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Vegetative Reproduction Potential of Common Purslane (*Portulaca oleracea*)

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Common purslane is a widely distributed summer annual weed. It can reproduce vegetatively from stem cuttings by forming adventitious roots from the cut end of the stem. Apart from large stem cuttings, it is unclear whether purslane cuttings of various plant tissues differ in their ability to reproduce asexually. The objective of the study was to determine the survival and asexual reproductive capacity of purslane cuttings. A greenhouse study evaluated three cuttings from two stem locations and a leaf from one stem location for their survival and new leaf growth after 21 d. Cuttings included a stem node with either leaves attached or removed and a stem internode, all from proximal and distal stem locations relative to the root crown, and a leaf from a proximal stem node. Stem node cuttings had ≥ 70% survival, whereas internodes had 0% survival. Nodes with leaves attached further increased survival by > 20%. The location of the cutting on the main stem did not affect survival. Only noded cuttings produced new leaves, and cuttings with leaves attached produced the most new leaves. For purslane to vegetatively reproduce, nodes on stem cuttings are required, and the presence of leaves on the cutting improves the survival and new leaf growth of cuttings. Therefore, mechanical methods of weed control that chop and spread purslane leaves and stems might not be effective and could ultimately increase weed populations.
Nomenclature: Common purslane, *Portulaca oleracea* L. POROL.
Key words: Adventitious roots, weed control, stem cuttings, summer annual, asexual reproduction.

La *Portulaca oleracea* es una maleza anual de verano ampliamente diseminada. Se puede reproducir vegetativamente a partir de cortes de tallos o esquejes formando raíces adventicias al extremo del corte del tallo. Con excepción de tallos muy grandes, no está claro si cortes de *P. oleracea* tomados de varios tejidos de la planta difieren en sus habilidades de reproducción asexual. El objetivo de este estudio fue determinar la supervivencia y la capacidad reproductiva asexual de cortes de tallos de *P. oleracea*. Un estudio de invernadero evalúo tres cortes tomados de dos sitios diferentes en el tallo y de un sitio con hoja, en cuanto a su supervivencia y nuevo crecimiento de hojas después de 21 días. Los cortes incluyeron un tallo con nudo ya sea con hojas o removidas, un entrenudo, todo con tallos con sitios proximales y distales relativo a la corona radical, y una hoja en un nudo proximal en un tallo. Los cortes de los tallos con nudo tuvieron ≥70% de supervivencia, mientras que los entrenudos tuvieron 0% de supervivencia. Los nudos con hojas tuvieron una supervivencia adicional >20%. La ubicación de los cortes en el tallo principal no afectó la supervivencia. Únicamente los cortes con nudo produjeron nuevas hojas y los cortes con hojas produjeron el mayor número de nuevas hojas. Para que *P. oleracea* se reproduzca vegetativamente se requieren nudos en los cortes o esquejes, y la presencia de hojas en los esquejes mejora la supervivencia y el crecimiento de nuevas hojas. Por lo tanto, los métodos mecánicos de control de maleza que cortan y dispersan las hojas y tallos de *P. oleracea* podrían no ser efectivos y pueden al final, incrementar su población.

Common purslane (referred to hereafter as purslane) is a succulent summer annual weed. The origin of purslane is uncertain but has been reported as native to South America (Rydberg 1932), North Africa (Holm et al. 1977), and western Asia and Europe (Mitich 1997). Although purslane was thought to have been imported by post-Columbian immigrants (Vengris et al. 1972), seeds and pollen have been found in the sediment of Crawford Lake, Ontario, from AD 1350, and seeds from southern Louisiana, Illinois, and Kentucky date from 1000 BC to AD 750 (Kaplan 1973; Walker 1936; Watson 1969). Within North America, the spread of purslane is attributed, in part, to American Indians (Chapman et al. 1974).

Purslane has a prostrate growth habit, a thick taproot, and abundant fibrous secondary roots. Leaves are alternate, often clustered around the branch tip, succulent, with smooth margins; stems are glabrous, succulent, often reddish with primary and secondary branching, forming a mat up to 60 cm in diameter. Stems and leaves both contain a watery sap. Purslane produces small yellow-petaled flowers that only open on sunny mornings producing spherical, many-seeded capsules that open around the middle with the top coming off like a lid (Mitich 1997; Miyanishi and Cavers 1980). Purslane produces rapid vegetative growth under a long-day photoperiod and flowers within a month of germination; seeds ripen within 2 wk of flowering (Holm et al. 1977; Miyanishi and Cavers 1980). A single purslane plant can produce > 100,000 seeds in a growing season (Holm 1977; Matthews et al. 1993; Zimmerman 1976). Purslane will continue flowering under favorable conditions until the first killing frost in fall (Vengris et al. 1972), and plants growing in the tropics will senesce naturally after 3 to 4 mo (Singh 1973). Optimal seed germination occurs at air temperatures > 30 C and poor germination at temperatures < 24 C (Miyanishi and Cavers 1980; Zimmerman 1976). Purslane is highly adaptive, growing in temperate and tropical environments from 58° N latitude in Alberta, Canada, to 40° S latitude (Matthews et al. 1993) and has been found on six continents and in 81 different countries (Holm et al. 1977). Gorske et al. (1979) classified 44 ecotypes of *Portulaca oleracea* from 18 different countries based on 36 plant characteristics; as a result, the plants were differentiated into four major groups: cool

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