

# WEEDS FOUND ON CULTIVATED LAND IN WESTERN TAIWAN

A Preliminary Report  
on a Two-Year Survey

*Plant Industry Series No. 25*

Plant Industry Division  
Joint Commission on Rural Reconstruction  
Taipei, Taiwan, Republic of China  
September, 1964

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# WEEDS FOUND ON CULTIVATED LAND IN WESTERN TAIWAN

## I. Introduction

Up to the present, no systematic survey of weeds on the cultivated land in Taiwan has been made as yet. Their kinds, distribution and extent of damage inflicted on the crops are still not very clear to the agricultural workers of the Island. In view of the seriousness of weed problem to Taiwan's agriculture and the lack of detailed information on such problems, this Division has, in cooperation with the Seed Technology Research Laboratory of the National Taiwan University and the various District Agricultural Improvement Stations made plan to survey, identify, and classify the weeds collected from a total of 978 carefully selected sample plots distributed throughout western (including NE) Taiwan.

### A. Paddy Field:

1. Different crop rotational systems were taken into consideration while selecting the sample plots. The following are the crop rotational systems popularly adopted by farmers in Taiwan:

Rice → rice → fallow  
Rice → rice → wheat  
Rice → rice → sweet potato  
Rice → rice → flax  
Rice → rice → tobacco  
Rice → rice → potato  
Rice → rice → rapeseed

2. Size of each sample plot: 5' x 50'

3. Numbers of sample plots for various districts:

Taipei district	200 plots
Hsinchu district	160 „
Taichung district	140 „
Kaohsiung district	95 „

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Total	595 plots
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### B. Upland:

1. While selecting the sample plots in the upland areas, criterion was based on different kinds of crops, e.g. peanut, sweet potato, soybean, jute, upland rice, etc.

2. Size of sample plot: 8' x 40'

3. Numbers of sample plots for various districts:

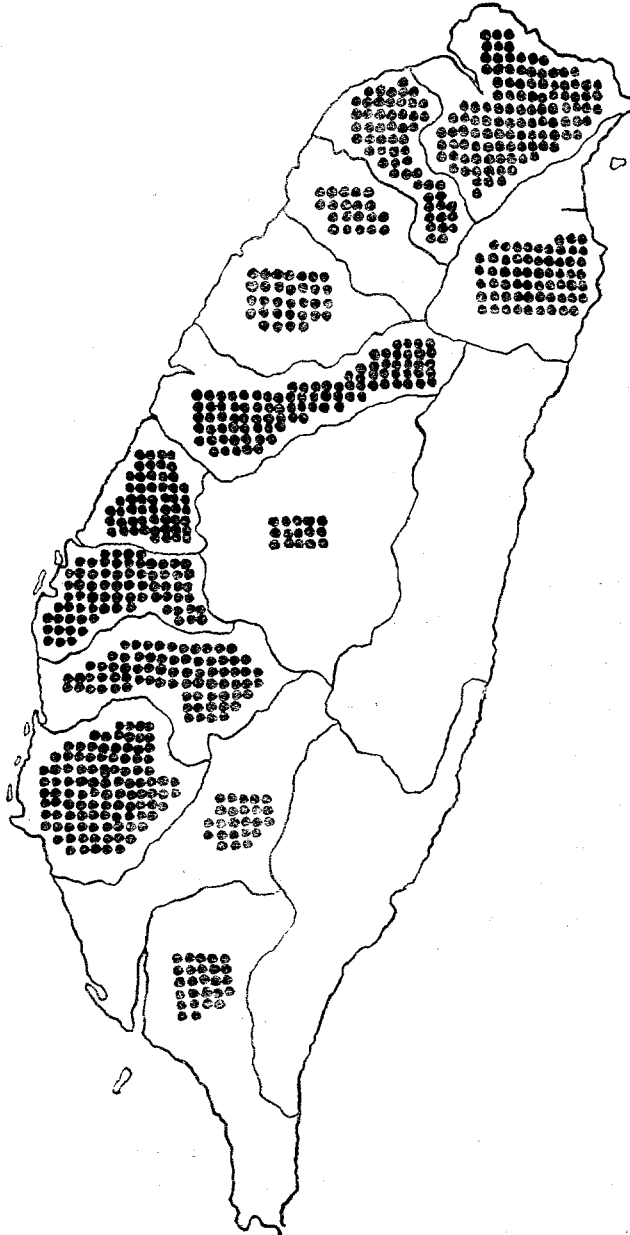
Taichung district	171 plots
Tainan district	212 „

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Total	383 plots
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C. Scale of survey:

The following map shows the distribution of the sample plots in various prefectures surveyed:



#### D. Processing procedure:

Weeds in each of the sample plots were carefully dug out by hands. The weeds were then brought back and sorted, counted and weighed. All the doubtful weeds were sent to the Department of Botany, National Taiwan University, for further identification.

#### E. Survey results:

As Taiwan is located in the tropics with hot and humid weather conditions and abundant rainfall, the kinds of weeds existing on the Island are numerous. A total number of 170 species, belonging to 112 genus, 46 families, were identified under the survey. For detailed information please refer to the Table 1. The following table shows the summarized results of the survey.

Item	Species	Genus	Family
General findings:	170	112	46
1) Paddy field	108	68	37
2) Winter paddy field (Taichung dist.)	49	41	16
3) Upland (Tainan dist.)	63	59	26
Taipei district (paddy)	57	42	27
1) Spring	43	33	23
2) Fall	38	30	20
Hsinchu district (paddy)	74	54	31
1) Spring	57	43	24
2) Fall	47	36	21
Taichung district (paddy)	82	59	31
1) Spring	46	37	16
2) Fall	36	34	15
3) Winter	49	41	16
Tainan district (upland)	63	59	26
Kaohsiung district (paddy)	19	16	9
1) Spring	19	16	9
2) Fall	18	16	9

The following are the summarized results of the survey for each of the districts:

**1. Most common weeds found in paddy fields in spring:**

Summarizing the survey results for the paddy fields in Taipei, Hsinchu, Taichung and Kaohsiung districts in the spring, a total number of 92 species of weeds, belonging to 59 genus, 31 families, were found. The following are the 17 species of most common weeds found in paddy fields in the spring in western Taiwan:

Kind of weeds	Percentage among plots surveyad			
	Taipei	Hsinchu	Taichung	Kaohsiung
<i>Cardamine parviflora</i>	53	—	—	—
<i>Cyperus difformis</i>	—	65	82	88
<i>Dopatorium junceum</i>	—	—	59	—
<i>Echinochloa crus-galli</i>	66	76	78	90
<i>Eclipta prostrata</i>	—	—	45	66
<i>Eleocharis acicularis</i>	40	5	16	—
<i>Fimbristylis miliacea</i>	36	31	43	—
<i>Kyllinga brevifolia</i>	76	—	—	—
<i>Lindernia cordifolia</i>	—	—	84	—
<i>Lindernia pyxidaria</i>	—	40	46	62
<i>Marsilea quadrifolia</i>	23	—	—	26
<i>Monochoria vaginalis</i>	80	68	79	66
<i>Panicum reptans</i>	—	—	—	50
<i>Rotala indica</i>	—	35	—	68
<i>Rotala rotundifolia</i>	71	—	—	—
<i>Sagittaria trifolia</i>	55	29	—	36
<i>Scirpus wallichii</i>	—	—	—	66

**2. Most common weeds found in paddy field in fall:**

Summarizing the survey results for the paddy fields in Taipei, Hsinchu, Taichung and Kaohsiung districts in the fall, a total number of 73 species, belonging to 49 genus, 25 families, were found. The following are the most common 17 species of weeds:

Kind of weeds	Percentage among plots surveyed			
	Taipei	Hsinchu	Taichung	Kaohsiung
<i>Alternanthera sessilis</i>	—	—	42	—
<i>Cyperus difformis</i>	—	—	79	51
<i>Cyperus rotundus</i>	—	—	—	33
<i>Dopatorium junceum</i>	—	—	66	—
<i>Echinochloa crus-galli</i>	42	58	68	69
<i>Eclipta prostrata</i>	—	—	21	98
<i>Fimbristylis miliacea</i>	49	28	32	29
<i>Juncus prismatocarpus</i>	49	—	—	—
<i>Lindernia cordifolia</i>	26	—	73	—
<i>Lindernia pyxidaria</i>	—	—	54	42
<i>Ludwigia prostrata</i>	53	31	—	—
<i>Marsilea quadrifolia</i>	38	20	—	40
<i>Monochoria vaginalis</i>	70	58	83	71
<i>Panicum reptans</i>	—	9	28	—
<i>Rotala indica</i>	32	40	—	71
<i>Rotala rotundifolia</i>	35	—	—	—
<i>Sagittaria trifolia</i>	29	20	—	24

### 3. Most common weeds found in winter paddy fields in Taichung district:

There were 171 sample plots selected from fields planted to various kinds of crops in Taichung district:

Wheat	28 plots
Sweet potato	30 „
Flax	20 „
Tobacco	27 „
Potato	27 „
Rapeseed	27 „
Fallow	12 „

Total	171 plots
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The results of the survey show that there are 49 species, belonging to 41 genus, 16 families, in paddy fields in the winter in Taichung district. The following are the seven most common kinds of weeds:



Kind of weeds	Percentage among plots surveyed
<i>Alopecurus geniculatus</i>	54
<i>Chenopodium ficifolium</i>	96
<i>Gnaphalium indicum</i>	85
<i>Mazus japonicus</i>	56
<i>Polygonum hydropiper</i>	73
<i>Polygonum minuta</i>	95
<i>Stellaria aquatica</i>	86

4. **Most common weeds found on upland in Tainan district:**

There were 212 sample plots selected from among fields planted to various of crops in Tainan district:

Peanut (spring)	73 plots
(fall)	20 „
Sweet potato	48 „
Soybean	25 „
Jute	10 „
Upland rice	12 „
Others	14 „
Total	<u>212 plots</u>

The results of the survey show that there are 63 species, belonging to 59 genus, 26 families, on upland in Tainan district. The following are the 10 most common kinds of weeds found in that area:

Kind of weeds	Percentage among plots surveyed
<i>Amaranthus viridis</i>	53
<i>Cyperus rotundus</i>	58
<i>Digitaria sericea</i>	72
<i>Digitaria violascens</i>	32
<i>Echinochloa colona</i>	73
<i>Echinochloa crus-galli</i>	52
<i>Eleusine indica</i>	71
<i>Physalis angulata</i>	57
<i>Portulaca oleracea</i>	41
<i>Solanum biflorum</i>	42

## F. Conclusion:

The primary purpose of the subject survey is to find out the kinds and distribution of weeds in the paddy fields and upland on the Island. The writers of this paper are indebted to Mr. C. C. Kuo of the National Taiwan University and those who had participated in the survey for their valuable assistances in the collection, and identification of the weeds surveyed, without which the completion of this paper would not have been possible.

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September, 1964

## II. Results of Weed Survey on Cultivated Lands in Western Taiwan

The following tables (1—10) are detailed analyses of the results of the weed survey in western Taiwan:

- Table 1. General Report on Weed Survey in Western Taiwan
- Table 2. Statistics on Families of Weeds on Cultivated Lands in Western Taiwan
- Table 3. Statistics on Weeds in Paddy Fields in Taipei District
- Table 4. Statistice on Weeds in Paddy Fields in Hsinchu District
- Table 5. Statistics on Weeds in Paddy Fields in Taichung District
- Table 6. Statistics on Weeds in Winter Paddy Fields in Taichung District
- Table 7. Statistics on Weeds in Winter Paddy Fields in Taichung District on  
Corp Basis
  - A. Wheat & Tobacco
  - B. Sweet Totato & Rapeseed
  - C. Flax, Potato & Fallowing Fields
- Table 8. Statistics on Weeds on Upland in Tainan District
- Table 9. Statistics on Weeds on Upland in Tainan District on Crop Basis
  - A. Peanut
  - B. Sweet Potato & Soybean
  - C. Upland Rice and Jute
  - D. Rapeseed & Others
- Table 10. Statistics on Weeds in Paddy Fields in Kaohsiung District

