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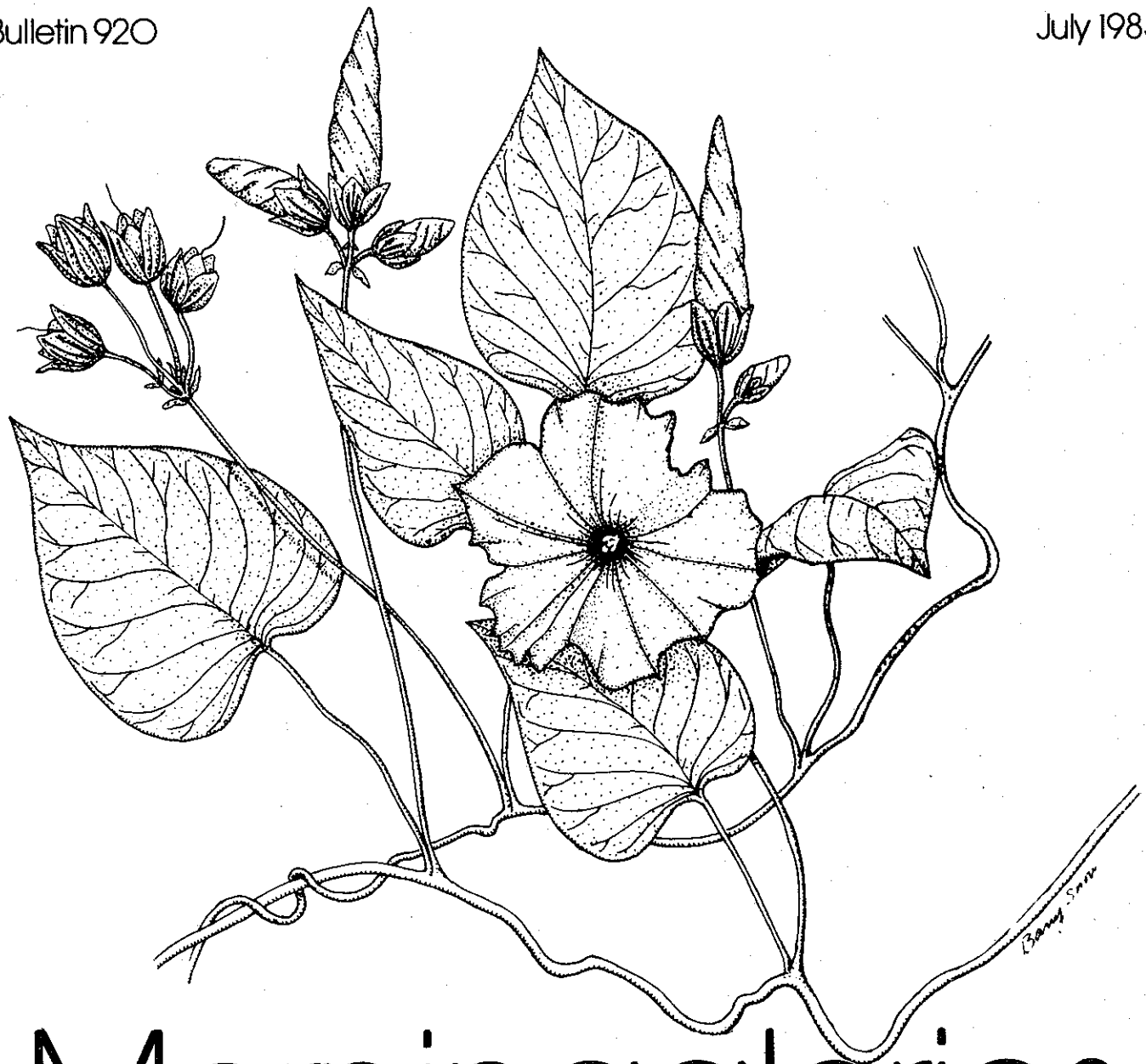

Morningglories in the Delta of Mississippi

Southern Weed Science Laboratory
ARS, USDA, Stoneville Mississippi
in cooperation with

MAFES MISSISSIPPI AGRICULTURAL & FORESTRY EXPERIMENT STATION
R. RODNEY FOIL, DIRECTOR MISSISSIPPI STATE, MS 39762

Mississippi State University
James D. McComas, President Louis N. Wise, Vice President

C. Dennis Elmore, Plant Physiologist, ARS, USDA
and
Sidney McDaniel, Professor, Department of
Biological Sciences,
Mississippi State University

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Morningglories are common and troublesome weeds in most crops in Mississippi. They are increasing in economic importance throughout the state, regardless of the crop. They reduce crop yields, increase the difficulty of harvesting, reduce the quality of harvested produce and greatly increase the cost of production.

