients and are great value when used at lower rates. Your representative should be able to direct you to the CRF that's right for your unique application.

2 Select products with appropriate longevities.

Select CRF products with appropriate longevities based on your average daytime temperatures and the length of time for which you want to provide plant nutrition. CRF longevity claims are generally based on set reference temperatures, but note that these reference temperatures may vary between CRF brands. Read the label to select the correct longevity for your growing environment. Keep in mind that true longevity will depend on actual growing conditions. Any particular CRF application will last longer at cooler temperatures and shorter at higher temperatures. See Table 1 for estimated longevities of Osmocote CRF based on average soil temperatures.

3 Select the correct rate.

The rates quoted on CRF bag labels are generally geared for outdoor-grown, container woody nursery crops and can be too high for color crops that are more salt sensitive and may require lower rates of CRF. A crop's absolute correct CRF rate will depend on your specific production objectives (target crop size); growing system factors (water quality, mix type, irrigation frequency, leaching fraction and other fertilizer sources); environment (temperatures and rainfall for outdoor production); crop mix; and desire to provide post-production fertilization.

The best rule of thumb is to start with a very low CRF rate in combination with WSF, especially for growers new to using CRF. In a combination feed program, CRFs can provide valuable nutrient insurance for times when WSF isn't an option due to cool, cloudy weather or busy shipping times. Many color growers who take this approach often increase their CRF rate and reduce WSF use over time as they gain confidence and experience in managing CRFs.

Suggested starting CRF rates for crops/situations:

- Propagation - 2 to 6 lbs/cubic yard
- Bedding plants - 2 to 5 lbs/cubic yard
- Color crops - 4 to 8 lbs/cubic yard
- Fall mums/perennials - 8 to 12 lbs/cubic yard

4 Find the best application method.

Since many color crops are grown in smaller containers, it is critical to achieve a uniform dose of CRF particles from pot to pot to ensure consistent crop nutrition. Incorporating CRF into growing media is the best and easiest application method. Done correctly, this virtually eliminates the labor costs associated with fertilizer application, especially if you buy mix from a professional potting soil supplier. One downside to this approach is that the CRF "clock" starts ticking as soon as the CRF is mixed into the growing media. As a result, such product

needs to be used fairly quickly– generally within a month — to avoid electrical conductivity (EC) buildup in the fresh media and wasted fertilizer.

If you buy your media well in advance of the planting season, it is best to hand mix CRF into the media before planting or even top dress CRF onto pots after liners or plugs are planted. This practice is often done on larger combination containers and hanging baskets. Some growers do not want CRF to interfere with their WSF during the production phase. These growers apply CRF onto containers just before shipping or even at the point of sale to provide nutrition to their crops in the retail and consumer phase.

5 Conduct trials.

By trialing CRF products (and rates) on a smaller scale before adopting them throughout your cropping system, you can gain some insight into how CRF technology performs in your growing systems. This will help you gain confidence before attempting broader application. If you bracket CRF rates and product types, you can assess how CRF can fit into your production without a lot of risk.

If you are transitioning from a 100-percent WSF program, there will be some adjustments. CRF tends to be less impactful on root zone pH and EC levels. Monitoring methods that work well with WSF — such as testing EC level in the root zone to assess the fertilizer's efficacy — are less applicable to a CRF program. With CRF, root zone EC levels may appear to be too low to a grower who is accustomed to monitoring WSF programs. Visual crop appearance and plant tissue analysis are actually better yardsticks to determine the effectiveness of your CRF fertilizer program.

6 Consider mini-prills for propagation.

For propagation and smaller cells, employ a mini-prill CRF product. The main benefit of this type of product is that there are many more fertilizer particles per unit weight. This can help provide a much more uniform distribution of fertilizer across smaller root zone cells and containers.

7 Use a combination of CRF and WSF.

Many growers use a base level of CRF supplemented with WSF in a variety of ways. By using different fertilizer delivery systems, growers are not putting all their "eggs in one basket," so to speak. CRF can back up a WSF program in case of inefficiencies or breakdowns.

Some growers supply a CRF supplement to heavy feeders and provide a base WSF feed to the entire crop — this way all crops can thrive on a single source/concentration of WSF. Others provide crops with a base feed of CRF, use WSF in the beginning of the crop cycle, then tail off applications unless

they need to apply WSF to react to specific situations that can arise in some crops, such as pH issues or micronutrient deficiencies.

8 Use CRF on outdoor crops.

CRF is a great solution for color crops grown outdoors where injector systems are not available or where overhead WSF applications can be expensive, wasteful and promote nutrient leaching.

9 Remember the consumer.

Growers can no longer provide their plants with TLC after they ship. Even the highest quality crop may be subjected to inadequate feed levels in the post-production retail phase. This can lead to reduced plant quality, poor consumer acceptance and preventable shrinkage. CRF is a means to provide salable crops a nutrient care package to keep them healthy and attractive through this period.

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Additionally, we know that many consumers do not understand plant nutrition and provide inadequate or no fertilizer after they purchase color crops. Garden soil may provide some nutrition, but large containers and hanging baskets fed with only water-soluble fertilizer have little nutrient reserves to sustain a finished color crop throughout the spring/summer/fall. By selecting a longer-term CRF at the start of production (that still contains residual nutrients at shipping time) or by top dressing with CRF close to the point of sale, growers can provide their end-user customers with a healthy, beautiful, smarter plant that only needs water to continue looking its best. g

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