Table 1. General Report on Weed Survey in Western Taiwan

No.	Scientific Name	Chinese Name	Family	Paddy Field	Upland
1.	<i>Acalypha australis</i> Linn.	鐵莧草	<i>Euphorbiaceae</i>	*	*
2.	<i>Achyranthes obtusifolia</i> Lamk.	土牛藤	<i>Amaranthaceae</i>		*
3.	<i>Ageratum conyzoides</i> Linn.	霍香薊	<i>Compositae</i>	*	*
4.	<i>Ageratum houstonianum</i> Mill.	紫花藿香薊	<i>Compositae</i>	*	
5.	<i>Alopecurus aequalis</i> Sobol. var. <i>amurensis</i> (Komar.) Ohwi	看麥娘	<i>Gramineae</i>		*
6.	<i>Alternanthera nodiflora</i> R. Br.	節節花	<i>Amaranthaceae</i>	*	*
7.	<i>Alternanthera philoxeroides</i> Griseb.		<i>Amaranthaceae</i>	*	
8.	<i>Alternanthera sessilis</i> R. Br.	滿天星	<i>Amaranthaceae</i>	*	*
9.	<i>Alysicarpus nummularifolius</i> DC.	山土豆	<i>Leguminosae</i>		*
10.	<i>Amaranthus spinosus</i> Linn.	刺莧	<i>Amaranthaceae</i>		*
11.	<i>Amaranthus viridis</i> Linn.	野莧菜	<i>Amaranthaceae</i>		*
12.	<i>Amanthia baccifera</i> Linn.	水莧菜	<i>Lythraceae</i>	*	
13.	<i>Aneilema sinicum</i> Lindl.	水竹葉	<i>Commelinaceae</i>		*
14.	<i>Arachis hypogaea</i> Linn.	落花生	<i>Leguminosae</i>		*
15.	<i>Arundo formosana</i> Hay.	籬竹	<i>Gramineae</i>		*
16.	<i>Bidens pilosa</i> Linn.	咸豐草	<i>Compositae</i>	*	
17.	<i>Blyxa shimadai</i> Hay.	女髮草	<i>Hydrocharitaceae</i>	*	
18.	<i>Bonnaya</i> sp.		<i>Scrophulariaceae</i>		*
19.	<i>Bothriospermum tenellum</i> Fisch. et Mey.	細纓子草	<i>Borraginaceae</i>		*
20.	<i>Brachiaria distachya</i> (L.) A. Camus	疏穗臂形草	<i>Gramineae</i>	*	
21.	<i>Cardamine parviflora</i> Linn.		<i>Cruciferae</i>	*	*
22.	<i>Carex brevicuspis</i> Clark.		<i>Cyperaceae</i>	*	
23.	<i>Cassia tora</i> Linn.	決明	<i>Leguminosae</i>		*
24.	<i>Centella asiatica</i> (L.) Urban.	雷公根；蚶壳草	<i>Umbelliferae</i>	*	*
25.	<i>Centipeda minima</i> (L.) A. Braun et Aschers.	石胡荽；吐金草	<i>Compositae</i>	*	*
26.	<i>Ceratophyllum demersum</i> Linn.	金魚藻	<i>Ceratophyllaceae</i>	*	
27.	<i>Ceratophyllum submersum</i> Linn.	松藻	<i>Ceratophyllaceae</i>		*
28.	<i>Ceratopteris thalictroides</i> Bron.	水蕨	<i>Parkeriaceae</i>	*	
29.	<i>Chenopodium ambrosioides</i> Linn.	臭杏	<i>Chenopodiaceae</i>		*
30.	<i>Chenopodium ficifolium</i> Sm.	小葉灰藿	<i>Chenopodiaceae</i>	*	*
31.	<i>Clinopodium confine</i> OK.		<i>Labiatae</i>	*	
32.	<i>Columella japonica</i> (May) Merr.		<i>Vitaceae</i>		*
33.	<i>Commelina auriculata</i> Bl.		<i>Commelinaceae</i>	*	
34.	<i>Commelina benghalensis</i> Linn.	竹葉菜	<i>Commelinaceae</i>	*	
35.	<i>Commelina undulata</i> Br.	波緣竹仔菜	<i>Commelinaceae</i>	*	
36.	<i>Crotalaria</i> sp.	太陽麻	<i>Leguminosae</i>		*
37.	<i>Cynodon dactylon</i> Pers.	狗牙根	<i>Gramineae</i>	*	*
38.	<i>Cyperus difformis</i> Linn.	球花蒿草	<i>Cyperaceae</i>	*	
39.	<i>Cyperus haspan</i> Linn.	水煙花	<i>Cyperaceae</i>	*	
40.	<i>Cyperus iria</i> Linn.	莎草	<i>Cyperaceae</i>	*	*
41.	<i>Cyperus pilosus</i> Vahl.		<i>Cyperaceae</i>	*	*
42.	<i>Cyperus rotundus</i> Linn.	香附子	<i>Cyperaceae</i>	*	*
43.	<i>Dactyloctenium aegyptium</i> Richt.	埃及指梳草	<i>Gramineae</i>		*
44.	<i>Digitaria chinensis</i> Hornem	小指草	<i>Gramineae</i>	*	
45.	<i>Digitaria sericea</i> (Honda) Honda	絹毛指草	<i>Gramineae</i>		*

46.	<i>Digitaria violascens</i> Link.	紫果指草	Gramineae		*
47.	<i>Dopatorium junceum</i> Hamilt.		Scrophulariaceae	*	*
48.	<i>Echinochloa colona</i> (Linn.) Link	芒稷	Gramineae	*	*
49.	<i>Echinochloa crus-galli</i> Beauv. var. <i>austro-japonensis</i> Ohwi	細葉野種	Gramineae	*	*
50.	<i>Echinochloa crus-galli</i> Beauv. var. <i>formosensis</i> Ohwi	台灣野種	Gramineae	*	*
51.	<i>Eclipta prostrata</i> (Linn.) Linn. Syn. <i>Eclipta alba</i> Hassk.	鱧腸; 墨菜	Compositae	*	*
52.	<i>Eleocharis acicularis</i> R. & S.		Cyperaceae	*	*
53.	<i>Eleocharis dulcis</i> Trin.	烏芋	Cyperaceae	*	*
54.	<i>Eleocharis fistulosa</i> Schult.		Cyperaceae	*	*
55.	<i>Eleocharis japonica</i> Miq.		Cyperaceae	*	*
56.	<i>Eleusine indica</i> Gaertn.	牛筋草; 蟋蟀草	Gramineae	*	*
57.	<i>Emilia sonchifolia</i> DC.	紫背草	Compositae	*	*
58.	<i>Epaltes australis</i> Less.		Compositae	*	*
59.	<i>Equisetum ramosissimum</i> Desv.	節節草	Equisetaceae	*	*
60.	<i>Eragrostis amabilis</i> (Linn.) Wight. et Arn.	鯽魚草	Gramineae		*
61.	<i>Eragrostis cilianensis</i> Link.	雀茅	Gramineae	*	
62.	<i>Eragrostis niwahokori</i> Honda	畫眉草	Gramineae		*
63.	<i>Erechtites valevianafolia</i> DC.	昭和草	Compositae		*
64.	<i>Erigeron canadensis</i> Linn.	加拿大蓬	Compositae	*	
65.	<i>Erigeron linifolius</i> Willd.	野塘蒿	Compositae		*
66.	<i>Eriocaulon formosanum</i> Hay.	台灣穀精草	Eriocaulaceae	*	
67.	<i>Eriocaulon pachypetalum</i> Hay.		Eriocaulaceae	*	
68.	<i>Euphorbia formosana</i> Hay	八卦草	Euphorbiaceae	*	
69.	<i>Euphorbia hirta</i> Linn.	乳仔草; 大本乳仔草	Euphorbiaceae		*
70.	<i>Euphorbia thymifolia</i> Linn.	紅乳草	Euphorbiaceae		*
71.	<i>Fimbristylis aestivalis</i> Vahl.		Cyperaceae	*	
72.	<i>Fimbristylis dichotoma</i> (L.) Vahl.	飄佛草	Cyperaceae		*
73.	<i>Fimbristylis koidzumiana</i> Ohwi		Cyperaceae	*	
74.	<i>Fimbristylis miliacea</i> (L.) Vahl.	木虱草	Cyperaceae	*	*
75.	<i>Gonostegia hirta</i> (Bl.) Miq.		Urticaceae	*	
76.	<i>Gonostegia pentandra</i> Miq. var. <i>akoensis</i> Yaman. et Masam.		Urticaceae	*	
77.	<i>Gnaphalium indicum</i> Linn.	母子草	Compositae		*
78.	<i>Gnaphalium purpureum</i> Linn.	擬青天白地; 鼠麴舅	Compositae		*
79.	<i>Hedyotis diffusa</i> Willd.	珠仔草; 龍吐珠	Rubiaceae	*	
80.	<i>Heliotropium indicum</i> Linn.	狗尾虫草	Borraginaceae		*
81.	<i>Hemistepta lyrata</i> Bunge.	泥胡菜	Compositae		*
82.	<i>Houttuynia cordata</i> Thunb.	蕺菜	Saururaceae	*	
83.	<i>Hydrocotyle formosana</i> Masamune	台灣蚶壳草	Umbelliferae	*	
84.	<i>Hypericum japonicum</i> Thunb.	地耳草	Guttiferae	*	
85.	<i>Ilysanthes antipoda</i> (Linn.) Merr.	定經草	Scrophulariaceae		*
86.	<i>Ilysanthes serrata</i> Urb.	鋸葉定經草	Scrophulariaceae	*	*
87.	<i>Ipomoea batatas</i> Poir.	蕃薯	Convolvulaceae		*
88.	<i>Ipomoea gracilis</i> R. Br.		Convolvulaceae		*
89.	<i>Ixeris oldhami</i> Kitamura	刀傷草	Compositae		*
90.	<i>Juncus prismatocarpus</i> R. Br.		Juncaceae	*	
91.	<i>Jussiaea erecta</i> Linn.	水丁香	Oenotheraceae	*	
92.	<i>Jussiaea stipulaceae</i> Ohwi		Oenotheraceae	*	

93.	<i>Jussiaea suffruticora</i> Linn.		<i>Oenotheraceae</i>	*	
94.	<i>Kyllinga brevifolia</i> Rottb.	水蜈蚣	<i>Cyperaceae</i>	*	*
95.	<i>Lactuca formosana</i> Maxim.	台灣黃瓜菜	<i>Compositae</i>		*
96.	<i>Lactuca indica</i> Linn.	山萵苣	<i>Compositae</i>		*
97.	<i>Leonurus sibiricus</i> Linn.	益母草	<i>Labiatae</i>		*
98.	<i>Leptochloa chinensis</i> Nees.		<i>Gramineae</i>	*	
99.	<i>Lindernia antipoda</i> (L.) Al.		<i>Scrophulariaceae</i>	*	
100.	<i>Lindernia cordifolia</i> Merr.		<i>Scrophulariaceae</i>	*	*
101.	<i>Lindernia pyxidaria</i> All.	母草	<i>Scrophulariaceae</i>	*	
102.	<i>Lipocarpa argentea</i> Br.		<i>Cyperaceae</i>	*	
103.	<i>Lippia nodiflora</i> Rich.	過江藤；鴨嘴黃	<i>Verbenaceae</i>		*
104.	<i>Lobelia radicans</i> Thunb.	半邊蓮	<i>Campanulaceae</i>	*	*
105.	<i>Ludwigia prostrata</i> Roxb.	喇叭草	<i>Oenotheraceae</i>	*	
106.	<i>Ludwigia repens</i> Linn.		<i>Oenotheraceae</i>		*
107.	<i>Marsilea quadrifolia</i> Linn.	蘋草；四葉菜；水鹽酸	<i>Marsiliaceae</i>	*	
108.	<i>Mazus japonicus</i> O. Kuntze	通泉草；大角定經草	<i>Scrophulariaceae</i>	*	*
109.	<i>Melia azedarach</i> L. var. <i>japonica</i> Makino	川楝樹	<i>Meliaceae</i>		*
110.	<i>Melia formosana</i> Max.		<i>Meliaceae</i>	*	
111.	<i>Melothria vaginalis</i> Hay.		<i>Cucurbitaceae</i>	*	
112.	<i>Mentha amensis</i> var. <i>piperascens</i>		<i>Labiatae</i>		*
113.	<i>Monochoria vaginalis</i> Presl.	鴨舌草；豬耳朵	<i>Pontederiaceae</i>	*	
114.	<i>Mosla formosana</i> Maxim.	台灣乾汙草	<i>Labiatae</i>	*	
115.	<i>Rorippa atrovirens</i> Ohwi et Hara.	山芥菜；葶藶	<i>Cruciferae</i>		*
116.	<i>Oenanthe javanica</i> (Blume) DC.	水芹菜	<i>Umbelliferae</i>	*	
117.	<i>Oldenlandia corymbosa</i> Linn.	吐龍珠	<i>Rubiaceae</i>	*	
118.	<i>Oldenlandia diffusa</i> Roxb.		<i>Rubiaceae</i>	*	
119.	<i>Oplismenus compositus</i> Beau.	大縮筴草	<i>Gramineae</i>		*
120.	<i>Oryza sativa</i> Linn.	水稻	<i>Gramineae</i>		*
121.	<i>Ottelia alismoides</i> Pers.	水草前	<i>Hydrocharitaceae</i>	*	
122.	<i>Oxalis corniculata</i> Linn.	酢醬草	<i>Oxalidaceae</i>		*
123.	<i>Panicum brevifolium</i> Linn.	短葉野稗	<i>Gramineae</i>	*	
124.	<i>Panicum repens</i> Linn.	匍黍草	<i>Gramineae</i>	*	*
125.	<i>Panicum replans</i> Linn.		<i>Gramineae</i>	*	*
126.	<i>Paspalum conjugatum</i> Berg.	毛穎雀稗	<i>Gramineae</i>	*	*
127.	<i>Paspalum dilatatum</i> Poir.	大理草	<i>Gramineae</i>	*	
128.	<i>Paspalum distichum</i> Linn.	雙穗雀稗	<i>Gramineae</i>	*	
129.	<i>Paspalum orbiculata</i> Forst.	圓穎雀稗	<i>Gramineae</i>	*	*
130.	<i>Pedicellaria pentaphylla</i> Schrank.	白花菜	<i>Capparidaceae</i>		*
131.	<i>Phyllanthus niruri</i> Linn.	小返魂	<i>Euphorbiaceae</i>	*	*
132.	<i>Phyllanthus urinaria</i> Linn.	葉下珠	<i>Euphorbiaceae</i>	*	
133.	<i>Physalis angulata</i> Linn.	苦蕒；炮仔草	<i>Solanaceae</i>		*
134.	<i>Pistia stratiotes</i> Linn.	大藻	<i>Araceae</i>	*	
135.	<i>Plantago major</i> Linn. var. <i>Kimurae</i> Yamamoto	車前草	<i>Plantaginaceae</i>	*	*
136.	<i>Polygonum caespitosum</i> Bl.	馬藜	<i>Polygonaceae</i>	*	
137.	<i>Polygonum flacida</i> Roxb.		<i>Polygonaceae</i>	*	
138.	<i>Polygonum hydropiper</i> Linn.	水蓼	<i>Polygonaceae</i>	*	*
139.	<i>Polygonum japonicum</i> Meisn.	蠶繭草	<i>Polygonaceae</i>	*	
140.	<i>Polygonum lapathifolium</i> Linn.	早辣蓼	<i>Polygonaceae</i>	*	*
141.	<i>Portulaca formosana</i> Hay.		<i>Portulacaceae</i>	*	
142.	<i>Portulaca oleracea</i> Linn.	馬荳齒；豬母乳；豬母菜	<i>Portulacaceae</i>		*