Many producers have considered morningglories to be a single weed, but there are many different morningglories. Several different species of morningglories are difficult to identify accurately, especially before flowers are produced.

Accurate identification is more important at present because certain widely used herbicides will provide effective control of some morningglory species but are ineffective on others. For example, bentazon applied postemergence in soybeans is highly effective for control of smallflower morningglory and palmleaf morningglory but is ineffective for control of entireleaf, ivyleaf, pitted and tall morningglory and purple moonflower (also a member of the morningglory family). Metribuzin applied preemergence is highly effective for control of smallflower morningglory and moderately effective for the control of pitted morningglory and purple moonflower but is ineffective for control of entireleaf, ivyleaf, palmleaf and tall morningglory.

Because of the increasing importance of the morningglories, we have developed criteria for identifying the species that may occur in Mississippi and have conducted a survey of the Delta of Mississippi for individual morningglory species. Our objective was to determine the level of infestation in cotton and soybean fields by each species of morningglory found.

Procedure

The 100 random sites selected for the field survey were apportioned among the counties according to each county's planted acreages of cotton and soybeans. The sites were determined by randomly selecting a page from the aerial photographs of the county soil survey. The site was then randomly selected from a grid placed over the photograph of the selected page. Lakes, forests and other uncultivated sites were not included in the survey. Alternate sites were selected if land use had changed since the aerial photographs were taken (eg, rice paddy or catfish pond).

The predetermined sites were surveyed in late August 1981 and late August-early September 1982. Fields were sampled by a walking survey. Data recorded for each site included crop planted, presence of morningglories by species and an abundance rating by species according to the following scale:

0 = none present
1 = rare, 1 to a few plants seen (< 1% area coverage)
2 = infrequent, more than 1 (1-10% area coverage)
3 = occasional (10-20% area coverage)
4 = common (20-50% area coverage)
5 = abundant (> 50% area coverage).

Two observers made independent ratings and assigned rating was by consensus. A few sites were visited by a single observer, but only after considerable experience had been achieved.

Results and Discussion

Six species of morningglories were found in our survey, but all six were not found each year. Species found were pitted morningglory, ivyleaf[1] and entireleaf[1] morningglory, palmleaf morningglory, bigroot morningglory, smallflower morningglory and and purple moonflower. Three other species (tall morningglory, cotton morningglory and cypress vine morningglory) have been seen in the Delta; however, these species were not seen in any of the fields sampled.

Pitted morningglory was found in the most fields during the two-year survey (Table 1). Pitted morningglory and *hederacea* (ivyleaf and entireleaf) were equally frequent in 1981. Ivyleaf and entireleaf decreased in frequency in 1982 (only 47% of the fields had these morningglories), while occurrence of pitted morningglory increased (to 67%).

Soybean fields had more morningglories than did cotton fields. Pitted morningglory occurred in about 50% of the cotton fields and 75% of the soybean fields in both years. Both

[1]Ivyleaf and entireleaf are varieties of the same species, *Ipomoea hederacea*, (L.) Jacq.

Table 1. Frequency of occurrence and severity of infestation of different morningglory species in cotton and soybean fields in the Delta of Mississippi in 1981-82.

Crop	No. of Fields	Morningglory species																	
		Pitted			Hederacea[1]			Palmleaf			Bigroot			Purple moonflower			Smallflower		
		Rating																	
		0	1	>1	0	1	>1	0	1	>1	0	1	>1	0	1	>1	0	1	>1
		% of fields																	
		1981																	
Cotton	43	53	12	35	60	15	23[2]	93	0	7	79	12	9	100	0	0	100	0	0
Soybean	57	25	21	54	18	37	46	61	21	18	86	11	4	100	0	0	96	4	0
Total	100	37	17	46	36	28	36	75	12	13	83	11	6	100	0	0	98	2	0
		1982																	
Cotton	35	49	23	28	77	9	14	97	3	0	91	0	9	100	0	0	100	0	0
Soybean	65	25	18	57	40	20	40	69	11	20	98	0	2	98	0	2	97	3	0
Total	100	33	20	47	53	16	31	79	8	13	96	0	4	99	0	1	98	2	0

[1] Includes both ivyleaf and entireleaf morningglory without distinction

[2] Rounding errors preclude adding up to 100

Table 2. Severity of infestation of cotton and soybean fields for morningglories in the Mississippi Delta for 1981 and 1982.

