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## Tapered drip laterals and manifolds in flat and rectangular irrigation units

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Multiple-diameter laterals and manifolds reduce the total cost in microirrigation systems, however, the length of each sublateral should be determined carefully to assure appropriate performance and uniformity of emitter flow rates. The most accurate method is numerical trial and error, which is time-consuming. Many research efforts have been made to propose simple analytical design procedures. By using the power-law form of the Darcy-Weisbach formula, and equal emitters spacing for the sublaterals, Sadeghi et al. (2016) extended a previously introduced design solution for one-diameter laterals to tapered laterals. Recently, a simplified procedure to design dual-diameter drip laterals has been introduced (Baiamonte and Palermo, 2022), providing relative errors in pressure heads less than 0.5%, and allowing to set different Hazen-Williams coefficients, flow rates, and emitter interspaces for each sublateral. Moreover, this analytical procedure easily allows the detection of the required commercial emitter characteristics. The objective of this work is to extend the aforementioned solution to rectangular irrigation units laid on flat fields.