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Wick Applicator for Applying Mepiquat Chloride on Cotton: I. Rate Response of Wick and Spray Delivery Systems

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Typical applications of mepiquat chloride (1,1-dimethylpiperidinium chloride) to control excessive vegetative growth in cotton (*Gossypium hirsutum* L.) are broadcast- sprayed by ground or air. Mepiquat chloride also can be applied through a wick mounted to implements or sprayers that apply the chemical to only the top three to four nodes of the plant. In 1998 and 1999, the wick delivery system was compared with broadcast spray at five mepiquat chloride rates in eight environments in North Carolina. A linear reduction in plant height was observed over five increasing rates of mepiquat chloride delivered through a wick, while a quadratic response was observed for the spray, indicating mepiquat chloride better controls plant height when applied through a wick delivery system. Reductions in lint proportion were well-correlated with increasing mepiquat chloride rate delivered through a spray, but correlated poorly when delivered through a wick. Main-stem nodes, height-to-node ratios, nodes above white flower, lint yield, micronaire, fiber strength, and fiber length generally did not differ between delivery systems at equal rates of mepiquat chloride. Our results show that rate reductions of mepiquat chloride are possible with a wick delivery system, compared with a broadcast spray, with no detrimental effects on cotton. In situations where mepiquat chloride is needed, the wick delivery system may provide a less costly alternative to conventional broadcast sprays.