Crop	No. of Fields	Pitted	Hederacea[1]	Palmleaf	Bigroot	Purple moonflower	Smallflower
		1981 Average rating					
Cotton	43	1.0	0.8	0.1	0.3	0	0
Soybean	57	1.6	1.4	0.7	0.2	0	< 0.1
Total	100	1.4	1.1	0.4	0.3	0	< 0.1
		1982 Average rating					
Cotton	35	1.0	0.4	< 0.1	0.2	0	0
Soybean	65	1.5	1.2	0.4	< 0.1	< 0.1	< 0.1
Total	100	1.3	0.9	0.4	0.1	< 0.1	< 0.1

[1] Includes both ivyleaf and entireleaf without distinction

crops had less ivyleaf and entireleaf morningglory in 1982 than in 1981.

The third most frequent morningglory was palmleaf. It was seen more frequently in soybean fields and was confined almost exclusively to the clay soils of the Delta.

Bigroot morningglory, a perennial, was found most frequently in cotton fields. The reason for the decline of this species in 1982 is not known. Purple moonflower and smallflower morningglory, although rarely seen in our survey, can cause severe weed problems. Purple moonflower was seen in 1982 in only one field in the south Delta (a newground soybean field in Issaquena County). Smallflower morningglory was seen in two soybean fields east of the Tallahatchie River. The moonflowers were infrequent weeds in our survey, but they are known to create severe weed problems in isolated situations throughout the Delta.

The average rating (severity of infestation) for morningglories tended to parallel their occurrence each year (Table 2). The most serious morningglory was pitted followed by ivy and entireleaf, palmleaf, bigroot, purple moonflower and smallflower morningglory. Pitted morningglory was the most common and most troublesome.

Identification of morningglories is difficult, even for weed professionals. This is aggravated by some published weed identification guides that contain mistakes. An illustrated guide and key is as follows:

Key to the Morningglories of the Delta

Flowers in heads of 10 or more	*Jacquemontia tamnifolia* (L.) Griseb.- smallflower morningglory (Figure 1.)
Flowers solitary or in 2-5 flowered groups	*Ipomoea*

Key to *Ipomoea* Species

A. Leaves deeply divided to base	*I. wrightii* Gray- palmleaf morningglory (Figure 2.)
A. Leaves unlobed or shallowly lobed	
B. Stems with soft spines	*I. muricata* (L.) Jacq.- purple moonflower (Figure 3.)
B. Stems smooth, without spines	
C. Leaves and flower stalks noticeably hairy	
D. Sepals short, blunt; flowers 1½ -2″ long, usually purple	*I. purpurea* (L.) Roth- tall morningglory (Figure 4.)
D. Sepals long, narrow, flowers 1-1½″ long, usually blue	*I. hederacea* (L.) Jacq. (Figure 5)
E. Leaves 3-lobed	var. *hederacea*- ivyleaf morningglory
E. Leaves unlobed	var. *integriuscula* Gray- entireleaf morningglory
C. Leaves and flower stalks not noticeably hairy	
F. Flowers less than 1″ long and wide, lavender or white	*I. lacunosa* L.- pitted morningglory (Figure 6.)
F. Flowers more than 1″ long and wide	
G. Plant perennial; flowers white with purple center	*I. pandurata* (L.) Meyer- bigroot morningglory (Figure 7.)
G. Plant annual, flowers lavender	*I. trichocarpa* Ell.- cotton morningglory (Figure 8.)

Figure 1. Smallflower morningglory, *Jacquemontia tamnifolia* (L.) Griseb.

