

K-Mag AGRI FACTS

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Balanced Fertilization For High-Yielding, High-Quality Cotton

- **Balancing potassium with other nutrients pays off in higher yields**

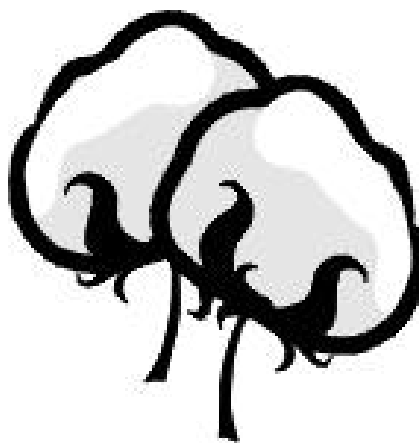
From the Southeast to California, amazing yield increases continue to be documented through balanced fertilization, particularly balancing potassium with other nutrients. In recent research in California, by adding large amounts of K to a potassium-depleted sandy soil, yields increased over 400 lb/A, or 81%. In Mississippi, the nutrient imbalance of potassium to phosphorus was the most limiting factor identified, accounting for almost half of the cotton yield variability over 5 years.

Without question, phosphorus and potassium are important nutrients in high-yielding, high-quality cotton. Yet a proper balance between all plant nutrients is important, especially as yields increase. For example, one of the major reasons for using K-Mag in cotton fertilization programs is to maintain a proper balance between K and Mg in the soil and in the plant tissues. As it has been shown, high-yielding cotton requires large quantities of K, especially with the newer cotton cultivars. But applications of K can restrict plant absorption of Mg and actually induce Mg deficiencies. So it is very important — especially under high yield conditions — to keep these nutrients in balance in order to maximize fertilizer efficiency.

The following table shows the nutrient utilization by cotton.

Yield	N	P ₂ O ₅	K ₂ O lb/A	Mg	S
1000 lb/A	149	51	112	32	28
1500 lb/A	180	63	126	35	30

Just like K and Mg, sulfur can be an important nutrient, especially on sandier soils. In recent years, sulfur deficiency symptoms were observed in Arkansas where cotton was growing on soils with sandy subsoils. Again, as cotton yields increase,



growers need to be especially aware of the importance of a balanced fertilization program.

Proper fertilization increases both cotton **yields and profits**. For example, tests in Mississippi, Arkansas and California have found that potassium increased yields and returned \$3.00 to \$9.00 for each \$1.00 spent for potassium fertilizer. Proper fertilization does pay!

Proper Fertilization Improves Quality

USDA-ARS researchers at Stoneville, Mississippi, reported that potassium fertilization reduced the incidence of fiber “white speck.” The condition occurs when young lint fibers die. The dead fibers will not take dye. This causes cloth spun and dyed from lint containing the dead fibers to have small, white specs throughout the material. Value of clothing or other products made from the material is reduced.

In addition USDA-ARS researchers found that with potassium deficiency:

- Leaf area index (LAI) of the plants was reduced by 18 percent.
- Fiber maturity was decreased by 4 percent.

- Lint turn-out was reduced by 2 percent.
- Lint yield was reduced by 105 lb/A.
- Fiber micronaire was lowered by 7 percent.

All of these factors result in lower yields of lower quality lint which costs producers lost yields and higher dockage for the low micronaire and strength of the fiber.

Summary

Proper fertilization of cotton makes sense and “cents” for cotton producers. As one cotton expert says about potassium fertilization of cotton, “When in doubt, put it out.”

Another thing scientists have been able to conclude from their extensive studies is that the odds are pretty strong you won't be able to achieve the proper nutrient balance quickly. It is a gradual process that requires a long-term commitment to correcting surface and subsoil problems.