

Poa annua
Annual bluegrass
Poaceae

Poa annua is an annual or biennial grass species that is abundant worldwide. It is found at low elevations in California, especially near the coast, and will flower continuously throughout the year when moisture permits. It is thought to be native to Europe. *Poa annua* is tetraploid; while it is widespread in all temperate regions throughout the world, its putative diploid ancestors are restricted to parts of Europe (Darmency and Gasquez 1997). *Poa annua* exhibits wide morphological variability including annual erect and perennial prostrate ecotypes (Darmency et al., 1992). Sterile triploid plants have been reported in areas of Europe where populations of *P. annua* and *P. supina* co-occur (Duckert-Henriod and Favarger 1987).

Poa annua is a common turfgrass species in golf turf; as such, it is currently being bred to produce more seeds per panicle and have greater pest resistance (Johnson and White, 1997a). The species is usually considered to be annual because of characteristics including continuous flowering throughout a growing season. However, a range of growth and flowering habits actually exists, including true annuals, winter annuals, biennials, and perennials. True annual genotypes appear to be rare (based on Johnson and White's (1997a) survey of *P. annua* genotypes). Vernalization may be the primary floral induction mechanism in this species. Ten to twelve weeks of cold temperatures (4°C) was found by Johnson and White (1997a) to induce a range of *P. annua* genotypes to flower; those plants that received less than ten weeks of cold treatment formed fewer, less fertile, and more deformed flowers.

The annual form of *P. annua* exhibits a winter annual life cycle, dying out during warm and dry seasons. However, perennial populations are also common. Many of these perennial types flower only in the spring (May-June), then persist and are vegetative the remainder of the year (Johnson and White, 1997b). The species is predominantly self-pollinated. It is a grazing-tolerant grass; after the removal of herbivores, cover decreases. In fact, large herbivores (e.g., reindeer) have been implicated in the replacement of species on the sub-Antarctic island of South Georgia by *P. annua* (Chown and Block 1997).

Because annual bluegrass invades golf courses and is considered an undesirable turfgrass, there are a number of control methods that have been tested in greenhouse and field experiments which are briefly reviewed below. It is important to keep in mind, however, that results from these intensively managed environments (i.e., regularly mowed and fertilized) cannot be directly extrapolated to natural systems.

Colletotrichum spp. cause crown rotting anthracnose on *P. annua* (Horvath and Vargas, 1997). Knott (1996) reported that a combination of the herbicides monolinuron and pendimethalin (at a rate of 560 + 660 g a.i. ha⁻¹, respectively) were nearly 100% effective in controlling *P. annua*. In a study of the efficacy of household compost, Ligneau and Watt (1995) found that a 3-cm layer of household compost completely

suppressed emergence of *P. annua*. Leachate from the compost suppressed emergence by 95%.

Xanthomonas campestris pv. *poannua* is a facultative parasite causing bacterial wilt of annual bluegrass. However, its efficacy in controlling *P. annua* may be limited, with infection rates as low as 11% in field studies (Zhou and Neal 1995). Johnson and Murphy (1996) found that plant growth regulators (paclobutrazol and flurprimidol) only mildly suppressed the perennial subspecies of *P. annua*. However, a root- and crown-infecting fungus, *Magnaporthe poae*, is one of the most destructive pathogens of annual bluegrass, causing “summer patch” (Melvin et al., 1993). Additionally, Crutchfield and Potter (1995) provided evidence that root feeding larvae of the Japanese beetle (*Popilia japonica* Newman) can significantly reduce root biomass of annual bluegrass.

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