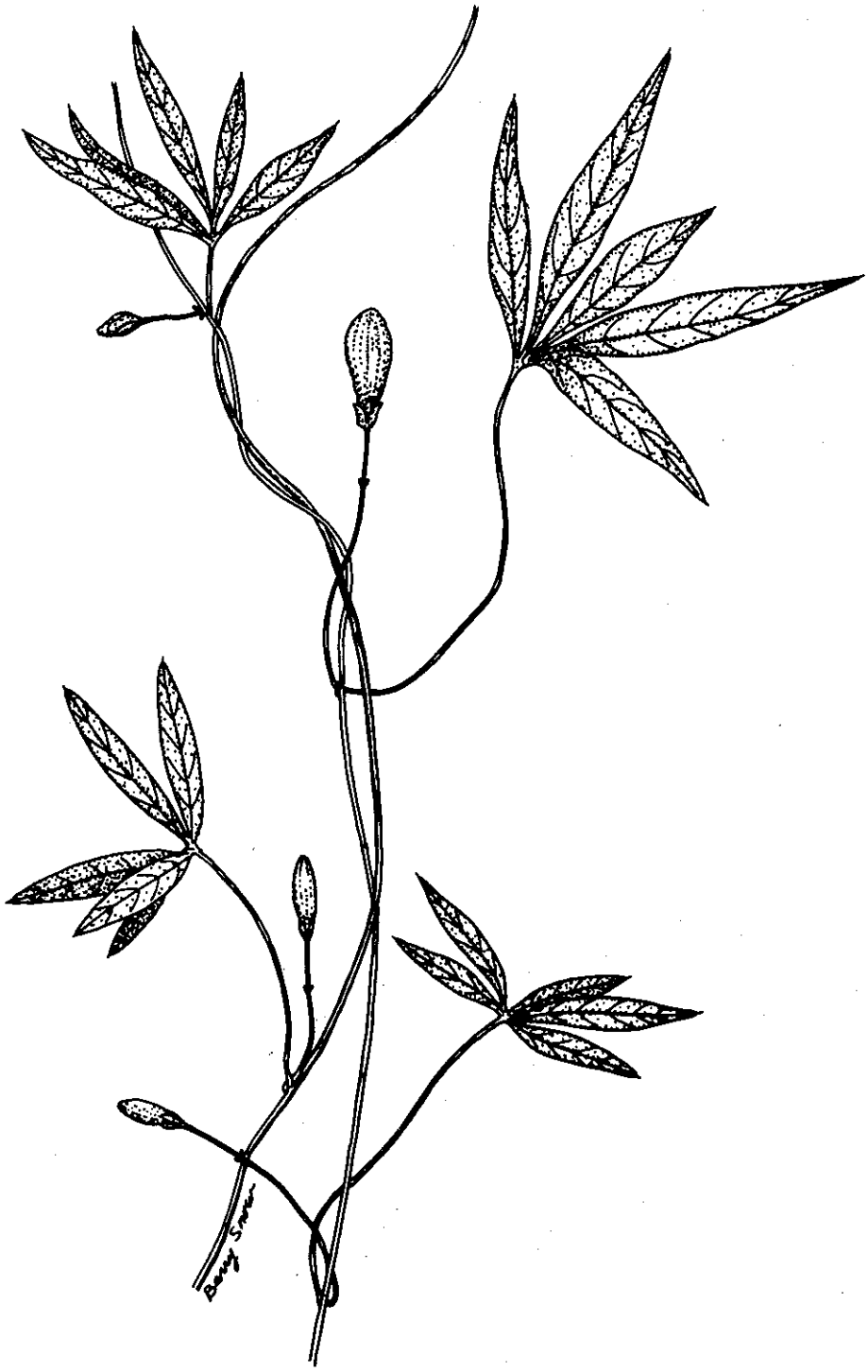

Figure 2. Palmleaf morningglory, *Ipomoea wrightii*, (L.) Gray.