143.	<i>Portulaca pilosa</i> Linn.	毛馬莧齒	<i>Portulacaceae</i>		*
144.	<i>Portulaca quadrifida</i> Linn.		<i>Portulacaceae</i>		*
145.	<i>Potamogeton natans</i> Linn.	大眼子菜	<i>Potamogetonaceae</i>	*	
146.	<i>Pycnus polystachus</i> Beauv.		<i>Cyperaceae</i>	*	*
147.	<i>Ranunculus japonicus</i> Thunb.	小毛茛	<i>Ranunculaceae</i>	*	
148.	<i>Rotala indica</i> Koehne.		<i>Lythraceae</i>	*	*
149.	<i>Rotala leptopetala</i> Koeh.		<i>Lythraceae</i>	*	*
150.	<i>Rotala rotundifolia</i> Koehne.	水豬母乳草	<i>Lythraceae</i>	*	
151.	<i>Rumex crispus</i> Linn.	羊蹄	<i>Polygonaceae</i>		*
152.	<i>Sacciolepis indica</i> (L.) Chase var. <i>oryzeterum</i> (Mak.) Ohwi	囊穎草	<i>Gramineae</i>	*	*
153.	<i>Sagittaria trifolia</i> Linn.	野茨菰	<i>Alismataceae</i>	*	*
154.	<i>Salvinia natans</i> All.	槐葉蘋	<i>Salviniaceae</i>	*	
155.	<i>Saussurea affinis</i> Spring		<i>Compositae</i>	*	
156.	<i>Scirpus juncoides</i> Roxb.	螢蘭	<i>Cyperaceae</i>	*	
157.	<i>Scirpus wallichii</i> Nees.	台灣野蘭	<i>Cyperaceae</i>	*	
158.	<i>Sesbania sesban</i> Merr.	田菁	<i>Leguminosae</i>		*
159.	<i>Setaria geniculata</i> (Lam.) P. Beauv.	小粒狗尾草	<i>Gramineae</i>		*
160.	<i>Setaria viridis</i> Beauv.	狗尾草	<i>Gramineae</i>	*	
161.	<i>Sida rhombifolia</i> Linn.	金午時花	<i>Malvaceae</i>		*
162.	<i>Solanum biflorum</i> Lour.	江絲線	<i>Solanaceae</i>		*
163.	<i>Solanum nigrum</i> Linn.	龍葵	<i>Solanaceae</i>		*
164.	<i>Soliva anthemifolia</i> R. Br.	假吐金菊	<i>Compositae</i>		*
165.	<i>Sonchus oleraceus</i> Linn.	苦蕒菜	<i>Compositae</i>		*
166.	<i>Stellaria aquatica</i> (Linn.) Scop.	鵝兒腸	<i>Caryophyllaceae</i>	*	*
167.	<i>Synedrella nodiflora</i> Gaertn.		<i>Compositae</i>	*	
168.	<i>Thuraea involuta</i> (G. Forst.) R. Br.	濱藜草	<i>Gramineae</i>		*
169.	<i>Wedelia chinensis</i> (Osbeck) Merr.	黃花田蘿蔔	<i>Compositae</i>		*
170.	<i>Youngia japonica</i> (Linn.) DC.	黃瓜菜	<i>Compositae</i>		*

Table 2 Statistics on Families of Weeds on Cultivated Lands in Western Taiwan

Family	Chinese Name	Number
<i>Alismataceae</i>	澤瀉科	1
<i>Amaranthaceae</i>	莧科	6
<i>Araceae</i>	天南星科	1
<i>Borraginaceae</i>	紫草科	2
<i>Campanulaceae</i>	桔梗科	1
<i>Capparidaceae</i>	白花菜科	1
<i>Caryophyllaceae</i>	石竹科	1
<i>Ceratophyllaceae</i>	金魚藻科	2
<i>Chenopodiaceae</i>	藜科	2
<i>Commelinaceae</i>	鴨跖草科	4
<i>Compositae</i>	菊科	22
<i>Convolvulaceae</i>	旋花科	2
<i>Cruciferae</i>	十字花科	2
<i>Cyperaceae</i>	莎草科	19
<i>Cucurbitaceae</i>	葫蘆科	1
<i>Equiselaceae</i>	木賊科	1
<i>Eriocaulaceae</i>	穀精草科	2
<i>Euphorbiaceae</i>	大戟科	6
<i>Gramineae</i>	禾本科	23
<i>Guttiferae</i>	藤黃科	1
<i>Hydrocharitaceae</i>	水鼈科	2
<i>Juncaceae</i>	燈心草科	1
<i>Labiatae</i>	唇形科	4
<i>Leguminosae</i>	豆科	5
<i>Lythraceae</i>	千屈菜科	4
<i>Malvaceae</i>	錦葵科	1
<i>Marsileaceae</i>	蘋科	1
<i>Meliaceae</i>	棟科	2
<i>Oenotheraceae</i>	柳葉菜科	5
<i>Oxalidaceae</i>	酢醬草科	1
<i>Parkeriaceae</i>	水蕨科	1
<i>Plantaginaceae</i>	車前科	1
<i>Polygonaceae</i>	蓼科	6
<i>Pontederiaceae</i>	雨久花科	1
<i>Portulacaceae</i>	馬齒莧科	4
<i>Potamogetonaceae</i>	眼子菜科	1
<i>Ranunculaceae</i>	毛茛科	1
<i>Rubiaceae</i>	茜草科	3
<i>Salviniaceae</i>	槐葉蘋科	1
<i>Scrophulariaceae</i>	玄參科	8
<i>Solanaceae</i>	茄科	3
<i>Saururaceae</i>	三白草科	1
<i>Umbelliferae</i>	繖形科	3
<i>Urticaceae</i>	蕁麻科	3
<i>Verbenaceae</i>	馬鞭草科	1
<i>Vitaceae</i>	葡萄科	1

合計： 46科  
170種



Table 3 Statistics on Weeds in Paddy Fields in Taipei District

Kinds	First Rice Crop		Second Rice Crop	
	Wet Weight (gm)	Percentage Among Plots Surveyed	Wet Weight (gm)	Percentage Among Plots Surveyed
<i>Monochoria vaginalis</i>	43,143	80	1,145	70
<i>Sagittaria trifolia</i>	15,290	55	1,444	29
<i>Echinochloa crus-galli</i>	12,707	66	2,271	42
<i>Eleocharis acicularis</i>	8,161	47	526	30
<i>Kyllinga brevifolia</i>	5,190	76	110	1
<i>Centipeda minima</i>	4,470	16	—	—
<i>Fimbristylis miliacea</i>	3,666	36	7,076	49
<i>Marsilea quadrifolia</i>	3,220	23	3,796	38
<i>Cardamine parviflora</i>	3,154	53	—	—
<i>Rotala rotundifolia</i>	2,800	71	2,811	35
<i>Alternanthera nodiflora</i>	2,547	47	—	—
<i>Eriocaulon pachypetalum</i>	2,282	9	—	—
<i>Panicum reptans</i>	2,127	21	125	32
<i>Blyxa shimadai</i>	2,109	12	297	2
<i>Scirpus wallichii</i>	1,759	32	273	14
<i>Commelina benghalensis</i>	1,599	12	667	14
<i>Ludwigia prostrata</i>	1,173	46	1,520	53
<i>Centelia asiatica</i>	731	7	17	2
<i>Juncus prismatocarpus</i>	467	6	2,243	49
<i>Lobelia affinis</i>	693	37	172	13
<i>Eleocharis japonica</i>	352	10	—	—
<i>Genostegia hirta</i>	312	5	—	—
<i>Ottelia alismoides</i>	277	6	—	—
<i>Lipocarpa argentea</i>	264	16	286	20
<i>Paspalum conjugatum</i>	260	14	1,116	30
<i>Ceratophyllum demersum</i>	235	4	—	—
<i>Lindernia pyxidaria</i>	228	29	51	15
<i>Jussiaea suffruticosa</i>	208	4	—	—
<i>Dobatorium junceum</i>	203	15	—	—
<i>Eriocaulon formosanum</i>	174	6	—	—
<i>Alternanthera sessilis</i>	144	8	—	—
<i>Lindernia antipoda</i>	76	10	727	7
<i>Ceratopteris thalictroides</i>	94	6	420	15
<i>Fimbristylis aestivalis</i>	49	2	1,095	5
<i>Panicum brevifolium</i>	32	3	—	—
<i>Potamogeton natans</i>	26	1	—	—
<i>Clinopodium confine</i>	21	1	—	—
<i>Oenanthe javanica</i>	15	2	—	—
<i>Paspalum distichum</i>	14	2	417	10
<i>Phyllanthus urinaria</i>	4	1	—	—
<i>Rotala indica</i>	—	—	3,090	32
<i>Cynodon dactylon</i>	—	—	3	3
<i>Jussiaea stipulaceae</i>	—	—	74	15
<i>Cyperus iria</i>	—	—	100	68
<i>Pycnus polystachus</i>	—	—	172	7
<i>Eragrostis cilianensis</i>	—	—	10	3
<i>Hedyotis diffusa</i>	—	—	514	11

<i>Alternanthera philoxeroides</i>	—	—	270	2
<i>Hypericum japonica</i>	—	—	162	6
<i>Cyperus pilosus</i>	—	—	171	4
<i>Lindernia cordifolia</i>	—	—	2,715	26
<i>Ageratum conyzoides</i>	—	—	230	1
<i>Stellaria aquatica</i>	—	—	108	3

Table 4 Statistics on Weeds in Paddy Fields in Hsinchu District

Kinds	First Rice Crop		Second Rice Crop	
	Wet Weight (gm)	Percentage Among Plots Surveyed	Wet Weight (gm)	Percentage Among Plots Surveyed
<i>Monochoria vaginalis</i>	8,655	63	2,781	58
<i>Echinochloa crus-galli</i>	5,684	76	4,518	58
<i>Sagittaria trifolia</i>	4,396	29	683	20
<i>Rotala indica</i>	2,768	35	142	40
<i>Fimbristylis miliacea</i>	2,034	31	1,200	28
<i>Cyperus difformis</i>	1,362	65	519	58
<i>Fimbristylis koidzumiana</i>	668	7	—	—
<i>Cyperus iria</i>	688	6	76	6
<i>Ageratum conyzoides</i>	445	5	1	1
<i>Eleocharis acicularis</i>	442	5	1	1
<i>Lindernia pyxidaria</i>	304	40	3	3
<i>Salvinia natans</i>	250	5	—	—
<i>Blyxa shimadai</i>	214	8	29	1
<i>Marsilea quadrifolia</i>	210	15	207	20
<i>Polygonum lapathifolium</i>	207	10	2	3
<i>Eclipta prostrata</i>	182	18	91	26
<i>Jussiaea erecta</i>	193	25	—	—
<i>Ludwigia prostrata</i>	165	21	647	31
<i>Kyllinga brevifolia</i>	155	16	15	7
<i>Panicum reptans</i>	132	6	177	9
<i>Alternanthera sessilis</i>	125	13	61	15
<i>Polygonum caespitosum</i>	96	4	—	—
<i>Alternanthera nodiflora</i>	89	11	4	3
<i>Dopatorium junceum</i>	73	9	11	1
<i>Paspalum distichum</i>	72	15	90	10
<i>Lindernia antipoda</i>	71	14	92	21
<i>Leptochloa chinensis</i>	65	2	77	4
<i>Alternanthera philoxeroides</i>	55	4	—	—
<i>Paspalum conjugatum</i>	55	6	—	—
<i>Juncus prismatocarpus</i>	46	9	—	—
<i>Cynodon dactylon</i>	46	15	25	13
<i>Lobelia affinis</i>	37	15	9	5
<i>Eleusine indica</i>	31	5	—	—
<i>Equisetum ramosissimum</i>	25	1	—	—
<i>Fimbristylis aestivalis</i>	24	1	—	—
<i>Lindernia cordifolia</i>	24	5	6	3
<i>Ceratophyllum demersum</i>	23	1	—	—
<i>Oenanthe javanica</i>	22	3	—	—
<i>Scirpus juncoides</i>	22	4	—	—
<i>Hydrocotyle formosana</i>	19	4	1	—
<i>Chenopodium ficifolium</i>	15	6	—	—
<i>Eleocharis dulcis</i>	13	2	—	—
<i>Hedyotis diffusa</i>	8	1	—	—
<i>Phyllanthus niruri</i>	8	4	—	—
<i>Houttuynia cordata</i>	7	1	—	—
<i>Eleocharis fistulosa</i>	6	1	—	—
<i>Cardamine parviflora</i>	5	3	—	—

<i>Brachiaria distachya</i>	5	1	—	—
<i>Scirpus wallichii</i>	4	1	25	3
<i>Ilysanthes serrata</i>	4	1	—	—
<i>Centella asiatica</i>	3	3	17	1
<i>Eriocaulon pachypetalum</i>	2	1	—	—
<i>Euphorbia formosana</i>	1	1	—	—
<i>Mazus japonicus</i>	1	1	0.2	1
<i>Polygonum japonicum</i>	1	1	—	—
<i>Carex brevicuspis</i>	1	1	—	—
<i>Commelina benghalensis</i>	—	—	102	3
<i>Ceratopteris thalictroides</i>	—	—	9	1
<i>Rotala leptopetala</i>	—	—	4	1
<i>Ranunculus japonicus</i>	—	—	2	1
<i>Digitaria chinensis</i>	—	—	43	4
<i>Cyperus rotundus</i>	—	—	5	1
<i>Oldenlandia diffusa</i>	—	—	3	1
<i>Melia formosana</i>	—	—	8	1
<i>Polygonum hydroppiper</i>	—	—	8	1
<i>Ammania baccifera</i>	—	—	30	3
<i>Echinochloa colona</i>	—	—	*	1
<i>Plantago major</i>	—	—	2	1
<i>Portulaca formosana</i>	—	—	28	1
<i>Synedrella nodiflora</i>	—	—	1	1
<i>Cyperus pilosus</i>	—	—	*	1
<i>Commelina auriculata</i>	—	—	20	1

