The Baumburg Summer of Culture opened in August 2010 with a special attraction: the largest cornfield maze in Bavaria. The local monastery brewery wished to offer its guests a rich and varied program in and around the labyrinth, including games, concerts, night walks, corn candlelight dinners, and helicopter tours. But how do you create a pattern in a 113,000 m² (28 acres) field of tall cornstalks? The event organizer, Muk Heigl, turned to the engineers at Ing Traunreut GmbH; using positioning technology from Leica Geosystems, they mastered this far-from-everyday task.

First, the figures and the overall pattern were designed by a graphic artist. Using these sketches the surveying engineers then calculated the basic data for setting out the paths and clearings. All the designs were scaled up and adjusted to match the size of the cornfield and each of the paths in the future labyrinth was digitized. The result was a true-to-scale plan with the outlines of the proposed cornfield maze shown as 2D polylines. The motif shows the Baumburg coat-of-arms along with a beer glass, beer bottle, a plate of dumplings, a Merowinger pony, and the logo “Chiemgau – Bayerns Lächeln”. These elements would later reveal themselves to passengers on the helicopter tours.

Mower with Machine Control
As the consulting engineers don’t use machine control in their day-to-day work, they called upon German company Scanlaser Vertriebsgesellschaft, Leica Geosystems’ sales partner for machine control, for help. The design would be mown into the cornfield using a GPS system from Leica Geosystems and the GeoROG machine control system from SBG (also part of the Hexagon Group). To do this, the polylines had to be converted into axes and the output prepared in the appropriate data format using the SBG GEO Construction software package.

After loading the mowing data there was still another problem to be solved: the machine control com-
onto the small tractor and there was still room for the system’s power supply – two 12-volt car batteries connected in series. They were fixed on top of the cutter bar to bring the center of gravity down and increase stability.

**Track for Track to the Finished Maze**

With the hardware ready and the software loaded with all the data required for mowing the labyrinth, it was time to begin. First the mower cut the shapes of the various paths within the labyrinth. The person steering the two-wheeled walking mower found it was easy to mow his way precisely through the cornfield with the help of the machine control. He orientated himself on the axes shown in GeoROG and the designs were mown relatively quickly into the cornfield. Only the tractor’s deep tire-tracks presented a problem, as the two-wheeled walking mower always tipped sharply to the side as soon as it crossed one. This caused the 2.8 m (9.2 ft) high GPS antenna to be displaced by up to a half meter, which the reliable machine control software would of course report to the user. To avoid distorting the contours of the motif, the tractor operator had to anticipate this and drive accordingly. After all the contours had been mowed, the remaining open areas were carved out with the mower.

The ing Traunreut GmbH engineers used a different approach to clear the islands. As they were isolated areas that could not be reached with the two-wheeled walking tractor, the islands were set out using conventional GPS surveying. The polylines for the labyrinth were loaded as DXF data into a Leica GPS1200. The outlines of the individual islands were determined on site and the isolated areas mowed by hand.

During the two mowing days about one quarter of the whole cornfield was cleared to form the paths and open areas of labyrinth. This project shows just how specialized machine control applications can be. Even for an “exotic” application such as setting out a cornfield maze, the GPS-controlled system proved to be an innovative solution and by far the quickest way of getting it done.

**About the author:**

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