CoRoN. CoRoN is an aqueous solution of many polymethylene ureas and amine modified polymethylene ureas. CoRoN consists primarily of a straight-chain, amine-modified polymethylene urea containing two to four urea units; this accounts for approximately 30% of CoRoN's nitrogen content. Small amounts of methylene diurea and dimethylene triurea are also present; however, the solution contains no cyclic urea formaldehyde products, such as triazones. No free ammonia and little methylol urea are included. CoRoN contains a small amount of sodium bicarbonate to protect its near-neutral pH and sufficient water to safely maintain its 28-0-0 formulation in water. While CoRoN depends on microbial action for nitrogen release, it has been shown to be effective in the winter due to its relatively high urea content. Although it tends not to last as long as dry slow-release nitrogen sources, its initial greenup is quicker.

N-Sure. N-Sure is a liquid nitrogen fertilizer containing triazones and urea in a 0.48:1.0 ratio. N-Sure may contain 6% methylene diurea and methylol urea by weight. Triazones are stable heterocyclic nitrogen-carbon ring compounds typically formed under low pH conditions from urea, formaldehyde, and ammonia. N-Sure contains 30% nitrogen and its nitrogen release rate is microbe-dependent. It has been demonstrated to be effective during cool weather; however, turf response is not as long-lasting as with solid, slow-release nitrogen sources.

FLUF. FLUF is another slow-release nitrogen solution source. It consists of cold-water soluble free urea and methylene diurea, cold-water insoluble, hot-water soluble polymethylene ureas, and small amounts of hot-water insoluble polymethylene ureas.

IV. Application

A simple irrigation delivery system is probably the best choice for fertilizer application. Such a system consists of a fiberglass or plastic storage tank with a visual volume gauge, a filter, and an adjustable corrosion-resistant pump to inject fertilizer into the main irrigation line. If a centrifugal pump is used for irrigation, the injection pump can be eliminated. Fertilizer is drawn into the suction side of the irrigation pump, so that some fertilizer is applied with each irrigation. If the injection pump supplies fertilizer at a constant rate, the irrigation system must be well balanced, with each zone covering approximately the same land area to ensure that the fertilization rate is also constant. The exception would be certain areas where it is desirable to fertilize at a heavier rate. Proportioning systems have been developed that maintain a constant ratio between the volume of liquid fertilizer injected and the volume of irrigation water applied.

To operate the system, the amount of nitrogen and other nutrients needed per unit of turf area per unit of time (e.g., lbs N per 1,000 sq. ft. or per acre applied per month) must be determined. The rate at which the injection pump must operate can be determined from the concentration of the fertilizer solution. If necessary, this rate can be adjusted to compensate for unusually high or low amounts of rainfall that affect irrigation requirements. The visual gauge on the fertilizer tank helps determine how well the fertilization schedule is being maintained, since the time needed to empty the tank (e.g., a week, a month, etc.) can be determined in advance. Heavily used areas such as tees and greens often require greater nitrogen rates than fairways. Various methods can be devised for increasing the rate of fertilizer applied by irrigation systems on these areas. Such complications, however, may cause excessive work and more problems. In most cases, fertigation is probably best used to supply a uniform rate of nitrogen to the entire golf course and traditional granular applications to augment fertilization on relatively small, heavily used green and tee areas.