

# SLOW RELEASE NITROGENS

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**N**itrogen requirements for sports turf must be sufficient to maintain proper turfgrass density, acceptable colour, and adequate recuperative ability. The specific application intervals depend largely on the type of nitrogen source used.

## Water Soluble Sources

If the fertilizer nitrogen source used is from a water soluble material such as ammonium sulphate, ammonium phosphate, ammonium nitrate or urea, more frequent applications must be made to maintain acceptable growth and colour.

The disadvantage of using only fast release nitrogen is a greater chance of burning the turf during hot weather, higher loss through volatilization from urea and higher loss through leaching, especially in coarse textured soils. Since fast release nitrogens do not last long, more frequent applications are required and thus higher labour costs.

## Slow Release Nitrogen

Sports turf managers now have a very wide range of slow release nitrogen sources to help them achieve superior results. There are two main groups of slow release nitrogen; those that come from organic sources and those that are derived from inorganic sources.

### Natural Organic

The Canadian fertilizer industry had its beginnings by processing what was at the time by-products of the meat-packaging industry. Organic fertilizers always held an important place in the turf grass industry even after the introduction of synthetic nitrogen.

Agriculture Canada defines "organic" as a substance that originated from plants or animals.

Following are some commonly used organic nitrogen sources.

Milorganite (R)	6-3-0
Vitorganic (R)	8-2-0

Blood Meal	12-0-0
Feather Meal	12-1-0
Leather Meal	12-0-0
Organiform (R)	25-0-0

(R) = Registered Trademark

NOTE: Only 50% of the nitrogen in organiform is derived from organic sources.

## The Benefits of Organic Fertilizers

- enhancement of microbial life in the soil
- minimum nutrient loss to the air (volatilization)
- minimum loss through leaching
- even feeding of turf without the stress of surge growth
- organic fertilizers are perceived as being environmentally friendly

## Disadvantages

- repeating the low nutrient content requires higher total amounts for turf response
- organics are slow to react during cooler weather
- cost per unit of nutrient is higher

## Synthetic Slow Release Nitrogen

There are two types of synthetic slow release nitrogens:

- a) those made by coating (example - Sulphur Coated Urea),
- b) those made by reacting materials with a nitrogen source to create complex structures called polymers (example - Nitroform and Nutralene).

### Sulphur Coated Urea

Sulphur coated urea is made by coating urea fertilizer with sulphur to form a slow release source. This is one of the most commonly used slow release nitrogen sources.

## Advantages

An economical source when compared to other organic and inorganic slow release nitrogens.

## Disadvantages

Not all sulphur coated ureas are created equal. That is sulphur coated urea is only as good as the weakest point on the coating. If this coating is cracked during transportation and

blending, the content is released as water soluble urea. Some independent studies have shown that as much as 50% of the nitrogen from sulphur coated urea could be released within 7 days of application. Ask your supplier to show you independent results of the standard 7 day dissolution test.

## Non-coated Slow Release Nitrogen

Following is a list of some non-coated nitrogen sources.

1) Nitroform	39-0-0
2) Isobutylene Diurea	31-0-0
3) Nutralene	40-0-0

The above materials are not dependent on coating for release as is the case with sulphur coated urea. The mechanism of release varies somewhat.

Nitroform (urea formaldehyde derivative) is released only by microbes. It is similar to organics in that respect. It does not release when microbial action is low (when the soil is cold). Nitroform lasts 12 to 16 months.

Isobathylene diurea 31-0-0, releases only by hydrolysis (water). The release time is 12 to 16 weeks. It releases nitrogen even in cold soil as it is not as dependent on microbial action for release.

Nutralene releases by both hydrolysis and microbial degradation. Nutralene releases over 12 to 16 weeks. Recent studies by Dr. Petrovic, Cornell University, has shown Nutralene is the least likely to leach even when applied at 4 pounds of nitrogen per 1,000 sq. ft.

## Conclusion

Although organic nitrogen fertilizers continue to receive a great deal of attention, it is important to note that sports turf managers have alternatives to organics. Many of these alternatives areas "environmentally friendly" as organics and their release patterns are very often, more predictable.

As sports turf managers, you must evaluate your own situation and decide what source(s) of nitrogen best suits your particular needs.