and 40 to 50% as topdressing at the fruit ripening stage, which is not consistent with the plant K uptake.

The timing of K application also usually depends on water management. Due to water shortage, most of the processing tomato in Xinjiang is drip-irrigated, which can affect nutrient distribution and movement in soil, and then influence K availability and plant uptake. Fu et al. (2005) observed that the movement of K with water was similar to N, which was distributed within 30 cm of the soil surface. So, in drip-irrigated systems most of the N (63 to 84%) and K (61 to 74%) were applied in the later stages from flowering to maturity (Wang et al., 2011).

The Right Place

Drip irrigated tomato is usually planted after plastic mulching. Since the irrigation pipelines are under the mulch between two rows of tomato plants, except for the pre-plant fertilizers applied before plastic mulching, the majority of N and K fertilizers are injected into the drip system via fertigation for delivery to the root system with water.

For the direct-seeded, furrow-irrigated processing tomato, fertilizers are usually side-dressed. In subsurface drip irrigation, the water is moving "from the inside out," whereas in furrow irrigation water moves in the opposite direction, carrying side-dressed N or K into the bed. This has implications on the placement of any banded fertilizer. Fertilizer bands located near the edge of the beds, which is an appropriate placement in furrow irrigation, is not effective in the drip-irrigation system.

Other Practices

The nutrient content in tomato fruit depends largely on genetic and environmental factors during the fruit ripening stage (Javanmardi and Kubota, 2008). Consistency and color parameters of tomato fruits was positively influenced by high water availability for plants, while the ascorbic acid content was positively affected by less frequent irrigations (Mitchell et al., 1991). Favati et al. (2009) indicated that extending irrigation intervals and limiting irrigation volume to the later part of the tomato crop cycle appeared to be the best management practice to optimize yield and nutritional quality of processing tomato.

With drip irrigation, we can precisely match the crop's nutrient needs using the right source and right rate so that high production goals can be achieved. Future extension efforts must focus on popularizing 4R Nutrient Stewardship in processing tomato production as a means of optimizing production and nutrient use efficiency. BC

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