\* Trace

Table 5 Statistics on Weeds in Paddy Fields in Taichung District

Kinds	First Rice Crop		Second Rice Crop	
	Wet Weight (gm)	Percentage Among Plots Surveyed	Wet Weight (gm)	Percentage Among Plots Surveyed
<i>Monochoria vaginalis</i>	17,606	79	14,713	84
<i>Echinochloa crus-galli</i>	9,823	78	7,713	68
<i>Ceratophyllum submersum</i>	8,071	6	—	—
<i>Cyperus difformis</i>	6,863	82	5,053	79
<i>Digitaria chinensis</i>	3,740	28	418	19
<i>Lindernia cordifolia</i>	3,527	84	1,680	73
<i>Fimbristylis miliacea</i>	2,350	43	630	32
<i>Gonostegia pentandra</i>	2,085	26	320	20
<i>Dopatorium junceum</i>	1,847	59	2,395	66
<i>Eleocharis acicularis</i>	1,810	16	105	7
<i>Alternanthera sessilis</i>	1,393	53	557	42
<i>Eclipta prostrata</i>	1,035	45	288	22
<i>Lobelia affinis</i>	860	50	61	10
<i>Eleocharis fistulosa</i>	683	9	1,581	19
<i>Ludwigia prostrata</i>	621	25	28	7
<i>Lindernia pyxidaria</i>	618	46	605	54
<i>Panicum repens</i>	592	9	539	28
<i>Polygonum lapathifolium</i>	482	18	9	1
<i>Marsilea quadrifolia</i>	439	9	353	9
<i>Paspalum dilatatum</i>	424	15	72	6
<i>Hydrocotyle formosana</i>	393	15	218	9
<i>Scirpus juncooides</i>	289	20	32	12
<i>Commelina auriculata</i>	180	9	334	5
<i>Sacciolepis indica</i>	174	24	292	22
<i>Oenanthe javanica</i>	144	12	8	4
<i>Rotala rotundifolia</i>	120	2	17	1
<i>Melothria formosana</i>	104	3	—	—
<i>Acalypha australis</i>	104	14	2	1
<i>Setaria viridis</i>	101	26	65	13
<i>Oldenlandia diffusa</i>	86	8	103	8
<i>Paspalum orbiculare</i>	71	8	22	3
<i>Kyllinga brevifolia</i>	59	8	18	4
<i>Mazus japonicus</i>	52	16	22	9
<i>Bidens pilosa</i>	50	1	1	1
<i>Polygonum flaccida</i>	45	4	—	—
<i>Centipeda minima</i>	39	7	—	—
<i>Paspalum conjugatum</i>	36	9	26	5
<i>Hypericum japonicum</i>	35	7	17	7
<i>Centella asiatica</i>	30	4	—	—
<i>Jussiaea erecta</i>	23	1	—	—
<i>Oldenlandia corymbosa</i>	20	1	—	—
<i>Ageratum houstonianum</i>	5	1	—	—
<i>Phyllanthus urinaria</i>	2	1	—	—
<i>Cyperus haspan</i>	2	1	—	—
<i>Pistia stratiotes</i>	—	—	927	1

Table 6 Statistics on Weeds in Winter Paddy Fields  
in Taichung District

Kinds	Wet Weight (gm)	Percentage Among Plots Surveyed
<i>Stellaria aquatica</i>	66,574	86
<i>Polygonum minus</i>	53,096	95
<i>Polygonum hydropiper</i>	51,788	72
<i>Chenopodium ficifolium</i>	41,242	96
<i>Alopecurus geniculatus</i>	35,664	54
<i>Gnaphalium indicum</i>	9,626	85
<i>Soliva anthemifolia</i>	5,976	17
<i>Hemistepta carthamoides</i>	5,454	28
<i>Nasturtium indica</i>	4,745	36
<i>Paspalum conjugatum</i>	2,804	37
<i>Mazus japonicus</i>	2,099	56
<i>Amaranthus spinosus</i>	1,642	40
<i>Crepis japonica</i>	1,503	49
<i>Alternanthera rodiflora</i>	1,389	23
<i>Rotala indica</i>	1,278	1
<i>Alternanthera sessilis</i>	1,271	17
<i>Erigeron canadensis</i>	1,095	32
<i>Ixeris oldhami</i>	973	17
<i>Panicum reptans</i>	756	16
<i>Ilysanthes anipoda</i>	755	30
<i>Eclipta prostrata</i>	691	35
<i>Cardamine parviflora</i>	623	6
<i>Solanum nigrum</i>	606	23
<i>Centipeda minima</i>	504	26
<i>Eleusine indica</i>	503	12
<i>Cynodon dactylon</i>	481	24
<i>Cyperus rotundus</i>	400	10
<i>Ludwigia repens</i>	300	6
<i>Chenopodium ambrosioides</i>	243	14
<i>Echinochloa crus-galli</i>	218	16
<i>Eragrostis plumosa</i>	188	8
<i>Eleocharis acicularis</i>	170	3
<i>Kyllinga brevifolia</i>	119	11
<i>Cyperus iria</i>	119	10
<i>Oxalis corniculata</i>	96	5
<i>Rumex crispus</i>	77	1
<i>Lobelia affinis</i>	60	5
<i>Fimbristylis dichotoma</i>	40	2
<i>Centella asiatica</i>	24	6
<i>Lactuca indica</i>	20	1
<i>Cyperus pilosus</i>	16	1
<i>Lindernia cordifolia</i>	12	1
<i>Plantago major</i>	10	1
<i>Rotala leptopetala</i>	10	1
<i>Epaltes australis</i>	8	1
<i>Fimbristylis miliacea</i>	7	1
<i>Oplismenus compositus</i>	3	1
<i>Sonchus oleraceus</i>	3	1
<i>Ilysanthes serrata</i>	1	1

Table 7 Statistics on Weeds in Winter Paddy Fields in  
Taichung District on Crop Basis

A Wheat and Tobacco

Kinds	Wheat		Tobacco	
	Wet Weight (gm)	Percentage Among Plots Surveyed	Wet Weight (gm)	Percentage Among Plots Surveyed
<i>Stellaria aquatica</i>	8,004	82	9,653	96
<i>Polygonum minuta</i>	17,558	96	1,433	27
<i>Polygonum hydropiper</i>	7,154	79	1,657	78
<i>Chenopodium ficifolium</i>	4,901	93	3,055	100
<i>Alpecurus aequalis</i>	12,613	71	574	33
<i>Gnaphalium indicum</i>	4,263	79	351	78
<i>Soliva anthemifolia</i>	168	29	2	4
<i>Hemistepta lyrata</i>	1,064	25	246	30
<i>Nasturtium indica</i>	1,180	39	26	15
<i>Paspalum conjugatum</i>	137	42	145	59
<i>Mazus japonicus</i>	425	50	116	56
<i>Amaranthus spinosus</i>	41	29	630	81
<i>Crepis japonica</i>	111	29	42	41
<i>Alternanthera nodiflora</i>	932	43	63	41
<i>Alternanthera sessilis</i>	19	11	6	11
<i>Erigeron canadensis</i>	292	39	14	11
<i>Ixeris oldhami</i>	215	25	1	4
<i>Panicum reptans</i>	214	21	13	11
<i>Ilysanthes antipoda</i>	192	39	12	15
<i>Eclipta prostrata</i>	86	32	62	41
<i>Cardamine parviflora</i>	20	4	—	—
<i>Solanum nigrum</i>	37	29	173	37
<i>Centipeda minima</i>	274	36	28	26
<i>Eleusine indica</i>	94	18	42	26
<i>Cynodon dactylon</i>	25	25	26	15
<i>Cyperus rotundus</i>	125	14	5	11
<i>Ludwigia repens</i>	—	—	4	11
<i>Chenopodium ambrosioides</i>	114	21	54	26
<i>Echinochloa crusgalli</i>	124	32	102	37
<i>Eragrostis plumosa</i>	20	14	1	4
<i>Eleocharis acicularis</i>	1	4	—	—
<i>Kyllinga brevifolia</i>	48	14	13	19
<i>Cyperus iria</i>	141	21	14	11
<i>Oxalis corniculata</i>	85	11	1	4
<i>Lobelia affinis</i>	—	—	1	4
<i>Fimbristylis dichotoma</i>	1	4	—	—
<i>Centella asiatica</i>	11	14	1	7
<i>Lactuca indica</i>	85	11	—	—
<i>Cyperus pilosus</i>	—	—	—	—
<i>Lindernia cordifolia</i>	5	11	1	4
<i>Oplismenus compositus</i>	4	4	—	—
<i>Sonchus oleraceus</i>	3	4	—	—

B. Sweet Potato and Rapeseed

Kinds	Sweet Potato		Rapeseed	
	Wet Weight (gm)	Percentage Among Plots Surveyed	Wet Weight (gm)	Percentage Among Plots Surveyed
<i>Stellaria aquatica</i>	13,390	83	6,460	85
<i>Polygonum minuta</i>	9,453	97	4,043	96
<i>Polygonum hydropiper</i>	18,867	67	9,619	67
<i>Chenopodium ficifolium</i>	11,646	100	6,773	96
<i>Alpecurus aequalis</i>	477	63	2,512	63
<i>Gnaphalium indicum</i>	1,414	63	288	52
<i>Soliva anthemifolia</i>	269	23	218	19
<i>Hemistepta lyrata</i>	582	30	1,816	37
<i>Nasturtium indica</i>	1,041	43	234	26
<i>Paspalum conjugatum</i>	69	27	3	11
<i>Mazus japonicus</i>	313	43	400	56
<i>Amaranthus spinosus</i>	290	30	12	11
<i>Crepis japonica</i>	347	57	26	11
<i>Alternanthera nodiflora</i>	40	10	63	15
<i>Alternanthera sessilis</i>	50	3	20	4
<i>Erigeron canadensis</i>	367	47	62	41
<i>Ixeris oldhami</i>	40	20	562	26
<i>Panicum reptans</i>	36	20	1	4
<i>Ilysanthes antipoda</i>	25	7	88	22
<i>Eclipta prostrata</i>	64	43	235	30
<i>Cardamine parviflora</i>	28	3	3	7
<i>Solanum nigrum</i>	336	30	53	22
<i>Centipeda minima</i>	66	23	30	22
<i>Eleusine indica</i>	40	17	14	4
<i>Cynodon dactylon</i>	42	23	11	15
<i>Cyperus rotundus</i>	12	7	14	11
<i>Ludwigia repens</i>	6	3	6	4
<i>Chenopodium ambrosioides</i>	54	17	—	—
<i>Echinochloa crusgalli</i>	20	3	2	7
<i>Eragrostis plumosa</i>	15	13	1	4
<i>Kyllinga brevifolia</i>	4	7	1	4
<i>Cyperus iria</i>	2	3	6	7
<i>Oxalis corniculata</i>	6	—	1	4
<i>Rumex crispus</i>	10	3	—	—
<i>Lobelia affinis</i>	12	3	2	4
<i>Centella asiatica</i>	5	10	1	4
<i>Cyperus pilosus</i>	16	3	—	—
<i>Lindernia cordifolia</i>	—	—	1	4
<i>Ilysanthes serrata</i>	—	—	2	4



C. Flax, Potato and Following Fields

Kinds	Flax		Potato		Following Fields	
	Wet Weight (gm)	Percentage Among Plots Surveyed	Wet Weight (gm)	Percentage Among Plots Surveyed	Wet Weight (gm)	Percentage Among Plots Surveyed
<i>Stellaria aquatica</i>	5,701	65	20,234	100	3,136	67
<i>Polygonum minuta</i>	4,335	95	5,094	89	11,127	100
<i>Polygonum hydropiper</i>	10,434	60	3,731	89	780	50
<i>Chenopodium ficifolium</i>	5,112	60	9,815	100	916	100
<i>Alpecurus aequalis</i>	9,724	45	9,491	93	275	25
<i>Gnaphalium indicum</i>	1,321	55	495	85	292	92
<i>Soliva anthemifolia</i>	—	—	24	19	5,269	42
<i>Hemistepta lyrata</i>	286	35	2	4	1,582	58
<i>Nasturtium indica</i>	1,362	30	25	11	623	33
<i>Paspalum conjugatum</i>	1,899	50	42	41	5	25
<i>Mazus japonicus</i>	455	85	62	26	211	67
<i>Amaranthus spinosus</i>	49	25	509	74	109	8
<i>Crepis japonica</i>	650	55	213	52	93	33
<i>Alternanthera nodiflora</i>	199	30	13	7	77	8
<i>Rotala indica</i>	—	—	—	—	1,278	8
<i>Alternanthera sessilis</i>	580	35	2	4	—	—
<i>Erigeron canadensis</i>	21	25	—	—	—	—
<i>Ixeris oldhami</i>	33	25	—	—	137	42
<i>Panicum reptans</i>	309	35	1	4	32	17
<i>Ilysanthes antipoda</i>	160	50	13	11	19	25
<i>Eclipta prostrata</i>	190	60	5	11	85	42
<i>Cardamine parviflora</i>	469	25	—	—	24	8
<i>Solanum nigrum</i>	1	5	42	22	9	8
<i>Centipeda minima</i>	67	40	3	7	41	50
<i>Eleusine indica</i>	277	15	23	7	—	—
<i>Cynodon dactylon</i>	252	50	62	22	61	17
<i>Cyperus rotundus</i>	141	25	8	4	18	8
<i>Ludwigia repens</i>	273	20	—	—	9	8
<i>Chenopodium ambrosioides</i>	10	20	10	7	12	17
<i>Echinochloa crusgalli</i>	1	5	33	19	1	8
<i>Eragrostis plumosa</i>	147	10	3	7	—	—
<i>Eleocharis acicularis</i>	170	25	5	4	—	—
<i>Kyllinga brevifolia</i>	30	15	4	11	17	8
<i>Cyperus iria</i>	18	25	5	4	—	—
<i>Oxalis corniculata</i>	—	—	5	4	4	17
<i>Rumex crispus</i>	—	—	—	—	67	8
<i>Lobelia affinis</i>	43	20	1	4	1	8
<i>Fimbristylis dichotoma</i>	42	20	—	—	—	—
<i>Centella asiatica</i>	4	5	—	—	2	8
<i>Lindernia cordifolia</i>	5	5	—	—	—	—
<i>Plantago major</i>	10	5	—	—	—	—
<i>Rotala leptopetala</i>	—	—	—	—	10	8
<i>Epaltes australis</i>	—	—	—	—	8	17
<i>Fimbristylis miliacea</i>	7	10	—	—	—	—

