

SELECTION OF A NEW BALL CLOVER VARIETY

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Background. Ball clover (*Trifolium nigrescens* Viv.) is a cool-season annual clover that has increased in popularity in recent years. It has small ovate leaflets and small white to yellowish-white flowers. If not cut or grazed, stems can grow up to 3 feet and are prostrate to partially erect, often forming a thick mat. This prevents using ball clover for hay and makes harvesting seed difficult unless it is grazed until flowering. Seed are very small (approximately 1,000,000 per lb) with a recommended seeding rate of only 2 to 3 lb/acre. Ball clover has excellent reseeding ability and this is one of the main reasons for its popularity. Hard seed content is about 60% and it will produce some flowers even under close grazing. Ball clover does best on fine sandy loam and clay loam soils but has done well on relatively level sandy soils near creek or river bottoms that maintain good soil moisture. It does not have good drought tolerance and growth will be reduced in a hot, dry spring. It prefers a soil pH of 6 or higher. Ball clover can tolerate wet soils but not as well as white clover. It is medium maturity, flowering about 2 weeks later than crimson with yields similar or slightly less than crimson. Ball clover does have a high bloat potential and should be managed accordingly. Only common ball clover seed is currently available.

Research Findings. A selection program to develop a ball clover variety that is more uniform and later maturing than common ball was initiated 8 years ago. In August 1998, Dr. Gary Pederson, plant breeder with ARS-USDA at Mississippi State, provided 100 seed of 69 half-sib families of ball clover taken from single plants of Segrest ball clover (no longer available), 9 selections of common ball clover, and 57 ball clover plant introductions (PI). Fifty seed of each entry were planted in 5 ft. rows with 3 ft. between rows on October 26, 1998 at the Sam Houston State University research ranch near Huntsville, Texas. On April 27, 1999 plants were rated for growth (1=poor growth, 5=excellent growth) and maturity (1=early, 5=late). Thirteen lines had ratings of 5 for both growth and maturity. Remnant seed of these 13 lines were planted in the greenhouse in October 28, 1999. On February 7, 2000 four large leaf types (lines 90099, 90103, 90112, and 90113) were selected and transplanted in the field and allowed to cross pollinate. For 2 years, seed were planted directly in the field in autumn to increase seed and remove off-type plants.

In the fall of 2004, 98 plants of common ball and 196 plants of the selected ball seedlings were transplanted on 3 ft. centers at the TAMU Agriculture Research and Extension Center at Overton. In the spring plants were rated weekly for flowering stage (0 = vegetative, 1 = bud, 2 =

first color, 3 = early bloom, 4 = mid-bloom, and 5 = full bloom) and length of the longest stem at full bloom. The average date for full bloom was April 29 for common ball and May 12 for the selected ball (Fig. 1). Longest stem length was 31 inches (79 cm) for common ball and 25 inches (65 cm) for the selected ball clover. The length and width of the terminal leaflet of the leaf at the third node was recorded on 20 random plants. Common ball clover leaflets were 0.8 inches (20.5 mm) long and 0.69 inches (17.5 mm) wide and the selected ball clover leaflets were 1.54 inches (39.2 mm) long and 1.14 inches (29 mm) wide. Recent attempts to compare forage production across the southeastern US have been unsuccessful because of drought.

Application. A ball clover selection at Overton is 2 weeks later maturing and has terminal leaflets twice as long and 60 % wider than common ball clover. Future work will focus on comparisons of forage distribution.

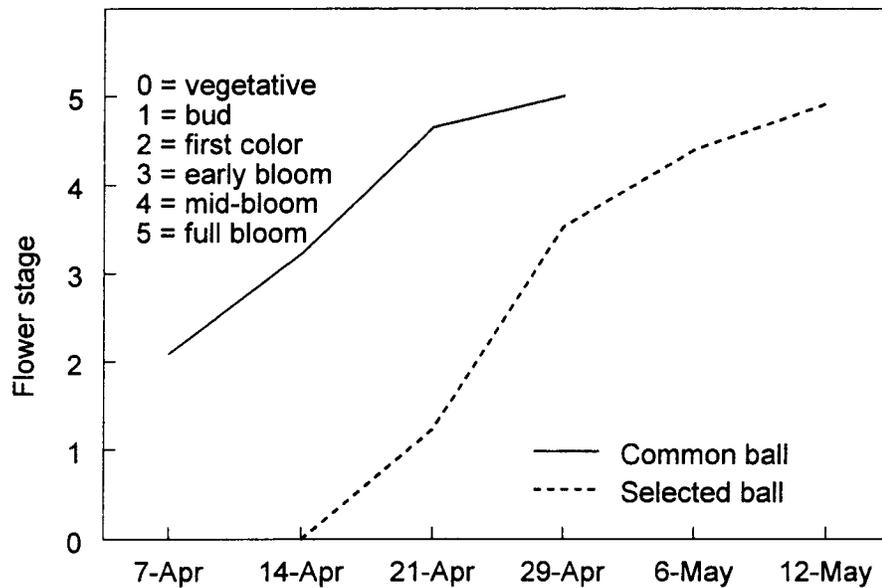


Fig. 1. Weekly ratings of flower stage of common and selected ball clovers at Overton.