

ABSTRACT

Seven fertilizer experiments were run on Arena Sands over 3 years to determine the effects of N, P, K and Mg on leaf area and leaf number per plant, yields of green and cured leaf, value of the cured leaf, and the levels of alkaloids, sugars, N, P, K, Ca and Mg in the leaf.

There were great differences between years which were largely attributable to seedling quality and weather conditions, and to a lesser extent, soil conditions.

The alkaloid content was undesirably high and increased up the plant. The sugar content was undesirably low; it increased from the lower to the middle leaves but decreased from the middle to the top leaves. As the plant grew, the concentrations of N and P diminished while Ca and Mg increased in lower leaves. Potassium and Ca content decreased and N increased up the plant (cured leaf results).

Lack of N reduced leaf area and maximum leaf number per plant, % alkaloid and N in the cured leaf. Nitrogen up to 40 lbs. per acre increased the yield of green and cured leaf and the level of Ca in the cured leaf but reduced quality.

Phosphorus had no significant effect on leaf area, leaf number, yield or quality although there were strong indications that 35 lbs. P/acre was optimum. Phosphorus lowered the sugar content but had no effect on alkaloid in the cured leaf. More than 40 lbs. P/acre increased P in the cured but not in the green leaf, and reduced K in the cured leaf.

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Lack of K reduced maximum leaf area per plant. Potassium up to 170 lbs./acre increased yields, quality and % sugar but had no effect on % alkaloid. Rates up to 125 lbs. K/acre increased K in the green and cured leaf, and reduced P in the green leaf but had no effect on P in the cured leaf. Potassium fertilizing also reduced Ca, Mg and N in the cured leaf.

Magnesium tended to decrease yield but improve quality, and increase sugar in the cured leaf. Magnesium fertilizing also increased P in the green leaf and reduced K in the cured leaf.

This work will long be remembered.

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