Table 8 Statistics on Weeds on Upland in  
Tainan District

Kinds	Wet Weight (gm)	Percentage Among Plots Surveyed
<i>Echinochloa colona</i>	693,577	66
<i>Digitaria sericea</i>	521,886	66
<i>Eleusine indica</i>	233,596	65
<i>Chenopodium ambrosioides</i>	27,856	19
<i>Echinochloa crusgalli</i>	262,313	47
<i>Amaranthus viridis</i>	236,309	49
<i>Physalis angulata</i>	221,968	52
<i>Dactyloctenium aegyptium</i>	153,239	25
<i>Cyperus rotundus</i>	128,538	53
<i>Euphorbia hirta</i>	119,514	33
<i>Solanum biflorum</i>	117,777	39
<i>Pycreus polystachus</i>	93,361	24
<i>Paspalum orbiculae</i>	93,125	1
<i>Digitaria violacens</i>	63,503	39
<i>Portulaca oleracea</i>	67,458	37
<i>Amaranthus spinosus</i>	43,665	21
<i>Euphorbia thymifolia</i>	36,521	17
<i>Eragrostis plumosa</i>	35,493	7
<i>Sesbaria sesban</i>	34,060	7
<i>Chenopodium ficifolium</i>	31,610	39
<i>Sida rhombifolia</i>	29,094	14
<i>Cynodon dactylon</i>	23,774	29
<i>Panicum repens</i>	23,633	12
<i>Arachis hypogaea</i>	25,740	1
<i>Phyllanthus niruri</i>	21,541	11
<i>Thuarea involuta</i>	17,144	7
<i>Lippia nodiflora</i>	16,624	4
<i>Aneilema sinicum</i>	16,250	4
<i>Eclipta prostrata</i>	15,731	10
<i>Acalypha australis</i>	15,637	12
<i>Ipomoea batatas</i>	15,469	2
<i>Wedelia chinensis</i>	13,204	15
<i>Ageratum conyzoides</i>	9,049	4
<i>Alternanthera sessilis</i>	8,997	2
<i>Polygonum lapatifolium</i>	19,880	12
<i>Cyperus iria</i>	6,411	5
<i>Polygonum minuta</i>	41,032	14
<i>Oryza sativa</i>	5,616	6
<i>Setaria geniculata</i>	4,921	3
<i>Heliotropium indicum</i>	4,815	7
<i>Pedicellatia pentaphylla</i>	4,300	1
<i>Portulaca pilosa</i>	3,548	4
<i>Mentha amensis</i>	3,135	1
<i>Commelina undulata</i>	3,156	1
<i>Epaltes australis</i>	3,596	5
<i>Oxalis carniculata</i>	2,235	4
<i>Eragrostis niwahokori</i>	1,927	3
<i>Bonnaya sp.</i>	1,104	1

<i>Columella japonica</i>	1,040	1
<i>Bothriospermum tenellam</i>	9,848	8
<i>Erigeron canadensis</i>	958	2
<i>Erigeron linifolius</i>	840	1
<i>Soliva anthemifolia</i>	3,852	4
<i>Equisetum ramosissimum</i>	765	3
<i>Leonurus sibiricus</i>	598	2
<i>Centella asiatica</i>	527	3
<i>Cassia tona</i>	456	1
<i>Erechtites valerianefolia</i>	451	1
<i>Portulaca quadrifida</i>	256	1
<i>Crotalaria sp.</i>	210	1
<i>Gnaphalium purpureum</i>	168	1
<i>Melia azedarach</i>	105	1
<i>Emillia sonchifolia</i>	103	1
<i>Lactuca formosana</i>	33	1
<i>Alysicarpus nummularifolius</i>	27	1
<i>Achyranthes obtusifolia</i>	20	1
<i>Sacciolepis indica</i>	8	1
<i>Nasturtium indicum</i>	31,132	4
<i>Arundo formosana</i>	801	1
<i>Panicum reptens</i>	88	1

Table 9 Statistics on Weeds on Upland in Tainan District on Crop Basis

## A. Peanut

Kinds	Spring Crop	(Previous Crop: Rice)	Spring Crop	(Previous Crop: Upland Crop)	Fall Crop	
	Wet Weight (gm)	Percentage Among Plots Surveyed	Wet Weight (gm)	Percentage Among Plots Surveyed	Wet Weight (gm)	Percentage Among Plots Surveyed
<i>Echinochloa colona</i>	185,960	88	182,768	76	29,274	90
<i>Digitaria sericea</i>	84,945	79	208,882	88	6,462	75
<i>Eleusine indica</i>	36,953	79	68,246	71	14,304	65
<i>Chenopodium ambrosioides</i>	4,750	9	421	6	225	5
<i>Echinochloa crusgalli</i>	108,858	88	84,398	47	7,030	45
<i>Amaranthus viridis</i>	79,995	59	86,187	65	5,567	45
<i>Physalis angulata</i>	13,257	76	135,333	65	2,015	35
<i>Dactyloctenium aegyptium</i>	4,855	18	57,488	47	536	25
<i>Cyperus rotundus</i>	18,195	56	47,505	69	1,623	45
<i>Euphorbia hirta</i>	5,540	29	64,335	53	4,042	20
<i>Solanum biflorum</i>	26,743	62	45,019	51	270	20
<i>Pycneus polystachus</i>	8,930	15	19,004	18	2,340	35
<i>Paspalum orbiculare</i>	125	3	—	—	—	—
<i>Digitaria violascens</i>	9,675	3	23,008	47	1,120	15
<i>Portulaca oleracea</i>	10,333	29	19,473	45	743	20
<i>Amaranthus spinosus</i>	3,385	21	26,950	31	1,470	25
<i>Euphorbia thymifolia</i>	8,108	29	11,485	18	—	—
<i>Eragrostis plumosa</i>	10	3	300	2	—	—
<i>Sesbania sesban</i>	6,600	3	6,132	4	—	—
<i>Chenopodium ficifolium</i>	2,155	29	8,808	35	—	—
<i>Sida rhombifolia</i>	25	3	630	8	985	10
<i>Cynodon dactylon</i>	2,405	15	9,912	16	150	15
<i>Panicum repens</i>	518	12	1,560	8	—	—
<i>Phyllanthus niruri</i>	5	3	2,579	12	142	15
<i>Thurea involuta</i>	6,655	9	1,137	6	—	—
<i>Lippia nodiflora</i>	2,150	9	—	—	85	5
<i>Aneilema sinicum</i>	110	6	50	2	—	—
<i>Eclipta prostrata</i>	1,400	6	2,468	12	—	—
<i>Acalypha australis</i>	8,993	26	1,480	8	35	5
<i>Ipomoea batatas</i>	—	—	5,605	2	—	—
<i>Wedelia chinenses</i>	5,978	29	878	6	—	—
<i>Ageratum conyzoides</i>	100	3	3,555	4	—	—
<i>Polygonum lapatifolium</i>	250	3	400	2	—	—
<i>Cyperus iria</i>	165	3	382	4	—	—
<i>Polygonum minuta</i>	—	—	1,005	4	163	5
<i>Oryza sativa</i>	540	12	118	4	—	—
<i>Setaria geniculata</i>	—	—	2,972	4	—	—
<i>Heliotropium indicum</i>	325	6	1,850	2	35	5
<i>Portulaca pilosa</i>	—	—	—	—	—	—
<i>Mentha amensis</i>	—	—	3,250	2	18	5
<i>Commelina undulata</i>	350	3	1,835	2	—	—
<i>Eragrostis niwahokori</i>	30	3	—	—	—	1
<i>Bonnaga sp.</i>	360	3	195	2	—	1
<i>Bothriospermum tenellum</i>	—	—	1,040	2	—	1
<i>Equisetum ramosissimum</i>	—	—	37	2	—	1

<i>Leonurus sibiricus</i>	180	6	520	4	—	1
<i>Centella asiatica</i>	450	3	67	2	—	1
<i>Cassia tona</i>	5	3	—	—	—	1
<i>Portulaca quadrifida</i>	—	—	415	3	—	1
<i>Melia azedarach</i>	105	3	—	—	—	1
<i>Emillia sonchifolia</i>	55	3	—	—	—	1

B. Sweet Potato & Soybean

Kinds	Sweet Potato (Previous Crop: Rice)		Sweet Potato (Previous Crop: Upland Crop)		Soybean	
	Wet Weight (gm)	Percentage Among Plots Surveyed	Wet Weight (gm)	Percentage Among Plots Surveyed	Wet Weight (gm)	Percentage Among Plots Surveyed
<i>Echinochloa colona</i>	11,602	36	50,037	60	29,814	60
<i>Digitaria sericea</i>	27,057	50	65,189	68	17,965	73
<i>Eleusine indica</i>	10,029	57	35,312	76	17,821	69
<i>Chenopodium ambrosioides</i>	20,578	36	52	4	—	—
<i>Echinochloa crusgalli</i>	12,369	57	15,660	43	12,896	53
<i>Amaranthus viridis</i>	6,966	39	19,571	68	26,341	60
<i>Physalis angulata</i>	7,377	64	7,480	43	19,668	73
<i>Dactyloctenium aegyptium</i>	4,495	7	19,255	32	606	13
<i>Cyperus rotundus</i>	13,410	71	29,075	43	5,137	67
<i>Euphorbia hirta</i>	603	32	8,766	43	10,431	27
<i>Solanum biflorum</i>	27,762	82	725	8	8,652	60
<i>Pycnus polystachus</i>	409	14	13,347	24	9,600	20
<i>Digitaria violascens</i>	9,242	21	9,115	20	2,243	13
<i>Portulaca oleracea</i>	2,589	43	2,528	43	9,359	40
<i>Amaranthus spinosus</i>	998	21	10,148	40	693	13
<i>Euphorbia thymifolia</i>	5,174	29	9,500	16	49	20
<i>Eragrostis plumosa</i>	1,096	7	29,306	20	275	7
<i>Sesbania sesban</i>	7,253	10	166	8	4,275	7
<i>Chenopodium ficifolium</i>	7,797	68	474	4	3,704	53
<i>Sida rhombifolia</i>	1,629	21	9,069	40	2,892	13
<i>Cynodon dactylon</i>	7,914	46	1,162	20	2,704	27
<i>Panicum repens</i>	5,662	29	8,067	16	5,395	27
<i>Arachis hypogaea</i>	—	—	25,740	12	—	—
<i>Phyllanthus niruri</i>	8,118	19	9,364	20	960	7
<i>Thurea involuta</i>	297	11	1,475	4	533	13
<i>Lippia nodiflora</i>	45	4	12,120	8	2,224	7
<i>Aneilema sinicum</i>	—	—	3,390	8	—	—
<i>Eclipta prostrata</i>	2,700	21	57	4	208	13
<i>Acalypha australis</i>	4,011	36	8	4	816	2
<i>Ipomoea batatas</i>	—	—	—	—	5,250	7
<i>Wedelia chinenses</i>	1,969	25	—	—	792	27
<i>Ageratum conyzoides</i>	210	4	18	8	—	—
<i>Alternanthera sessilis</i>	—	—	7,750	8	—	—
<i>Polygonum lapatifolium</i>	2,015	32	51	4	4,178	20
<i>Cyperus iria</i>	193	7	157	8	170	13
<i>Polygonum minuta</i>	4,316	46	96	4	164	7
<i>Oryza sativa</i>	299	18	—	—	—	—
<i>Setaria geniculata</i>	7	4	640	4	252	7
<i>Heliotropium indicum</i>	2,016	21	213	4	76	7
<i>Pedicellaria pentaphylla</i>	1,960	7	—	—	—	—
<i>Portulaca pilosa</i>	42	10	81	8	158	7
<i>Mentha amensis</i>	—	—	51	4	—	—
<i>Commelina undulata</i>	—	—	336	8	64	7
<i>Epaltes australis</i>	1,884	14	—	—	—	—
<i>Oxalis corniculata</i>	1,645	25	153	4	—	—
<i>Eragrostis niwahokori</i>	1,200	4	1,104	4	—	—
<i>Commumella japonica</i>	—	—	—	—	288	13

<i>Bothriospermum tenellum</i>	503	18	186	4	—	—
<i>Erigeron canadensis</i>	772	14	—	—	—	—
<i>Erigeron linifolius</i>	840	7	—	—	—	—
<i>Soliva anthemifolia</i>	1,683	21	51	4	—	—
<i>Equisetum ramosissimum</i>	10	4	—	—	50	7
<i>Leonurus sibiricus</i>	31	7	—	—	—	—
<i>Centella asiatica</i>	402	14	430	4	10	7
<i>Cassia tona</i>	16	4	—	—	—	—
<i>Erechtites valerianefolia</i>	36	7	—	—	—	—
<i>Portulaca quadrifida</i>	256	4	—	—	210	7
<i>Crotalaria sp.</i>	—	—	8	4	—	—
<i>Emillia sonchifolia</i>	48	7	75	4	—	—
<i>Lactuca formosana</i>	48	4	3	4	—	—
<i>Alysicarpus nummularifolius</i>	30	4	—	—	—	—
<i>Achynanthes obtusifolia</i>	—	—	—	—	20	7
<i>Nasturtium indica</i>	8	4	3	4	42	7
<i>Arundo formosana</i>	801	4	—	—	—	—
<i>Panicum reptens</i>	88	4	—	—	—	—