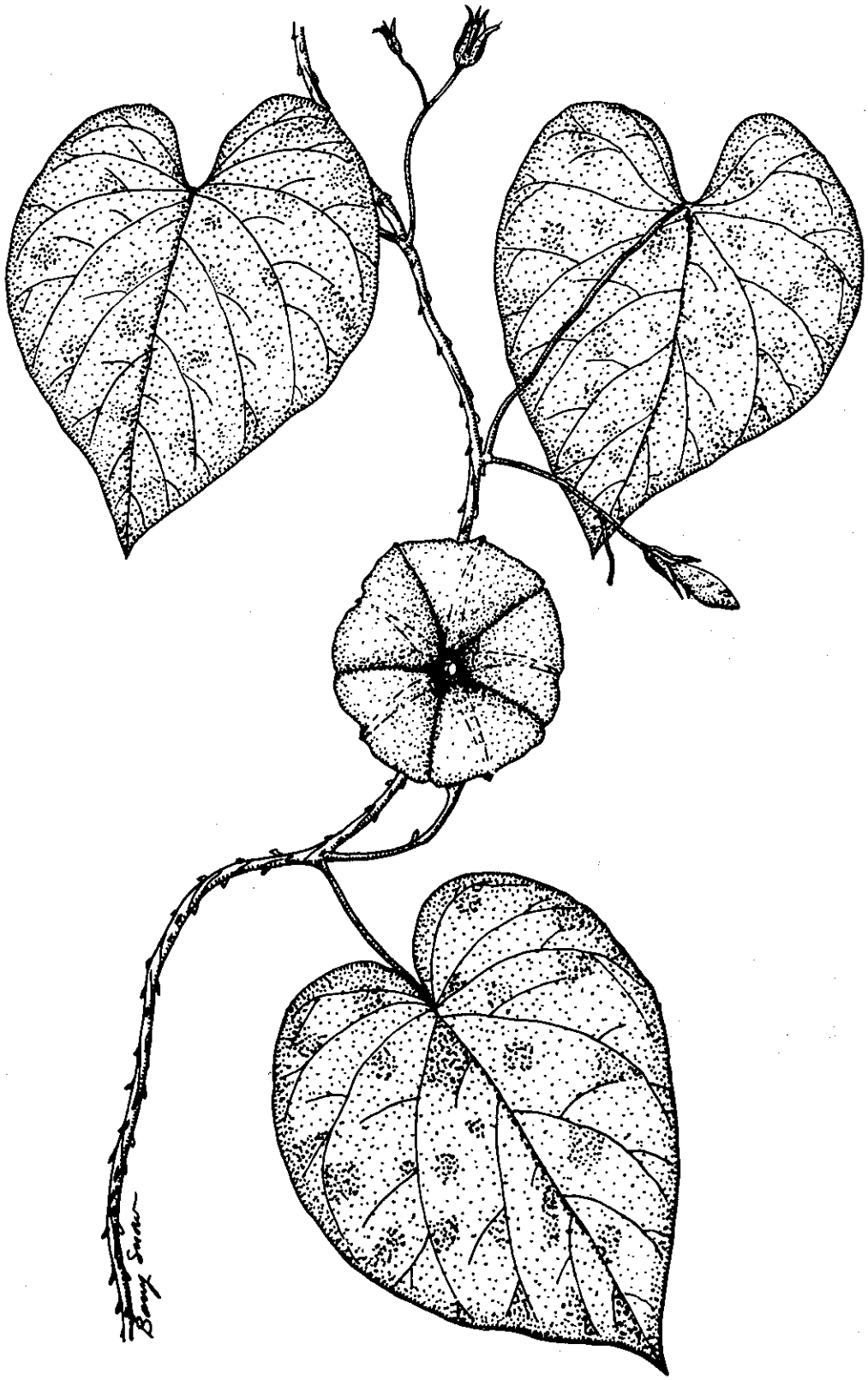

Figure 3. Purple moonflower, *Ipomoea muricata* (L.) Jacq.

