

**SQM**

Controlled Release

The right nutrition at the right time

**Qrop**[®]
CR

Qrop[®] CR is a polymer-coated Controlled Release NPK fertilizer. Qrop[®] CR is covered by a superior polymer coating agent, which guarantees a consistent, safe and controlled nutrient release pattern under a wide range of soil temperatures.

The main advantages and benefits of Qrop[®] CR are:

- Improved nutrient use efficiency and crop safety.
- Lower nutrient input costs and application costs.
- Environmentally friendly, as its use reduces the risk of nutrient run-off, ground and surface water pollution, and algae bloom in coastal areas.
- No premature or “flash” release of nutrients at higher soil temperatures (> 70 °F), which may lead to plant burning, early nutrient depletion, and an increased risk of nutrient leaching.
- Qrop[®] CR has a thin and pliable coating layer: no cracks or breaks will appear during handling and mixing.





Controlled release fertilizer

Qrop® CR is coated with an ultra-thin, semi-permeable polyurethane polymer, allowing the penetration of water to the fertilizer granule. Subsequently, the fertilizer salt will dissolve and gradually diffuse through the coating to the surrounding environment. Qrop® CR's release pattern is independent of soil pH, soil type, bacteria, and relatively independent of soil moisture levels and is not affected by rainfall or excess watering. Its release pattern is soil temperature driven, but in a controlled, predictable way. The release pattern will depend on the thickness of the coating and the soil temperature. Qrop® CR is available in a multitude of various analyses with a 3, 6, and 9 month release period, which matches the longevity to most crop cycles. Other product longevities and analyses can be custom produced.

Characteristics, advantages and benefits of Qrop® CR

- The unique and exclusive coating technology of Qrop® CR is more efficient than competing products in the market. It takes less coating chemical to get the same result, i.e. release time. What this means is each fertilizer has less coating-thus more nutrients. For example, Qrop® CR 3 month urea is a 45-0-0 compared to others that are 44-0-0 or 43-0-0 for the same 3 month longevity.
- The Qrop® CR coating process is a room temperature process. Other manufacturers must use very high heat in the coating process. What this means is that nitrates (oxidizers) can be coated by the Qrop® CR coating process with little risk. Most of the high heat manufacturers will not take that risk. Qrop® CR offers coated versions of ammonium nitrate, potassium nitrate, calcium nitrate, etc. The coating also removes the oxidizer/hazmat classification from such materials.
- The Qrop® CR manufacturing plant is VERY flexible in the types and sizes of blends it can make. It can do small batch tailor made blends if desired. Most large manufacturers do not offer that service. SQM can now offer customers exactly what they're looking for and try to meet their needs.
- The micro-pores in the coating do not expand as the temperature increases, which results in a more even nutrient release and also prevents the premature release of nutrients, or "flash release". This so-called flash release of nutrients at higher temperatures (> 70 °F) may lead to plant burning, early nutrient depletion, and an increased risk of nutrient leaching. Qrop® CR stands for crop and environmental safety, economical use of plant nutrient sources, and brings peace of mind to the end-user.
- Qrop® CR has a durable coating layer, no cracks or breaks will appear during handling and mixing. This smooth, uniform coating layer provides consistent and predictable feeding and prevents uncontrolled release of nutrients, with a low risk of nutrient leaching, which makes its use safe for the environment.
- Qrop® CR fits perfectly into an environmentally-sound plant nutrition program, with a reduced risk of nutrient run-off, ground and surface water pollution, and algae bloom in coastal areas. This risk is strongly present in soils with a limited nutrient holding capacity, such as coarse textured, sandy soils, low in organic matter, in combination with heavy rainfall.
- Qrop® CR is SQM's answer for improved nutrient use efficiency and crop safety, lower nutrient input and application costs, and is an environmentally-safe solution, which will result in higher marketable yield and grower's income.

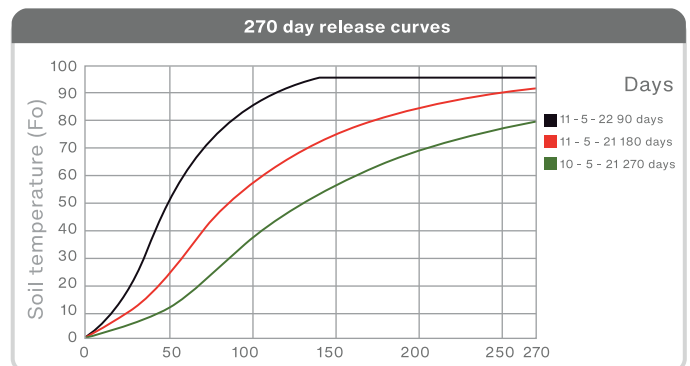
Release periods

The nutrient release rate of Qrop® CR is modified by temperature only, slowing down when soil temperatures are lower and releasing faster under higher soil temperatures, coinciding with the crop's rate of growth. Qrop® CR is predicted to gradually release 80% of its nutrients over its stated longevity, while flash release will not occur under normal production conditions.

The table shows the longevity, in months, of Qrop® CR with 3, 6 and 9 month release periods for three average median soil temperatures. For example, Qrop® CR with a 6 month release period will effectively release up to 80% of its nutrients in 6 months at a soil temperature of around 80 °F. However, at a lower soil temperature of around 70 °F, it will take up to 7 months as the rate of release is slowed down at lower temperatures.

DISCLAIMER.

All information is given to the best of SQM's knowledge and is believed to be accurate. Your conditions of use and application of the suggested products and recommendations are beyond our control. There is no warranty regarding the accuracy of any given data or statements. SQM specifically disclaims any responsibility or liability relating to the use of the suggested products and recommendations and shall under no circumstances whatsoever, be liable for any special, incidental or consequential damages which may arise from such use.



Qrop® CR release periods (months)	Average median soil temperatures		
	60°F	70°F	80°F
	Longevity in months (up to)		
3	5	4	3
6	8	7	6
9	11	10	9