C. Upland Rice & Jute

Kinds	Upland Rice		Jute	
	Wet Weight (gm)	Percentage Among Plots Surveyed	Wet Weight (gm)	Percentage Among Plots Surveyed
<i>Echinochloa colona</i>	24,490	100	9,320	70
<i>Digitaria sericea</i>	7,150	42	17,960	60
<i>Eleusine indica</i>	7,100	57	8,440	70
<i>Chenopodium ambrosioides</i>	275	8	630	10
<i>Echinochloa crusgalli</i>	8,740	42	2,100	20
<i>Amaranthus viridis</i>	2,325	17	7,275	50
<i>Physalis angulata</i>	10,600	17	13,007	40
<i>Dactyloctenium aegyptium</i>	18	17	645	20
<i>Cyperus rotundus</i>	650	33	8,760	50
<i>Euphorbia hirta</i>	11,955	33	5,350	10
<i>Solanum biflorum</i>	1,600	8	2,690	10
<i>Pycnus polystachus</i>	4,060	67	5,195	50
<i>Digitaria violascea</i>	—	—	446	20
<i>Portulaca oleracea</i>	7,330	58	9,545	40
<i>Eragrostis plumosa</i>	—	—	936	30
<i>Sesbania sesban</i>	1,985	17	7,655	40
<i>Chenopodium ficifolium</i>	1,625	8	4,550	10
<i>Cynodon dactylon</i>	4,125	25	75	10
<i>Panicum repens</i>	2,125	8	5,220	20
<i>Arachis hypogaea</i>	—	—	—	—
<i>Phyllanthus niruri</i>	10	8	—	—
<i>Thurea involuta</i>	1,070	17	6,020	20
<i>Aneilema sinicum</i>	—	—	3,200	10
<i>Eclipta prostrata</i>	1,540	17	1,575	10
<i>Ipomoea batatas</i>	4,605	17	—	—
<i>Wedelia chinenses</i>	10	8	210	10
<i>Alternanthera sessilis</i>	—	—	413	10
<i>Polygonum minuta</i>	—	—	190	10
<i>Oryza sativa</i>	—	—	4,550	20
<i>Heliotropium indicum</i>	10	8	—	—
<i>Mentha amensis</i>	—	—	—	—
<i>Commelina undulata</i>	1,025	8	2,080	10
<i>Oxalis corniculata</i>	—	—	560	10
<i>Eragrostis niwahokori</i>	—	—	10	10
<i>Bothriospermum tenellum</i>	—	—	170	10
<i>Centella asiatica</i>	—	—	120	10
<i>Gnaphalium purpureum</i>	—	—	160	10



D. Rapeseed & Other Crops

Kinds	Other Crops		Rapeseed	
	Wet Weight (gm)	Percentage Among Plots Surveyed	Wet Weight (gm)	Percentage Among Plots Surveyed
<i>Echinochloa colona</i>	85,310	86	—	—
<i>Digitaria sericea</i>	86,277	79	—	—
<i>Eleusine indica</i>	85,392	86	—	—
<i>Chenopodium ambrosioides</i>	926	14	—	—
<i>Echinochloa crusgalli</i>	263	14	—	—
<i>Amaranthus viridis</i>	1,981	43	92	7
<i>Physalis angulata</i>	13,232	36	—	—
<i>Dactyloctenium aegyptium</i>	65,342	50	—	—
<i>Cyperus rotundus</i>	4,135	42	—	—
<i>Euphorbia hirta</i>	8,493	50	—	—
<i>Solanum biflorum</i>	4,139	21	128	13
<i>Pycreus polystachus</i>	35,394	43	82	7
<i>Paspalum orbiculare</i>	98,000	7	—	—
<i>Digitaria violascens</i>	13,650	50	—	—
<i>Portulaca oleracea</i>	5,510	57	—	—
<i>Amaranthus spinosus</i>	1,981	14	—	—
<i>Euphorbia thymifolia</i>	2,215	29	—	—
<i>Eragrostis plumosa</i>	3,575	14	—	—
<i>Sesbania sesban</i>	—	—	—	—
<i>Chenopodium ficifolium</i>	19	7	2,479	60
<i>Sida rhombifolia</i>	13,864	50	—	—
<i>Cynodon dactylon</i>	274	21	54	7
<i>Panicum repens</i>	—	—	92	7
<i>Phyllanthus niruri</i>	363	14	—	—
<i>Aneilema sinicum</i>	9,500	14	—	—
<i>Eclipta prostrata</i>	5,784	14	—	—
<i>Acalypha australis</i>	295	14	—	—
<i>Wedelia calendulacea</i>	—	—	8,368	60
<i>Ageratum conyzoides</i>	5,100	14	66	13
<i>Alternanthera sessilis</i>	—	—	834	7
<i>Polygonum lapatifolium</i>	—	—	12,986	87
<i>Cyperus iria</i>	5,330	14	14	7
<i>Polygonum minuta</i>	—	—	35,096	80
<i>Setaria geniculata</i>	1,050	7	—	—
<i>Heliotropium indicum</i>	290	7	—	—
<i>Pedicellaria pentaphylla</i>	2,340	7	—	—
<i>Epaltes australis</i>	—	—	1,312	27
<i>Eragrostis niwahokori</i>	2	7	—	—
<i>Bothriospermum tenellum</i>	—	—	8,887	73
<i>Soliva anthemifolia</i>	—	—	3,028	60
<i>Gnaphalium purpureum</i>	—	—	21,310	87
<i>Saussurea affinis</i>	—	—	16,613	80
<i>Lactuca formosana</i>	27	7	—	—
<i>Nasturtium indica</i>	—	—	31,137	53
<i>Marsilea quadrifolia</i>	—	—	135	7

Table 10 Statistics on Weeds in Paddy Fields in  
Kaohsiung District

Kinds	First Rice Crop		Second Rice Crop	
	Wet Weight (gm)	Percentage Among Plots Surveyed	Wet Weight (gm)	Percentage Among Plots Surveyed
<i>Echinochloa crus-galli</i>	6,229	90	1,037	69
<i>Monochoria vaginalis</i>	2,635	66	4,402	71
<i>Cyperus difformis</i>	2,139	88	426	51
<i>Cyperus rotundus</i>	1,168	20	663	33
<i>Scirpus wallichii</i>	877	66	325	40
<i>Eclipta prostrata</i>	795	66	4,431	98
<i>Sagittaria sagittifolia</i>	571	36	745	24
<i>Marsilea quadrifolia</i>	549	26	737	40
<i>Rotala indica</i>	544	68	1,253	71
<i>Panicum reptans</i>	340	50	164	16
<i>Lindernia pyxidaria</i>	327	62	553	42
<i>Alternanthera sessilis</i>	163	34	112	13
<i>Eleocharis acicularis</i>	161	14	433	20
<i>Hydrocotyle formosana</i>	118	8	46	2
<i>Lindernia antipoda</i>	88	20	237	20
<i>Cynodon dactylon</i>	63	20	408	27
<i>Mazus japonicus</i>	39	10	22	7
<i>Fimbristylis miliacea</i>	14	8	869	29
<i>Lindernia cordifolia</i>	13	4	—	—

### III. Illustrations of 76 Most Common Weeds Found on Cultivated Lands in Western Taiwan

The following illustrations of the weeds contain (1) morphological drawings; (2) botanical description and (3) distribution map for each kind of weeds.

Table 11 Nomenclature of 76 Most Common Weeds Found on Cultivated Land in Western Taiwan

Figure No.	Scientific Name	Chinese Name	Family	Page
1.	<i>Acalypha australis</i> Linn.	鐵莧草	<i>Euphorbiaceae</i>	34
2.	<i>Ageratum conyzoides</i> Linn.	霍香薊	<i>Compositae</i>	36
3.	<i>Alopecurus aequalis</i> Sobol. var. <i>amurensis</i> (Komar.) Ohwi	看麥娘	<i>Gramineae</i>	38
4.	<i>Alternanthera nodiflora</i> R. Br.	節節花	<i>Amaranthaceae</i>	40
5.	<i>Alternanthera sessilis</i> R. Br.	滿天星	<i>Amaranthaceae</i>	42
6.	<i>Amaranthus spinosus</i> Linn.	刺莧	<i>Amaranthaceae</i>	44
7.	<i>Amaranthus viridis</i> Linn.	野莧菜	<i>Amaranthaceae</i>	46
8.	<i>Aneilema sinicum</i> Lindl.	水竹葉	<i>Commelinaceae</i>	43
9.	<i>Bothriospermum tenellum</i> Fisch. et Mey.	細纓子草	<i>Borraginaceae</i>	50
10.	<i>Centella asiatica</i> (L.) Urban.	雷公根；蚶壳草	<i>Umbelliferae</i>	52
11.	<i>Centipeda minima</i> (L.) A. Braun et Aschers.	石胡荽；吐金草	<i>Compositae</i>	54
12.	<i>Chenopodium ficifolium</i> Sm.	小葉灰藟	<i>Chenopodiaceae</i>	56
13.	<i>Cynodon dactylon</i> Pers.	狗牙根	<i>Gramineae</i>	58
14.	<i>Cyperus difformis</i> Linn.	球花蒿草	<i>Cyperaceae</i>	60
15.	<i>Cyperus iria</i> Linn.	莎草	<i>Cyperaceae</i>	62
16.	<i>Dactyloctenium aegyptium</i> (Linn.) Richt.	埃及指梳茅	<i>Gramineae</i>	64
17.	<i>Digitaria chinensis</i> Hornem	小指草	<i>Gramineae</i>	66
18.	<i>Digitaria sericea</i> (Honda) Honda	絹毛指草	<i>Gramineae</i>	68
19.	<i>Digitaria violascens</i> Link.	紫果指草	<i>Gramineae</i>	70
20.	<i>Dopatorium junceum</i> Hamilt.		<i>Scrophulariaceae</i>	72
21.	<i>Echinochloa colona</i> (L.) Link.	芒稷	<i>Gramineae</i>	74
22.	<i>Echinochloa crus-galli</i> Beauv. var. <i>austro-japonensis</i> Ohwi	細葉野稗	<i>Gramineae</i>	76
23.	<i>Echinochloa crus-galli</i> Beauv. var. <i>formosensis</i> Ohwi	台灣野稗	<i>Gramineae</i>	78
24.	<i>Eclipta prostrata</i> (L.) Linn.	墨菜；鱧腸	<i>Compositae</i>	80
25.	<i>Eleocharis acicularis</i> (Linn.) R. & S. var. <i>longiseta</i> Svenson		<i>Cyperaceae</i>	82
26.	<i>Eleusine indica</i> Gaertn.	牛筋草；蟋蟀草	<i>Gramineae</i>	84
27.	<i>Epaltes australis</i> Less.		<i>Compositae</i>	86
28.	<i>Equisetum ramosissimum</i> Desv.	節節草	<i>Equisetaceae</i>	88
29.	<i>Eragrostis amabilis</i> (L.) Wight. et Arn.	鯽魚草	<i>Gramineae</i>	90
30.	<i>Euphorbia hirta</i> Linn.	乳仔草；大本乳仔草	<i>Euphorbiaceae</i>	92
31.	<i>Euphorbia thymifolia</i> Linn.	紅乳草	<i>Euphorbiaceae</i>	94
32.	<i>Fimbristylis miliacea</i> (L.) Vahl.	木虱草	<i>Cyperaceae</i>	96
33.	<i>Gnaphalium purpureum</i> Linn.	鼠麴舅；擬青天白地	<i>Compositae</i>	98

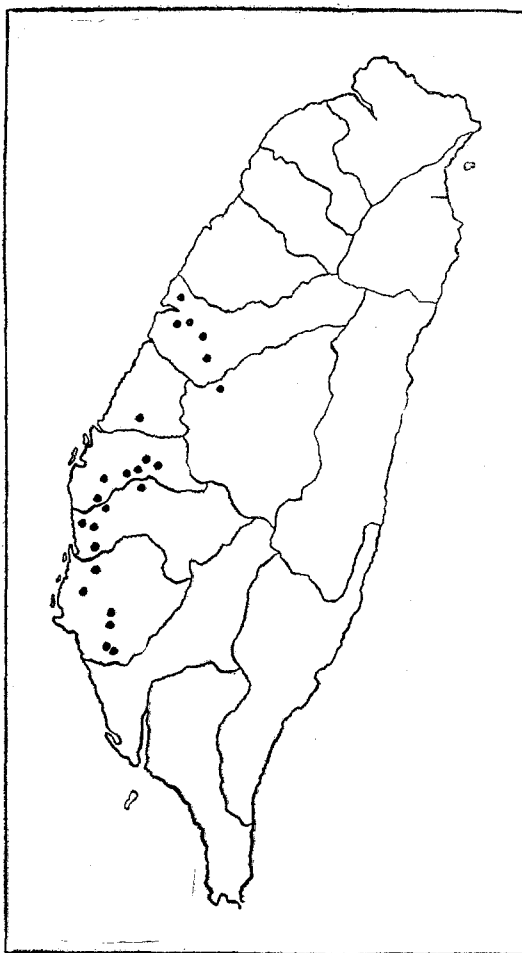
34. <i>Hedyotis diffusa</i> Willd.	珠仔草；龍吐珠	<i>Rubiaceae</i>	100
35. <i>Heliotropium indicum</i> Linn.	狗尾虫草	<i>Borraginaceae</i>	102
36. <i>Hemistepta lyrata</i> Bunge.	泥胡菜	<i>Compositae</i>	104
37. <i>Hydrocotyle formosana</i> Masamune	台灣蚶殼草	<i>Umbelliferae</i>	106
38. <i>Hypericum japonicum</i> Thunb.	地耳草	<i>Guttiferae</i>	108
39. <i>Ixeris laevigata</i> (Blume) Sch. var. <i>lanceolata</i> Makimo.	刀傷草	<i>Compositae</i>	110
40. <i>Juncus prismatocarpus</i> R. Br.		<i>Juncaceae</i>	112
41. <i>Kyllinga brevifolia</i> Rottb.	水蜈蚣	<i>Cyperaceae</i>	114
42. <i>Lindernia cordifolia</i> Merr.		<i>Scrophulariaceae</i>	116
43. <i>Lindernia pyxidaria</i> All.	母草	<i>Scrophulariaceae</i>	118
44. <i>Lippia nodiflora</i> Rich.	過江藤；鴨嘴黃	<i>Verbenaceae</i>	120
45. <i>Lobelia radicans</i> Thunb	半邊蓮	<i>Campanulaceae</i>	122
46. <i>Ludwigia prostrata</i> Roxb.	喇叭草	<i>Oenotheraceae</i>	124
47. <i>Marsilea quadrifolia</i> Linn.	蘋草；水鹽酸；四葉菜	<i>Marsiliaceae</i>	126
48. <i>Mazus japonicus</i> O. Kuntze	通泉草；大角定經草	<i>Scrophulariaceae</i>	128
49. <i>Monochoria vaginalis</i> (L.) Presl.	鴨舌草；豬耳朵	<i>Pontederiaceae</i>	130
50. <i>Rorippa atrovirens</i> (Honrem.) Ohwi et Hara.	山芥菜；葶藶	<i>Cruciferae</i>	132
51. <i>Oenanthe javanica</i> (Blume) DC.	水芹菜	<i>Umbelliferae</i>	134
52. <i>Oxalis corniculata</i> Linn.	酢醬草	<i>Oxalidaceae</i>	136
53. <i>Panicum repens</i> Linn.	匍黍草	<i>Gramineae</i>	138
54. <i>Paspalum conjugatum</i> Berg.	毛穎雀稗	<i>Gramineae</i>	140
55. <i>Pedicularia pentaphylla</i> Schrank.	白花菜	<i>Capparidaceae</i>	142
56. <i>Phyllanthus niruri</i> Linn.	小返魂	<i>Euphorbiaceae</i>	144
57. <i>Physalis angulata</i> Linn.	炮仔草；苦蕒	<i>Solanaceae</i>	146
58. <i>Plantago major</i> Linn. var. <i>kimurae</i> Yamamoto	車前草	<i>Plantaginaceae</i>	148
59. <i>Polygonum caespitosum</i> Bl.	馬蓼	<i>Polygonaceae</i>	150
60. <i>Polygonum hydrobiper</i> Linn.	水蓼	<i>Polygonaceae</i>	152
61. <i>Polygonum lapathiifolium</i> Linn.	旱辣蓼	<i>Polygonaceae</i>	154
62. <i>Portulaca oleracea</i> Linn.	豬母菜；豬母乳；馬齒莧	<i>Portulacaceae</i>	156
63. <i>Pycreus polystachus</i> Beauv.		<i>Cyperaceae</i>	158
64. <i>Rotala indica</i> (Willd.) Koehne		<i>Lythraceae</i>	160
65. <i>Rotala rotundifolia</i> Koehne	水豬母乳草	<i>Lythraceae</i>	162
66. <i>Sagittaria trifolia</i> Linn.	野茨菰	<i>Alismataceae</i>	164
67. <i>Scirpus juncooides</i> Roxb.	螢蘭	<i>Cyperaceae</i>	166
68. <i>Scirpus wallichii</i> Nees.	台灣野蘭	<i>Cyperaceae</i>	168
69. <i>Setaria geniculata</i> (Lam.) P. Beauv.	小粒狗尾草	<i>Gramineae</i>	170
70. <i>Setaria viridis</i> Beauv.	狗尾草	<i>Gramineae</i>	172
71. <i>Solanum nigrum</i> Linn.	龍葵	<i>Solanaceae</i>	174
72. <i>Soliva anthemifolia</i> R. Br.	假吐金菊	<i>Compositae</i>	176
73. <i>Stellaria aquatica</i> (L.) Scop.	鵝兒腸	<i>Caryophyllaceae</i>	178
74. <i>Thuraea involuta</i> (G. Forst.) R. Br.	濱筴草	<i>Gramineae</i>	180
75. <i>Wedelia chinensis</i> (Osbeck.) Merr.	黃花田蘿蔔	<i>Compositae</i>	182
76. <i>Youngia japonica</i> (L.) DC.	黃瓜菜	<i>Compositae</i>	184