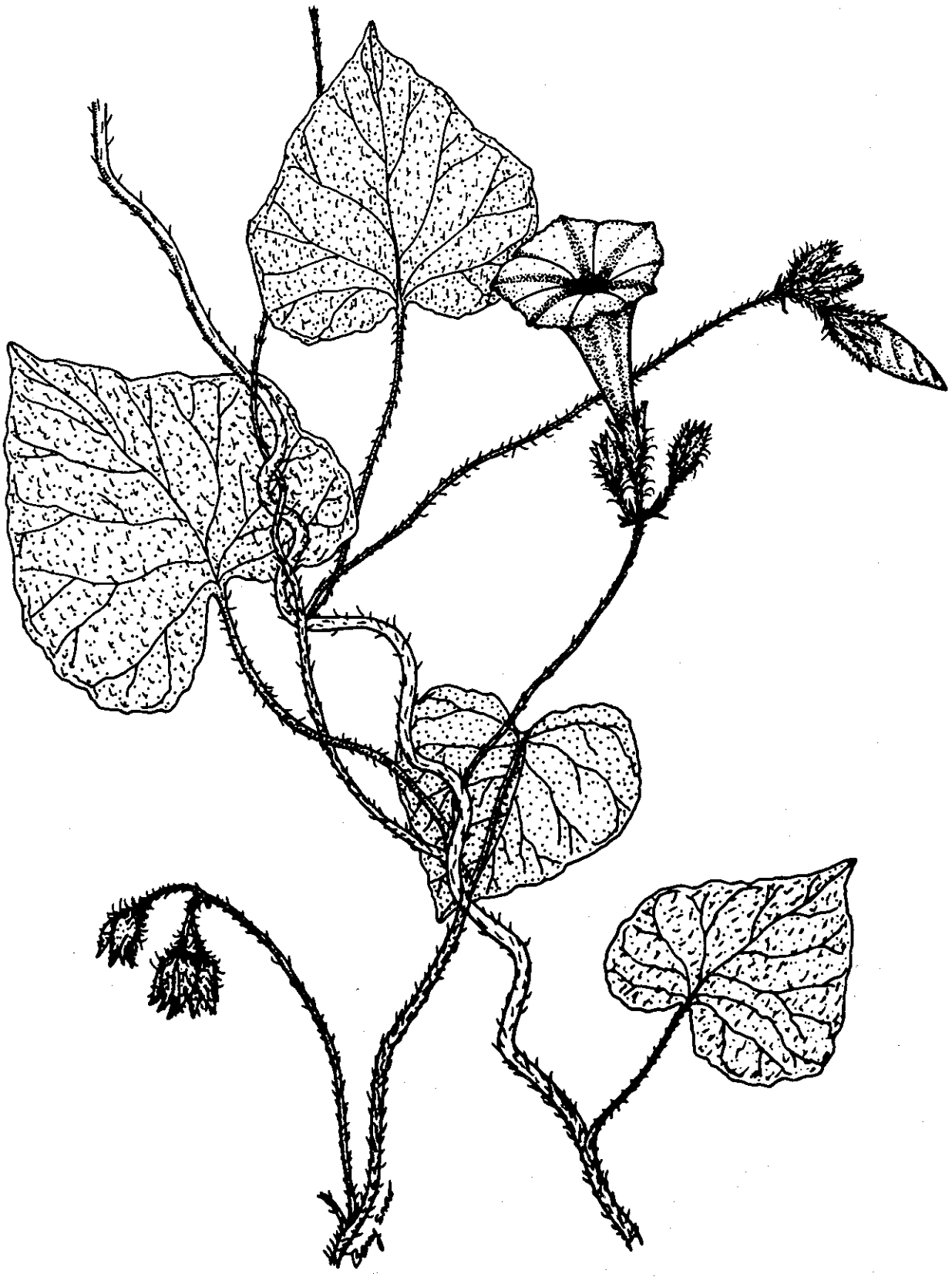

Figure 4. Tall morningglory, *Ipomoea purpurea* (L.) Roth.

