BIOLOGY AND ECOLOGY OF YELLOW UNICORN-PLANT (*IBICELLA LUTEA*)

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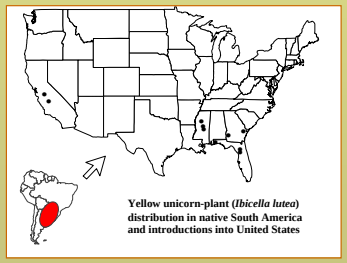
INTRODUCTION

Yellow unicorn-plant [*Ibicella lutea* (Lindl.) Van Eselt.] [= *Proboscidea lutea* (Lindl.) Sapf] is a invasive weed native to Argentina, Brazil, Paraguay, and Uruguay. It is a member of the family Martyniaceae (=Pedaliaceae) and kin to devil's-claw [*Proboscidea louisianica* (Mill.) Thellung].

Yellow Unicorn-plant

Devil's Claw

Yellow unicorn-plant has spread into Australia, where it is considered a noxious weed (Parsons and Cuthbertson 1992). The earliest records of yellow unicorn-plant in the United States are from agricultural fields in the Sacramento and San Joaquin valleys of California over 70 years ago (Hickman 1993). More recently, yellow unicorn-plant was reported from three counties in Florida (Alachua, Escambia, and Union) (Wunderlin 1998). In 2000, yellow unicorn-plant was detected near Carthage, Leake County, Mississippi, in a BT corn field and near Grenada, Grenada County, Mississippi, in an area over seeded with grass to prevent erosion following clear-cut timber harvest. Yellow unicorn-plant was found in Quitman and Bullock counties, Georgia, in 2001 and 2002, respectively. In 2003, yellow unicorn-plant was found in a Roundup Ready cotton field near Walnut Grove, Leake County, Mississippi, about 15 km from the initial location in Leake County.



Yellow unicorn-plant (*Ibicella lutea*) distribution in native South America and introductions into United States

Seedlings and young plants of yellow unicorn-plant and devil's-claw are similar. The leaves and stems of both species are covered with glandular hairs and when the leaves and stems are crushed, a sticky and foul smelling substance is exuded. Yellow unicorn-plant flowers are bright yellow with dark yellow spots, while devil's-claw flowers are pinkish-white to light lavender with yellow and purple spots. Immature pods of both species are contained in a green fleshy covering with sticky, glandular hairs. At maturation, the fleshy covering dries, splits, and peels back exposing a woody two-horned (clawed), curved-beaked seed pod. Yellow unicorn-plant fruit are spiny, and the spines are similar to those on jimsonweed (*Datura stramonium* L.) capsules, while those of devil's claw

are alternating smooth and rough. This family of plants possesses one of the world's most durable and ingenious hitchhikers with claws on the pods that are adapted for attaching on the hooves and fur of large grazing animals (Wayne's Word 1999).

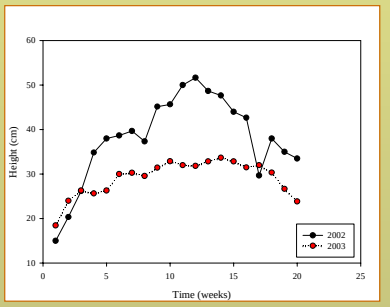
MATERIALS AND METHODS

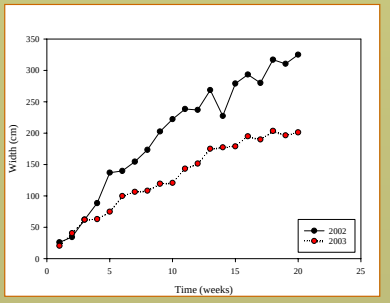
Experiments were conducted in a containment area at the Southern Weed Science Research Unit Farm at Stoneville, Mississippi, during 2001, 2002, and 2003 to study the biology and ecology of yellow unicorn-plant. Seedling plants were started in the greenhouse in March of each year (2001-2003) in 10 cm-diameter pots in a mixture of a Bosket sandy loam (Mollic Hapludalfs) soil and Jiffy Mix at 50/50 v/v. The greenhouse was maintained at temperatures of 20/30 C night/day. The field soil was a Dundee silt loam (fine-silty, mixed thermic Aeric Ochraqualf) soil with pH 6.7, 1% organic matter, a cec of 15 cmol/kg, and soil textural fractions of 26% sand, 56% silt, and 18% clay. Yellow unicorn-plant seedlings were transplanted in the field each year in April. Yellow unicorn-plant seedlings were transplanted into an area in 2001 that was tilled, fertilized, and irrigated and data were recorded for maximum growth (height and width) and number of fruit produced at frost (Nov). In 2002 and 2003, plants were transplanted into areas that were tilled the previous fall and that were not irrigated or fertilized. Data on growth (height and width), leaf size, and number of mature fruit were recorded weekly during 2002 and 2003 until frost (Nov).

RESULTS

Because the area was tilled and fertilized prior to transplanting and the area was irrigated several times during the summer in 2001, ideal growth conditions were obtained and the largest of three yellow unicorn-plants plants was 5 m wide by frost and produced 200 pods. These preliminary data demonstrate that yellow unicorn-plants could become very competitive and produce large numbers of seeds annually.

Flowering initiated at the six-leaf stage and continued until frost each year (2001-2003). Plant height was greatest during mid summer each year and plant width increased until frost each year. Maximum leaf size seemed to be dependent on environmental conditions, with larger leaves during periods of adequate moisture and smaller leaves during periods of drought each year (data not shown). The nearly oval leaves averaged 18 cm diameter in 2002 to 14 cm diameter in 2003. Yellow unicorn-plants produced an average of 147 pods/plant annually (200, 173, and 68 pods for 2001, 2002, and 2003, respectively) (data not show). Pods, including the horned beaks, were 11 to 21 cm long and averaged 110 seed per pod (data not shown).





Yellow unicorn-plant (*Ibicella lutea*) growth (height and width) at Stoneville, MS, during 2002 and 2003.

Yellow unicorn-plant seeds are oblong, 0.6 to 0.9 cm long, 0.4 to 0.5 cm wide, and covered by a black rough seed coat. Because the seed coat texture and color are similar to rat pellets, yellow unicorn-plant seed could be easily overlooked in crop seeds.

DISCUSSION

Based on our observations and field research, yellow unicorn-plant has the potential to become a serious weed problem in row crops, pastures, clear-cut forested, and open natural areas in the southern United States. The size and habit of this species suggest that it may be competitive with pasture and row crops similar to devil's-claw. Devil's-claw reduced cotton (*Gossypium hirsutum* L.) yields by as much as 60 to 74% (Mercer et al. 1987) and by as much as 5% for each week of weed interference (Riffle et al. 1988) from distances up to 0.5 m by season end (Mercer et al. 1990). The average number of pods and seed/pod produced by yellow unicorn-plant annually are slightly larger than those reported for devil's-claw (122 pods/plant and 71 seeds/pod) (Riffle et al. 1989). Early detection and effective control methods are essential to prevent additional yellow unicorn-plant establishment and spread in the southern United States.

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