Fig. 1

*Acalypha australis* Linn.

*Euphorbiaceae*

- A. Whole plant ( $\frac{1}{2}$ )
- B. A branch with flower ( $\frac{1}{2}$ )
- C. Pistillate flowers within bract (X2)
- D. Bract (X2)
- E. Seed (X10)
- F. Fruit (X6)



Annuals, plants pubescent, stems erect about 30-50 cm. high, leaves ovate, sometimes broad-lanceolate, membranaceous, 3-6 cm. long, 1-3 cm. wide, upper surface sparsely clothed with appressed hairs, lower surface clothed with short hairs, 3 main-veined, margin serrate, petiole slender, flowers 1-5, pedicels short, surrounded by bracts, pistillate flowers at the base, bracts ovate, dentate, staminate flowers small, sessile or very short pedicels, capsule pubescent, sessile or short stalks, seeds ovate, dark-brown glabrous.

**Habitat:** On the paddy fields of Taichung district and upland of Tainan district of Taiwan.



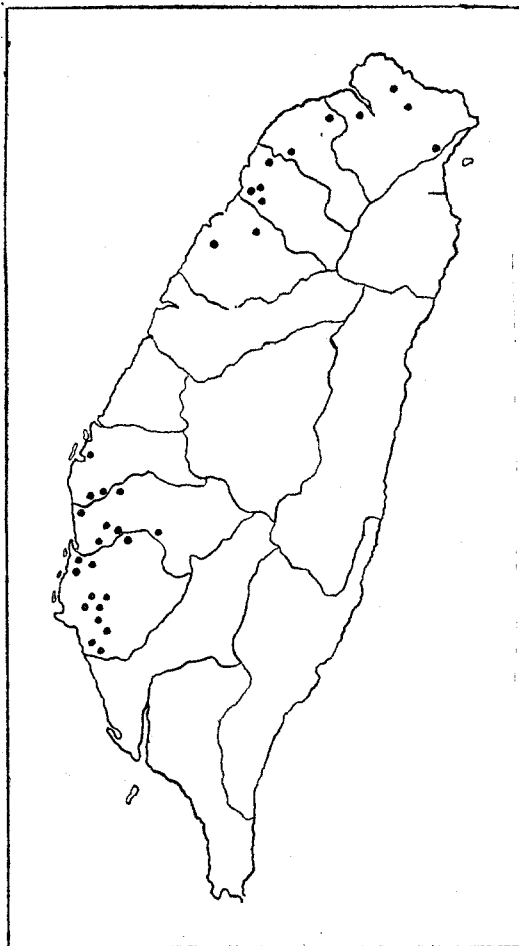
Fig. 1 *Acalypha australis* Linn.

Fig. 2

*Ageratum conyzoides* Linn.

*Compositae*

- A. Low part of stem and root ( $\frac{1}{2}$ )
- B. Branch with flowers ( $\frac{1}{2}$ )
- C. Capitulum or head (X3)
- D. Bract of outer row (X7)
- E. Bract of inner row (X7)
- F. Flower (X10)
- G. Flower without corolla (X10)



Annual erect herbs, up to 60 cm. high, plants hirsute, leaves opposite, petiolate, cordate-ovate, acuminate at the apex, margin crenate, capitulum in rather dense terminal corymbs, involucre campanulate, bract in 2 rows, linear-lanceolate, acuminate, outer surface covered with hairs, flowers white small, tubular, regular, 5-cleft, fruits achene, 5-angled with pappus.

**Habitat:** On the paddy fields of the northern part and upland of southern Taiwan.

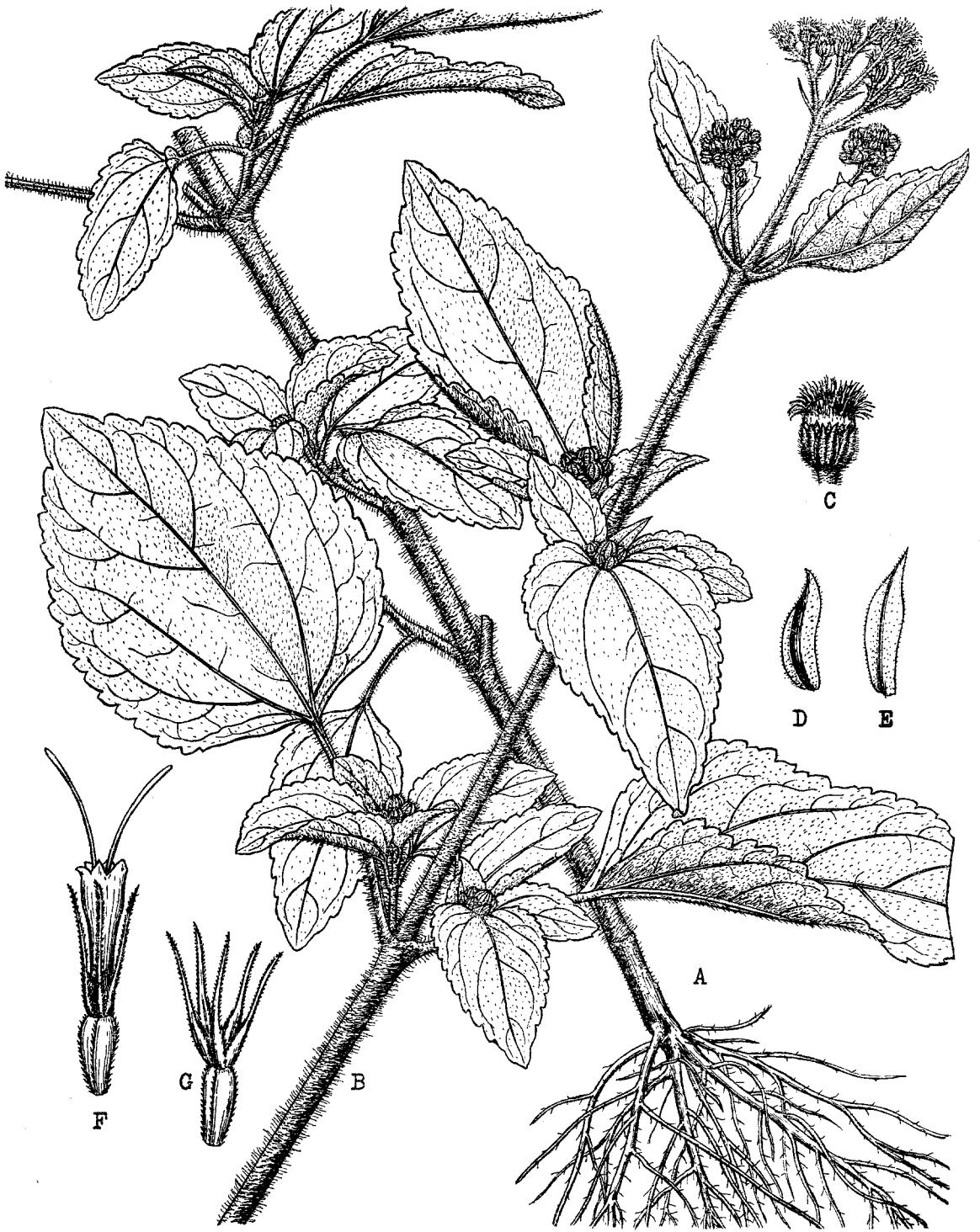


Fig. 2 *Ageratum conyzoides* Linn.

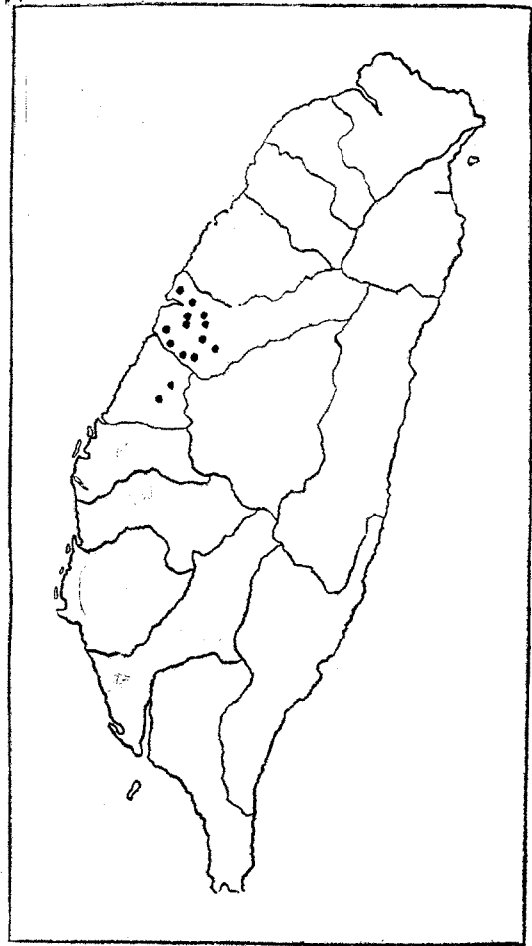


Fig. 3

*Alopecurus aequalis* Sobol.  
var. *amurensis* (Komar.) Ohwi  
Syn. *Alopecurus geniculatus* Linn.

*Gramineae*

- A. Whole plant ( $\frac{1}{4}$ )
- B. Nodular portion of leaf (X5)
- C. Spikelet (X10)
- D. Glume (X10)
- E. Lemma (X12)
- F. Palea (X12)
- G. Seed (X20)



Annuals, culms tufted, about 20-45 cm. high, smooth glabrous, blades flat, 5-15 cm. long, ligules membranaceous, margin entire, 2-5 mm. long, flowers in spikelike panicles, cylindrical, 3-8 cm. long, yellowish green in color, glume 3-veined, outer covered with appressed hairs, awnless, lemma and glume equal in length, nerves covered with hairs, membranaceous, lemma glabrous, anthers golden-yellow color when dry.

**Habitat:** On winter paddy field of Taichung district of Taiwan.



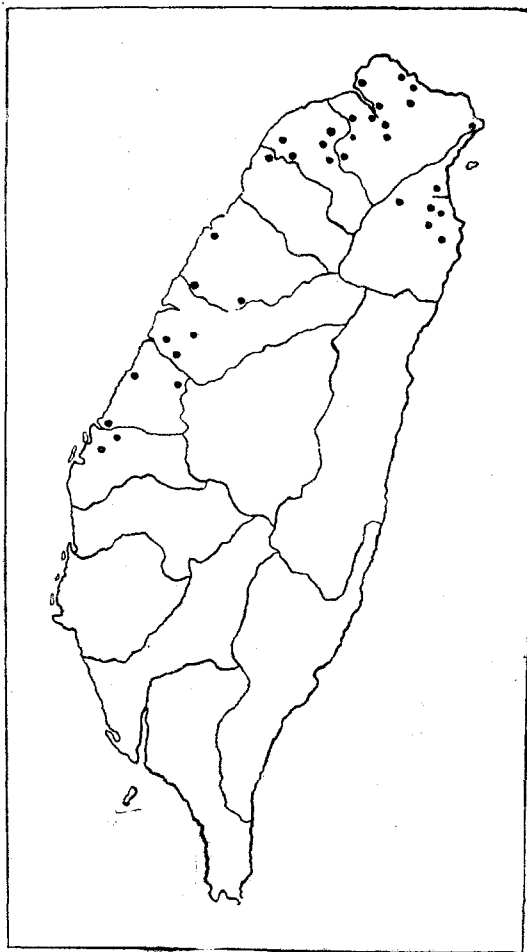
Fig. 3 *Alopecurus aequalis* Sobol. var. *amurensis* (Komar.) Ohwi

Fig. 4

*Alternanthera nodiflora* R. Br.