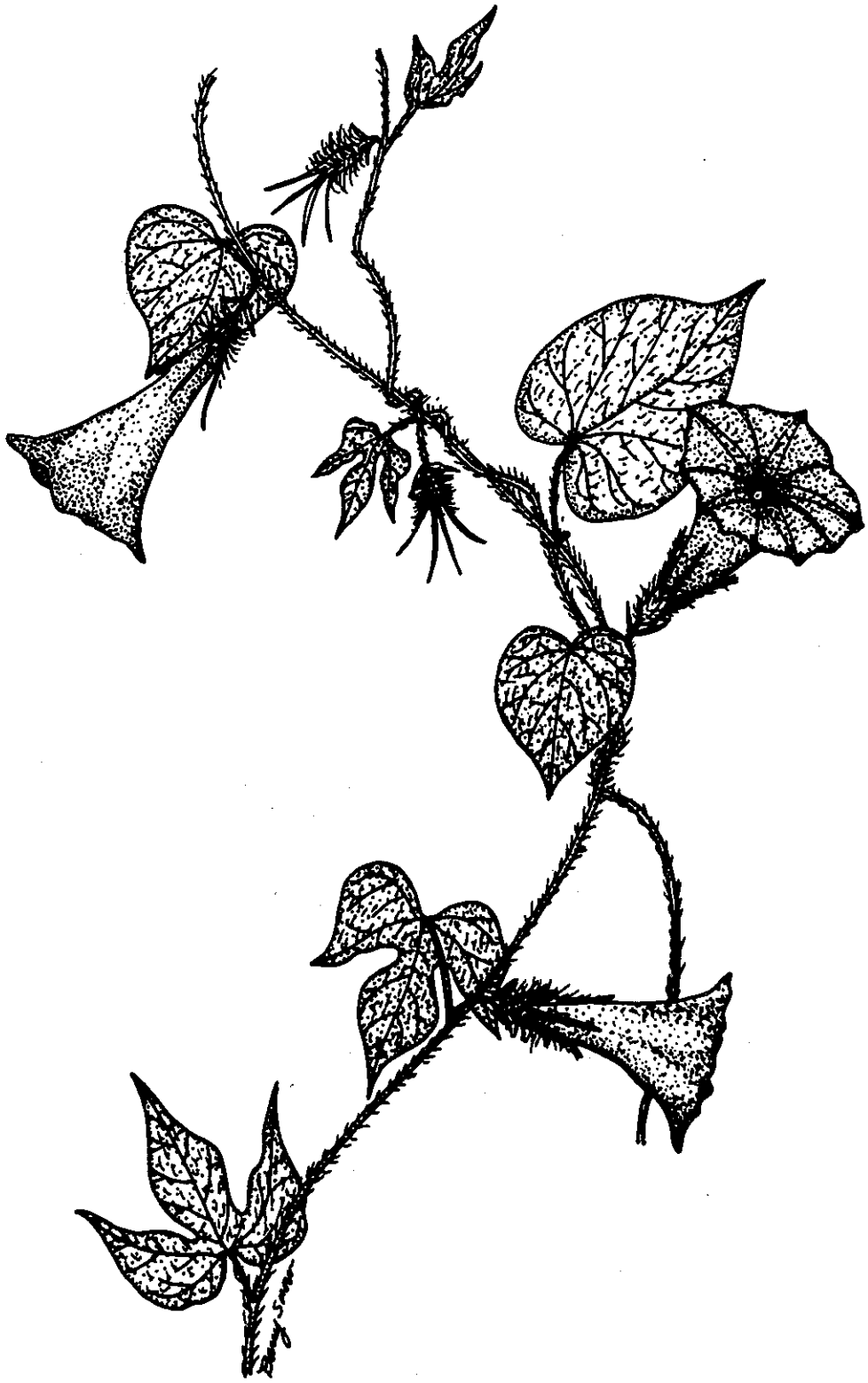

Figure 5. Ivyleaf and entireleaf morningglory, *Ipomoea hederacea*, (L.) Jacq.

Figure 6. Pitted morningglory, *Ipomoea lacunosa* L.

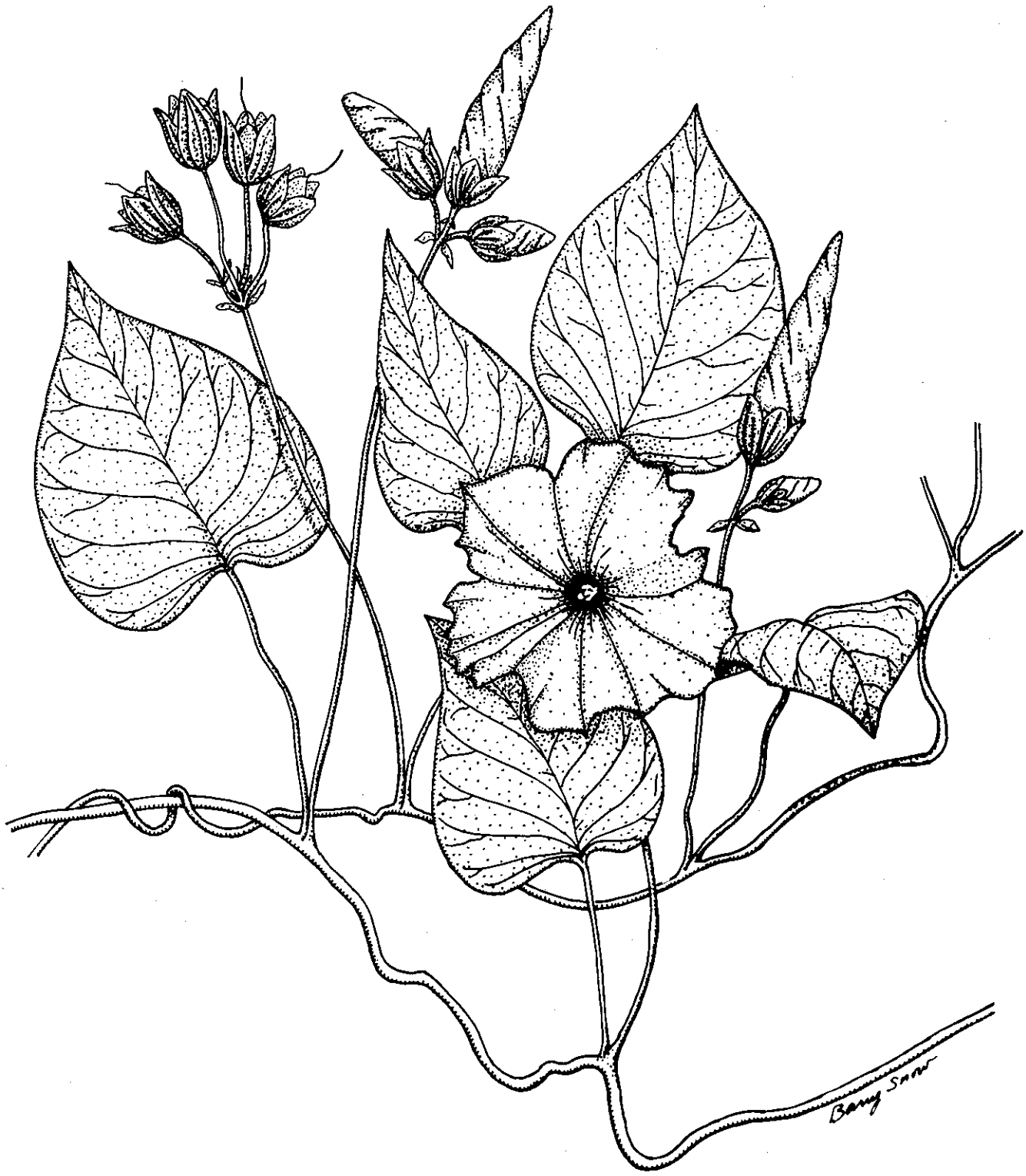

Figure 7. Bigroot morningglory, *Ipomoea pandurata* (L.) Meyer.

