

**Student**

McCray McGee
Kernersville, NC

Summary

A 2nd grade project to test Squanto's theory about fertilizing crops leads to a positive family science experience—and success at the school fair!

A "Fishy" Field of Corn?

For McCray McGee, a 2nd grader in Kernersville, North Carolina, the family farm presented a prime opportunity for both scientific and historical inquiry. McCray wanted to test Squanto's advice to the Pilgrims about growing corn—*are dead fish the best fertilizer?* That was what McCray wanted to find out.



With his family's support—and a row of the farm dedicated to his science fair project—McCray devised his project, "The Best Way to Grow Corn." He divided the row into sections so that he could test three different fertilizers: fish, compost, and the commercially-available 10-10-10. In one 25-foot section, he buried fish before planting the seed. In another, he buried homemade compost from leftover, non-meat food mixed with waste from his pet pig. In the final section, he used 10-10-10, a fertilizer that contains nitrogen, potash, and phosphate.

Once the planting was done and the experiment underway, McCray eagerly awaited the first shoots of corn. As he discovered, there was still a lot of work to be done to monitor the project and record the growth of the corn! McCray and his family were not sure exactly what should be documented. According to his mom, Sandy, she wanted to make sure McCray was recording the right information, but she also wanted to be sure the project was kept realistic and straightforward enough for a second grader.

At Science Buddies' [Ask an Expert Forums](#), Sandy asked volunteer Experts what was most important for McCray to measure. Two Expert suggestions, measuring both *height* and *quantity* of ear production, became part of McCray's project. For the next 13 weeks, he measured the growth of the stalks, kept notes on ear production, and logged when it rained and when he watered. That's a lot of recordkeeping for a seven-year-old, and McCray admits it was a challenge to keep up with the constant monitoring. McCray also faced an unexpected problem—the family cats kept trying to dig up the fish!

Once the corn matured, it was time to analyze the data and document it to share with others. Looking for an approach that made sense for McCray's age, Sandy returned to Ask an Expert for advice. The suggestion from long-time volunteer, Donna Hardy of Bio-Rad: *bar graphs*. McCray was already familiar with the concept and was able to use the method to systematically show his results. The evidence was clear: *compost proved most effective*. McCray's original hypothesis was that the fish would work best, but the compost-fertilized crop produced the tallest and most abundant corn.

According to Sandy, being able to seek professional advice from the volunteers at Ask an Expert helped make the corn growing experience a positive one for McCray. "This is the second year we have used Ask an Expert, and both times the Experts have been extremely helpful," says Sandy. "They really helped me keep things at a level that McCray understands so that he could complete the project on his own. I will always help him, but I believe firmly that he needs to do the work!"

"It's very easy to overwhelm a child with a science project that is too complex. It's much better to do a very good job on a simpler project," agrees Donna, who frequently offers advice to parents who visit Ask an Expert seeking assistance or guidance for student projects. "To analyze his data, McCray was able to use skills he had learned in school—measuring, adding, doing a bar graph."

For a project that began with a question derived from the story of Squanto, McCray's study of the effects of various fertilizers on corn production was a project that drew the whole family together. Even his three-year-old brother got involved. "I will never forget the day," recounts Sandy, "when they came running in to tell me about the first ear of corn!" In the end, the project was a success at school and at home. "Of course, they did enjoy getting to eat the results—and trying to guess which ear came from which plant (fertilizer). That was funny!"

McCray's project earned a 2nd place win in the K-2 division, and he says he'll definitely participate again. We look forward to seeing what he chooses to explore next year!