Case Study

PLASTICS · PIPE · INSTITUTE®

THE VOICE OF AN INDUSTRY

105 Decker Court, Suite 825
Irving, Texas 75062
Phone: 469.499.1044
www.plasticpipe.org

MONSANTO WORKS TO CONTROL MOTHER NATURE

New Tiling System Designed to Yield Better Results at Research Farm

MONMOUTH, IL - At the Monsanto Company Learning Center here, a new storm water drainage system is being installed on its research farm. Using a grid pattern of corrugated high-density polyethylene (HDPE) pipe will provide more efficient field drainage so the company will be able to get more consistent results in its development of new seeds and crops. The first phase of the drainage system has been completed with the remainder scheduled for the fourth quarter of 2014. Based in St. Louis, Missouri, Monsanto is a leading global provider of technology-based solutions and agricultural products that improve farm productivity and food quality.

"We're in a pretty flat area and with soils that tend to hold moisture very easily," explained Eric Hickenbottom, North American Corn Breeding testing operations manager for Monsanto, "which is good for production, but we just have to get rid of the excess water. There are a lot of roads through the research farm which are higher than the fields and act as a dam trapping the water, so we don't get a lot of surface runoff and need to drain it with tile. After large rain events we have water standing in those areas, sometimes for a week at a time; it would take that long for it to drain. What we hope to achieve is to have those major wet holes drained in 24 hours, at least the visible water sitting on top of the ground -- that's our end result objective."

For the first phase, 446,000 feet of the HDPE pipe was used that ranged in diameters from 3 to 8 inches of single wall, corrugated HDPE tubing and 18,000 feet of 12 to 24 inches of dual wall, corrugated HDPE pipe manufactured by Timewell Drainage Products (Timewell, Illinois).

"For nearly 50 years, farmers have been using corrugated HDPE pipe for draining their fields," stated Daniel Currence, P.E. director of engineering for the Plastics Pipe Institute's CPPA division. PPI is the major trade association representing all segments of the plastic pipe industry. Timewell is a member company of PPI.

"Tile drainage is critical to crop production because it allows excess water to leave the soil. This provides a higher yield for a farm. If not for this system, many fields would be flooded and totally unusable. Tiling saves those fields and increases crop production.

"Spacing of the pipe for this project was a little tighter than usual," Currence continued. "Typically, you'll find the rows spaced 30 and even 40 feet apart. Here, because of the some of the areas being prone to standing water, the pipe was installed with 20-foot spacing, about 2,000 feet of lateral pipe an acre. Water in some areas gets trapped in there like a pool."

Corrugated HDPE pipe is installed at the Monsanto research farm.

Case Study

PLASTICS · PIPE · INSTITUTE®

THE VOICE OF AN INDUSTRY

105 Decker Court, Suite 825
Irving, Texas 75062
Phone: 469.499.1044
www.plasticpipe.org

To install the 88-plus miles of pipe, Timewell's construction division, Ag Drainage Inc (ADI), plowed both the mains and the laterals. Depths ranged from 7.5 feet for the mains to 30 inches for the laterals. No additional bedding was used. Installation took a week with a crew of 10.

Tile drainage is critical to crop production because it allows excess water to leave the soil. This provides a higher yield for a farm.

"Because the pipe used for the laterals comes in long coils and is fed on the plow, the installation is rather quick," noted Currence. "For example, three inch diameter, perforated tubing that was used on this job, comes in a reel that has 6,200 feet. That makes it efficient to get to the field and install."

With an average annual rainfall of 38 inches, the farm near where Iowa, Missouri and Illinois meet, has mainly silt loam soil.

Hickenbottom added, "We did have some areas that were tiled many years ago in grid pattern and probably put in a little too far apart, and maybe a little too deep. Also, the mains weren't sized big enough. We want adequate moisture but not a lot at one time. Typically with the way weather patterns have changed here during the past 10 years, we're seeing more heavy rain storms with more frequency. In a dry year we can handle five inches of rain without a problem and it drains. What happens is that a week later we get another five inches and it's so saturated we can't get rid of the water.

"We are a research facility so we have many, many special projects out here on the farm. And quite truthfully a lot of times, those projects, whether it is a breeding effort or something of that nature, those crops tend to be a little bit higher in value versus just a commercial field," he said. "If we lose it, there's potential to lose maybe a year or more of progress with our breeding and yield testing programs. So we went with a pretty aggressive drainage coefficient for the farm....there were 488 acres there that we wanted to get done."

The Monsanto Learning Center has research labs, classroom training and plot tours. Hickenbottom and his team do advanced research in corn. Some of the other business functions at the site have corn and soybean research testing projects, along with many demo's that the learning center plants and harvests every year.

"We're already doing corn and soybeans yield trials," Hickenbottom continued, "as well as a corn breeding nursery where we are making crosses and self-pollination and trying to develop new inbred lines and hybrid combinations. It's important that we have proper drainage, which I'm sure we'll now have."

For additional information, go to: www.plasticpipe.org.

# # #

About PPI:

The Plastics Pipe Institute Inc. (PPI) is the major trade association representing all segments of the plastic pipe industry and is dedicated to promoting plastics as the material of choice for pipe applications. PPI is the premier technical, engineering and industry knowledge resource publishing data for use in development and design of plastic pipe systems. Additionally, PPI collaborates with industry organizations that set standards for manufacturing practices and installation methods.