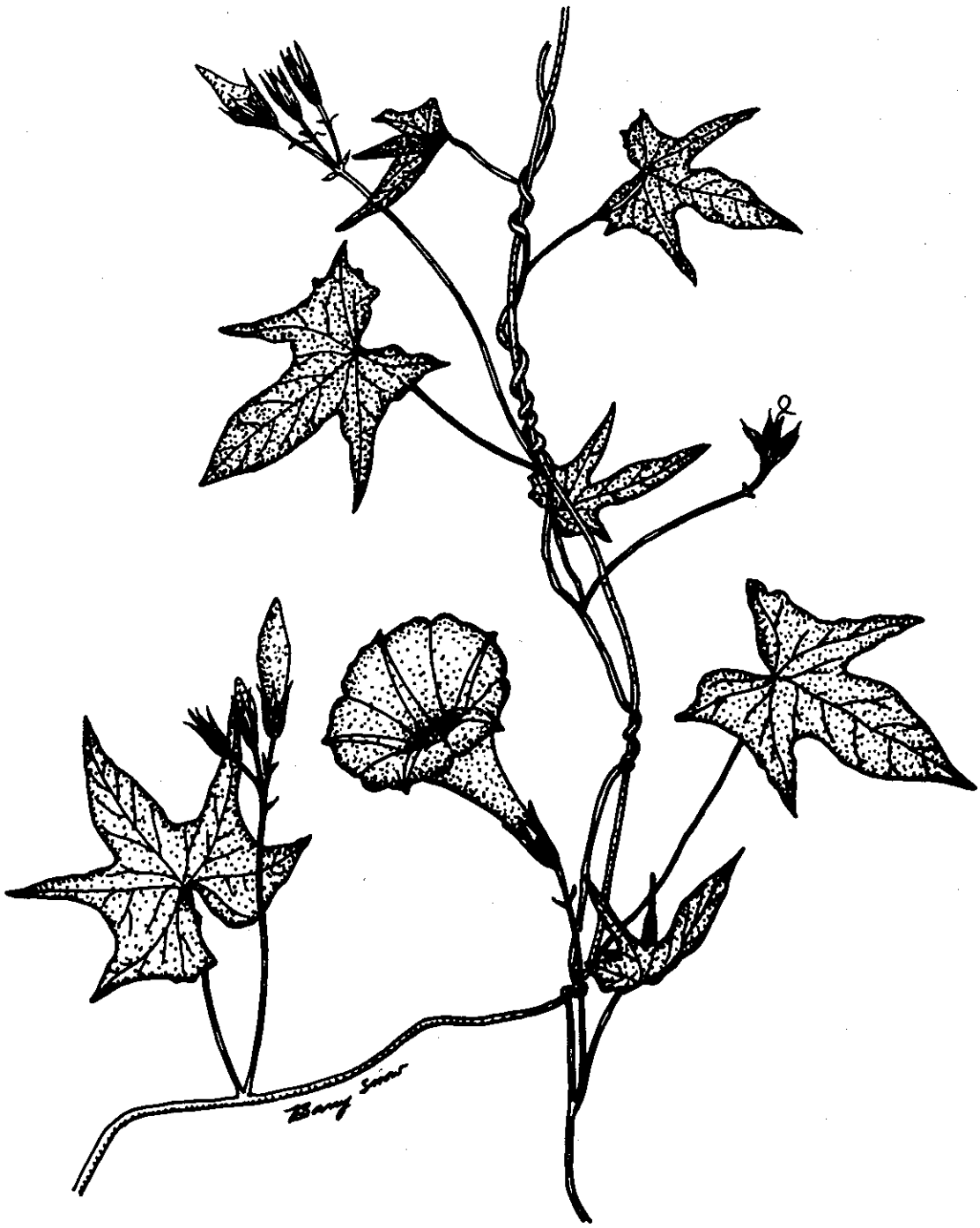

Figure 8. Cotton morningglory, *Ipomoea trichocarpa* Ell.

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