THE UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
TUCSON PLANT MATERIALS CENTER
TUCSON, ARIZONA

NOTICE OF RELEASE OF BATAMOTE GERMPLASM DESERT ZINNIA

The Natural Resources Conservation Service, U.S. Department of Agriculture announces the naming and release of Batamote desert zinnia (*Zinnia acerosa* (DC.) A. Gray). Batamote desert zinnia has been assigned the NRCS Accession number 9094064.

Batamote germplasm is released as a selected class of certified seed. This alternative release procedure is justified by the lack of existing commercial sources of desert zinnia. Propagation material of this species is needed for ecosystem restoration and enhancement in southern Arizona. The potential for immediate use is high. There is currently no released germplasm of desert zinnia.

Species:	*Zinnia acerosa* (DC.) A. Gray
Common Name:	desert zinnia
Plant Symbol:	ZIAC
Accession Numbers:	9094064

Collection Site Information

Batamote germplasm is a composite of 9 accessions collected from native desert zinnia stands in southeastern Arizona, Major Land Resource Area 41(MLRA 41) (Table 1). MLRA 41 corresponds with Level 3 Ecoregion 79. Plant materials were collected from distinct locations in southeastern Arizona to develop a population of desert zinnia with a broad genetic base and adaptation to the range of conditions in southeastern Arizona (Fig. 1).

Figure 1. Collection locations of Batamote Germplasm desert zinnia.

Table 1. Accession number and origin of collections for Batamote Germplasm desert zinnia

Accession Number	Collection Site	Landmark
9092477	-111.37720 31.81910	Palo Alto Ranch
9092478	-109.93300 31.67770	near Thompson Tank
9092479	-110.83260 31.91180	Santa Rita Experimental Range
9092483	-110.09340 31.34390	near Ladd field planting
9092614	-111.17110 31.74410	near the intersection of Batamote and Arivaca Roads
9092632	-110.29420 32.07920	Pomerene Road
9092662	-110.10110 32.62140	Klondyke Road near Bonita
9092683	-109.39920 31.35080	Geronimo Trail (mile marker 5)
9064149	-111.18330 32.25000	Saguaro National Park West

Description

Desert zinna is a small shrub-like perennial forb. Desert zinnia typically grows 10.2 to 25.4 cm tall (4 to 10 inches) with numerous branches and scores of narrow leaves 1.9 to 3.8 cm (0.75 to 1.5 inches) long. The flowers have 5 to 7 white to off-white ray flowers and 8 to 13 yellow disc flowers. The ray flowers are lightly dentate at the tips. (Torres, 1963 and Kearney and Pebbles, 1969). Desert zinnia flowers from spring to fall. It is found on rocky open slopes and flats, often occurring on calcareous soils. Desert zinnia is completely self-incompatible with a chromosome number of n=10 (Torres, 1962). Batamote germplasm desert zinnia is not distinguishable from in situ populations of desert zinnia occurring in southern Arizona.

Method of Selection

Batamote germplasm was developed from collections made at nine sites within southeastern Arizona (Table 1). Accessions were planted in a 0.2 acre field at the Tucson Plant Materials Center in September 2005. Plugs of each accession were planted into a randomized complete block design with 4 replicates. Visual evaluations revealed no discernible differences among accessions for flowering dates, number of flowers, size or vigor. The assemblage contained no observable detrimental characteristics, therefore no selection was made. Efforts were made to avoid direct and indirect selection to maintain the genetic diversity of the assemblage. Seed was hand harvested from each plant within the plot. Seed from this harvest was compiled to produce the composite population of Batamote germplasm. Due to hybridization that may occur within the assemblage it should not be assumed that this germplasm may be reproduced by repeating collections from the original collection sites. Desert zinnia is self-incompatible (Torres, 1962), therefore seed produced from the assemblage is the product of crossing of plants from all

nine collection sites. Therefore, breeder seed is not maintained as originally released (Fehr, 1987). Composite populations are not simply mixtures of the genotypes present in the field, but are expected to have a continuosly changing genetic makeup (Fehr, 1987). When a composite cross population is to be used for restoration the earliest filial generation available should be used. This allows successive generations of the segregating population to be produced in a specific environment, allowing natural selection to become the principal component acting to produce genetic change.

By producing composite cross populations from a defined land resource area we hope to match the abiotic and biotic factors of the area of suggested use such as elevation, soil characteristics, climate regime, pathogens and predators. Composite cross populations respond dynamically to complex natural selection from abiotic and biotic stresses (Phillips and Wolfe, 2005). By avoiding making selections for traits such as vegetative vigor or high productivity a product is produced that does not disrupt the ecological interaction between species or the gene pools of local plant communities. We also hope to produce a product with greater sustainability in the landscape.

Ecological Considerations

Batamote germplasm is a composite of naturally occurring germplasm and has undergone no purposeful selection. Batamote germplasm does not differ significantly in rate of spread, seed production, or vigor from naturally occurring desert zinnia. Batamote germplasm desert zinnia was determined "OK to release" when evaluated through the "Worksheet for Conducting and Environmental Evaluation of NRCS Plant Releases".

Anticipated Conservation Use

The potential uses of Batamote germplasm desert zinnia include restoration of disturbed areas, wildlife habitat improvement and for increasing plant diversity on lands in southeastern Arizona (MLRA 41). Batamote germplasm desert zinnia reproduces through seed. This release provides a forb for use in conservation plantings.

Anticipated Area of Adaptation

Batamote germplasm desert zinnia was developed for use in southeastern Arizona (MLRA 41).

Availability of Plant Materials

Seed production will be maintained by the USDA-NRCS Tucson Plant Materials Center. Limited quantities of seed are available to seed producers for increase and to other interested parties, as available.

References

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