

Fla. agronomist tells how to grow 200 bushel corn

NEWARK, Del. — A corn plant is capable of producing 3/4 pounds of grain per ear. At 30,000 plants to the acre, that's about 400 bushels. Currently, with good management and little luck, growers who irrigate in the Southeast are getting between 200 and 300 bushels.

During the recent fifth annual Delaware Irrigation Conference in Dover, Florida Extension agronomist Dave Wright described his system for growing 200 plus bushel corn.

Wright is an agronomy specialist at the Agricultural Research and Education Center in Quincy, Florida, where extensive work has been done with irrigated corn over the past 12 years. During that time, yields have risen from 125 to upward of 300 bushels an acre.

The reason for this increase, he said, was effective management of inputs. Besides water, critical factors affecting yield are early planting date; hybrids which have performed well in irrigated variety trials; excellent insect, nematode and weed control; plant populations of 26,000 to 30,000 an acre; proper tillage practices; rotations; and, above all, a good fertility program.

Skillful water management is essential for efficient use of other inputs, he said. He recommended placing soil moisture blocks or tensionmeters in the ground to a depth of six inches and 12 inches. Keep soil watered to a depth of eight to 10 inches, since almost 90 percent of the corn root system is in that layer.

About one inch of water should be applied per irrigation on sandy coastal plain soils when the six-inch tensionmeters read 20 centibars. These gauges need frequent, periodic checks, especially in sandier soils, he

cautioned. Use the 12-inch tensionmeters to see whether you're over or under watering.

"The water requirement of the corn plant is the same regardless of the soil it's growing in," said Wright. "The bucket's just bigger in clay than it is in sand." The most critical period of water use is during silking and ear fill.

He advised setting several tensionmeters (four to six) across the pivot to make sure you're putting on what you think you are. The sight or "toe test" doesn't give an accurate measure of soil moisture — you need to use a gauge, he said. At 20 centibars the soil may seem to be well moistened, but tests have shown that at this moisture level corn roots are beginning to experience some difficulty in absorbing water. Watering when the six-inch tensionmeters read 20 centibars resulted in about a 30-bushel yield increase over 60-centibar soil water tension.

In cases where an irrigation system isn't capable of delivering enough water to an entire field during critical periods, the agronomist suggested farmers plant half the field in corn and the other half in soybeans. Water only the corn until that crop is made. Then you can water the soybeans as needed.

Some growers go by ear appearance or a black layer in deciding when to stop irrigating maturing corn. Wright said sometimes plants continue to transpire even after corn looks ripe. So he prefers to use a tensionmeter. That way you know when the plant has actually stopped taking up water. Corn should then be harvested promptly to avoid loss to insects and the weather.

Next to adequate water, proper fertility is essential for top yields. "You can do everything else right,

but if you leave out one nutrient, you won't make your yields," Wright said. "Know the crop's requirements." And soil test.

He recommended applying lime six months before planting, phosphorus before or at planting, and zinc and manganese banded at planting. Most of the nitrogen should be sidedressed, along with sulfur and boron, during the growing season because these materials are subject to leaching. "We don't incorporate when we sidedress," he said. "With irrigation it's not necessary—even with no-till."

Use of planter fertilizer resulted in good growth response, silking about a week earlier, earlier maturity, and about a 15-bushel increase in yield. This is similar to test results reported in Delaware.

In work at the Quincy center, tissue analysis showed that the majority of potassium was taken up within the first four to eight

weeks of plant growth, he reported. Later applications were of little help. He recommended growers use this year's tissue tests to determine next year's fertility program, so deficiencies can be avoided.

Nitrogen is critical to high yields. This nutrient should be scheduled for at least six applications over the growing season, along with a very small amount (20 pounds to the acre) at planting. The reason for this is that the corn plant needs only about five percent of its total N uptake during the first four weeks of growth. If large amounts are put down at planting, hard rains may leach this out, leaving an insufficient amount for high yields.

Based on work at Quincy, at 30,000 plants per acre corn needs four pounds of nitrogen per acre per day for top yields. If plants look nitrogen-deficient at silking, they can still take up about 150

pounds between then and maturity, he said.

Tillage practices also affected yields, in work at the Quincy center. Where traffic pans exist, Wright said deep plowing to 10 inches or more has given yield increases, as has under-the-row subsoiling. No-till and minimum-till crops have done better in some years on deep sand which blows badly and dries out rapidly with in-row subsoiling.

He mentioned one study where corn, minimum-tilled into crimson clover, yielded between 150 and 175 bushels without additional nitrogen.

On the soil around Quincy he said periodic bottom plowing was needed to break up the shallow traffic pan and also to control weeds, insects and nematodes.

Close management of such factors is the key in producing 220 to 300 bushels of corn per acre yearly, he said.

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a strong commitment to agricultural service."

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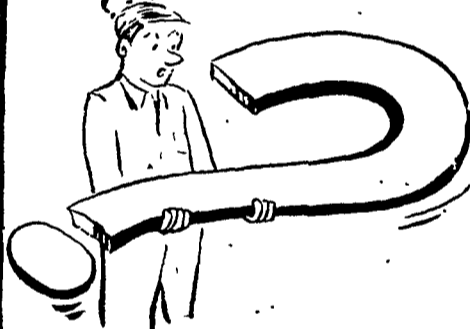
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