

Weed seed production

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As summer approaches summer annual weeds (e.g pigweed species, puncturevine, barnyardgrass, Russian thistle, and kochia) are beginning to flower and produce seeds. Most weed species are prolific seed manufacturers, in some cases producing more than 1 million seeds/plant (see table 1 for more information). These seeds produced are eventually deposited either onto the soil adjacent to the parent plant or transported to another area where they wait for the adequate conditions to germinate and grow.

Prevention of weed seed production is an important weed management principle as it can dramatically reduce the number of seeds present in an area. The term used to describe the collection seeds present in the soil is the seed bank. This bank is an accumulation of potentially viable seeds that has accumulated over many years, and is the major source of future weed populations within the area. Seed banks numbers are increased by two methods, 1) by production of new seeds from plants growing in the area and 2) importation of seeds into the area from other dispersal agents (e.g. animals, people, tractors, wind, irrigation water). Weed seed banks can be reduced by preventing introduction of new seeds to the soil and by conducting management practices that promote seed death in the soil. Although seeds can persist in the soil seed bank for many years (see table 1), the majority of seeds in the seed bank will decline rapidly over the first few years, with only a few seeds surviving for extended periods. For example, Burnside et al. (1986) found keeping an area weed free for 5 years reduced weed seed bank numbers by 95%. However, in the 6th year of this study researchers allowed weed species to reproduce resulting in a replenishment of the weed seed to 90% of their levels 6 years ago (Burnside et al. 1986). This research demonstrates how effective preventing weeds from producing seeds and preventing new seeds from being deposited into the area can reduce the weed seeds present. This can result in reduced resources that need to be dedicated to weed management, as fewer weed species are present. Remember that continued management ***must*** occur as replenishment of the weed seed bank can occur rapidly (within a season). So make sure to remove the weed species ***before*** they produce seeds, the hard work and diligence will pay off !!

Table 1. Seed production capability of several agronomic weed species.¹

Weed species	Number of seeds produced per plant ²	Longevity of seeds in soil (years) ³
Barnyardgrass	700,000	5
Common purslane	1,800,000	20-25
Velvetleaf	48,000	15-40 +
Puncturevine	100,000	15-20
Shepardspurse	150,000	15-35
Eastern black nightshade	825,000	40 +

¹ Adapted from the California Weed Science Society's Principles of Weed control Third Edition. 2002. Thomson Publications, Fresno CA.

² Seed production in the absence of significant competition.

³ Seed survival in most species declines rapidly within the first few years, with only a small percentage of seed surviving for extended periods.

Literature cited:

Burnside, O. C., R. S. Moomaw, F. W. Roeth, G. A. Wicks, and R. G. Wilson. 1986. Weed seed demise in soil in weed-free corn (*Zea mays*) production across Nebraska. *Weed Science* 34:248-251.