BÖLÜM 9

TOPRAK REAKSİYONU

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Toprak reaksiyonu (pH), toprak çözeltisinin asit, alkali veya nötr oluşunun bir ölçüsü olarak ifade edilmektedir (1). Toprak reaksiyonu tanımlanırken toprak pH'sı olarak ifade edilmekte olup "potential of H veya power of H" terimlerinden türetilmiştir (2). Toprak pH'sı, toprakta gerçekleşen biyojoekimyasal süreçler üzerinde muazzam bir etkiye sahiptir. Bu nedenle, toprak pH'sı bitki büyümesini ve biyokütle verimini etkileyen toprağın sayısız biyolojik (örn. mineralizasyon veya immobilizasyon), kimyasal (örn. adsorpsiyon veya desorpsiyon) ve fiziksel özellikleri (örn. flokülasyon veya deflokülasyon) ile süreçlerini etkileyen "ana toprak değişkeni" olarak tanımlanır (3, 4, 5). Essington (6) ise toprakta meydana gelen çeşitli kimyasal reaksiyonların, proton kullanımını veya salınımını içerdiğinden ve proton aktivitesinin birçok kimyasal süreci kontrol eden bir faktör olduğundan toprak çözeltisinin pH'sı ana kimyasal değişken olarak kabul edildiğini bildirmiştir.

Sulu bir çözeltinin pH'sı çözeltideki iyon konsantrasyonunun tersinin logaritması olarak tanımlanmaktadır (6, 7). Aynı zamanda pOH'da iyon aktivitesinin negatif logaritmasıdır (3). Çözeltideki H^+ iyonlarının konsantrasyonu g L^{-1} şeklinde ifade edilir (8).

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DOI: xxxx

şimine neden olur. Tipik olarak, kökler kalın ve bodur hale gelirken ince köklerin ise gelişimi çok az olur (46). Bhuyan ve ark., (48) toprakların pH'sı düştükçe proton (H^+) rizotoksisitesi, çeşitli bitkilerde kök büyümesini durdurduğunu ve besin bulunabilirliğini azaltarak, plazma membran H^+-ATPaz aktivitesini ve metabolik süreci bozarak, reaktif oksijen türleri (ROS) üretip, antioksidan savunma sistemini altüst ettiğini ve toksik etki gösterdiğini belirtmişlerdir. Dış büyüme ortamındaki H^+ iyonlarının yüksek aktivitesi, hücrenin sitoplazmik pH'ı koruma yeteneğini aşar ve bitkilerin normal büyümesini durdurur. Bitki yetiştirme ortamındaki asidik koşulların ayrıca bitkinin su alımını da bozduğu bildirmiştir (48).

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