*Amaranthaceae*

- A. Part of stem and root ( $\frac{1}{2}$ )
- B. Branch ( $\frac{1}{2}$ )
- C. Leaf (X2)
- D. Flower (X7)
- E. Flower without perianth (X20)
- F. Stamen (X20)
- G. Fruit, immature (X10)
- H. Fruit (X10)



Annual herbs, stems up to 50 cm. high, many branches, leaves opposite linear-lanceolate, acute and obtuse at the apex, 2-4.5 cm. long, 3-5 mm. wide, nearly sessile, flowers small, white in axillary heads, calyx membranaceous, lanceolate, unequal, acuminate, stamens united, with very short filaments, fruits utricle obcordate, flattened.

**Habitat:** On the paddy field and winter catch cropping field in the northern and central Taiwan.



Fig. 4 *Alternanthera nodiflora* R. Br.

Fig. 5

*Alternanthera sessilis* R. Br.

*Amaranthaceae*

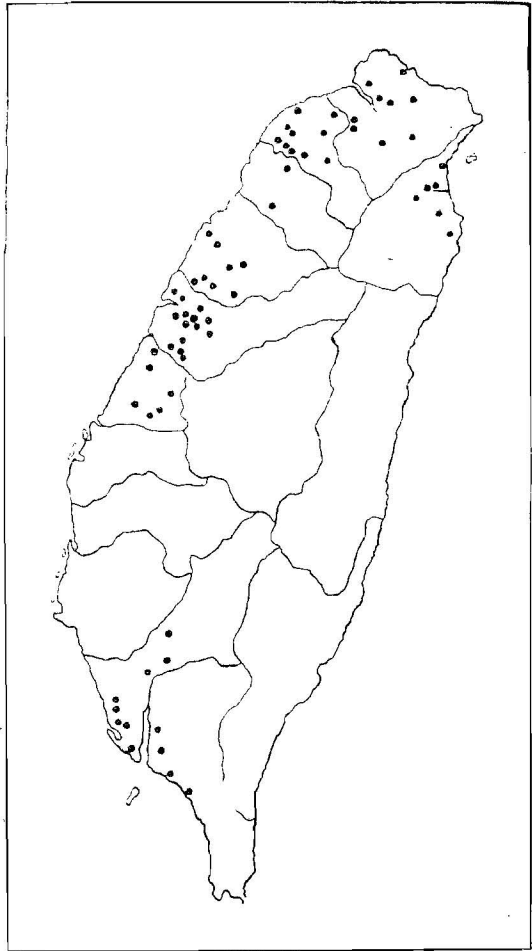
A. Root ( $\frac{1}{2}$ )

B. Fruiting branchlet ( $\frac{1}{2}$ )

C. Flower (X10)

D. Fruit (X10)

E. Seed (X15)



Prostrate annuals, stems slender many branched, covered with 2 rows of hairs, leaves opposite nearly sessile, elliptical or linear-oblong, margins entire, obtuse to subacute at the apex, 2-5 cm. long, flowers white in globous axillary heads, calyx 5, lanceolate, unequal in length, the length as twice as bracts, stamens 3, staminode 3, utricle obcordate, flattened.

**Habitat:** Widely found on the paddy fields throughout the island.



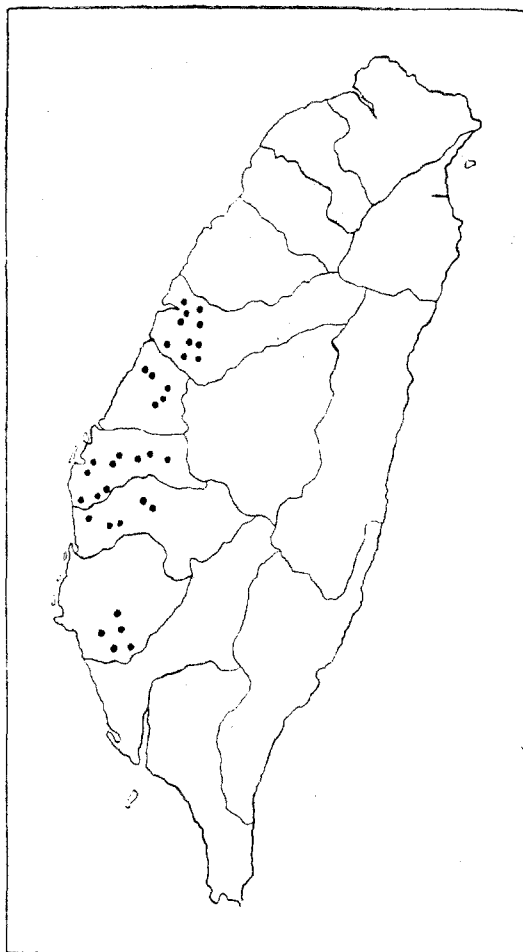
Fig. 5 *Alternanthera sessilis* R. Br.

Fig. 6

*Amaranthus spinosus* Linn.

*Amaranthaceae*

- A. Branch of flower and fruit, and part of root ( $\frac{1}{4}$ )
- B. Staminate flower (X20)
- C. Stamen (X20)
- D. Fruit (X20)
- E. Seed (X13)



Annuals, stems 30-80 cm. high, leaves narrowly ovate or ovate, sometimes broad-ovate, obtuse at the apex, with apiculate, obtuse at the base, petiole 1-8 cm. long, with 2-spines at the base, about 1-1.5 cm. long, inflorescence in axillary and terminal spike, monoecious, bracts narrowly-lanceolate, perianth 5, narrowly-oblong, membranaceous, utricle imperfect transverse dehiscence, stigma slender, about 1 mm. long.

**Habitat:** On the upland of the southern part and also on catch cropping fields of Tai-chung district of Taiwan.



Fig. 6 *Amaranthus spinosus* Linn.

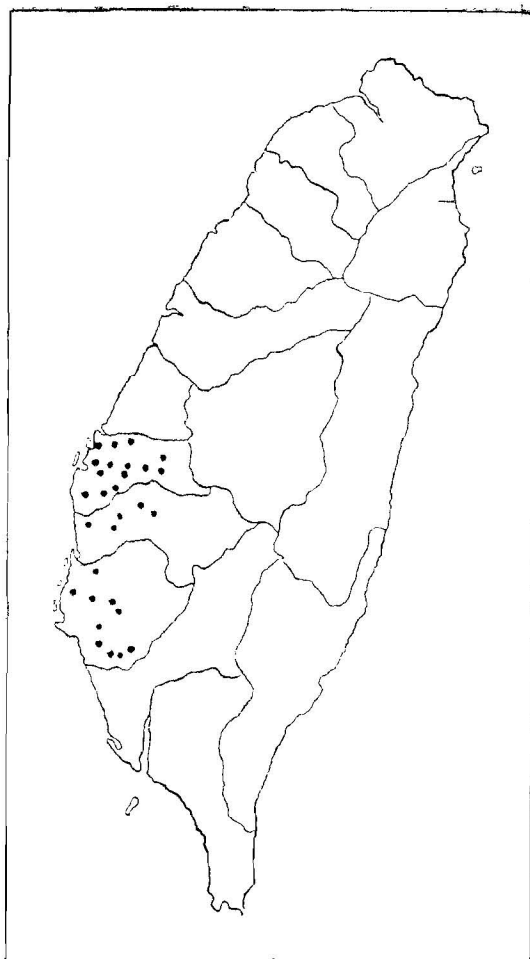


Fig. 7

*Amaranthus viridis* Linn.

*Amaranthaceae*

- A. Part of stem and root ( $\frac{1}{2}$ )
- B. Flowering and fruiting branchlets ( $\frac{1}{2}$ )
- C. Staminate flower (X25)
- D. Stamen (X30)
- E. Pistillate flower (X25)
- F. Fruit (X10)
- G. Seed (X15)



Annuals, stem erect, sometimes branched, about 30-80 cm. high, leaves alternate, triangular-ovate, obtuse at the apex, broad-cuneate at the base, 3-6 cm. long, flowers monoecious, in terminal spike to forming panicle, bracts membranaceous, narrowly ovate, small, shorter than the perianth, apex with awn, perianth 3, broad-oblongate, acute at the apex, lower surface with green midrib, utricle globose, longer than the perianth, with conspicuous wrinkled in the surface indehiscence.

**Habitat:** On the upland of Tainan district Taiwan.



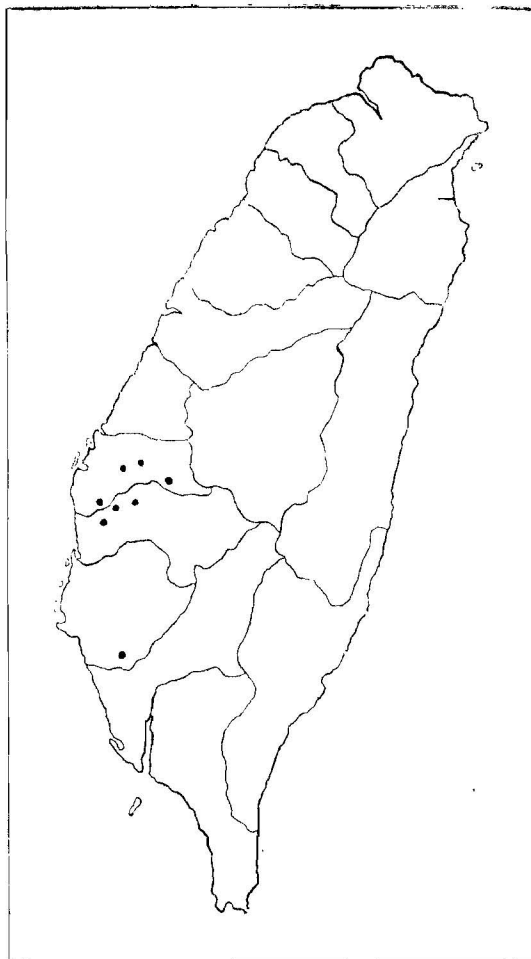
Fig. 7 *Amaranthus viridis* Linn.

Fig. 8

*Aneilema sinicum* Lindl.

*Commelinaceae*

- A. Whole plant with fruits ( $\frac{1}{2}$ )
- B. Fruit (X5)
- C. Seed (X10)



Annuals, stems many-branched, branches prostrate and ascending up to 30 cm. long, leaves linear, 3-5 cm. long, flowers few sparsely arranged in terminal panicle, light blue in color, large bract, calyx 3, persistent, petals 3, stamens 3, filament pubescent, staminalodes 3, ovary 2-celled, capsule, nearly globose, seeds 3-angled, wrinkled.

**Habitat:** On the upland of Tainan district of Taiwan.



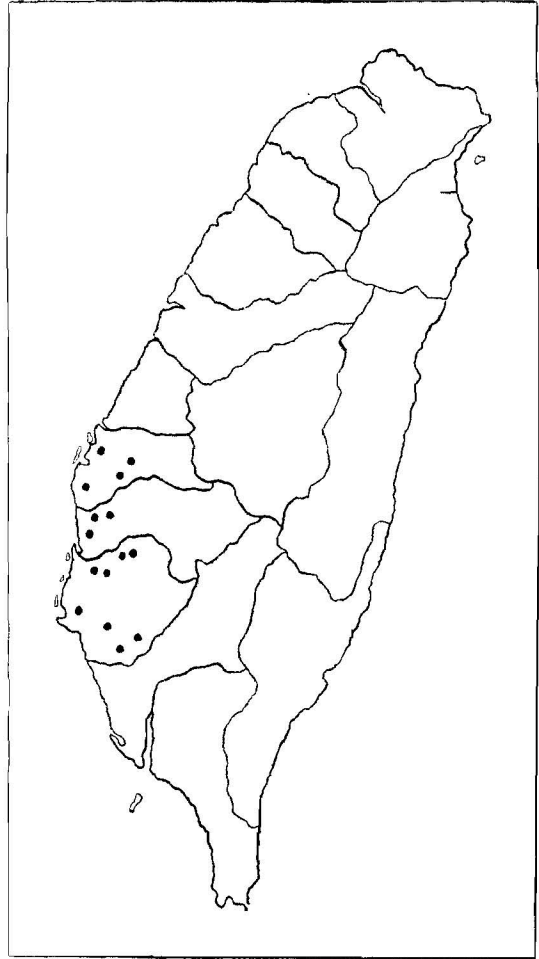
Fig. 8 *Aneilema sinicum* Lindl.

Fig. 9

*Bothriospermum tenellum* Fisch. et Mey.

*Borraginaceae*

- A. Whole plant with fruits ( $\frac{1}{2}$ )
- B. Fruits (X5)
- C. Nutlets (X10)



Annuals, ascending or decumbent, stems 10-20 cm. long, densely covered with hairs, leaves ovate-oblong, oblong and lanceolate, 1.5-3 cm. long, 8-15 mm. wide, obtuse at the apex, attenuate at the base, both surface covered with appressed hairs, flowers in terminal raceme, each flowers bracteate, bracts 5-15 mm. long, pedicels shorter than the bract, flowers hanging down after blooming, light blue in color, calyx and corolla 5 cleft, stamens 5, ovary 4-celled, nutlets ellipsoid densely glandular—tuberculate.

**Habitat:** On the upland of southern Taiwan.



Fig. 9 *Bothriospermum tenellum* Fisch. et Mey.

Fig. 10

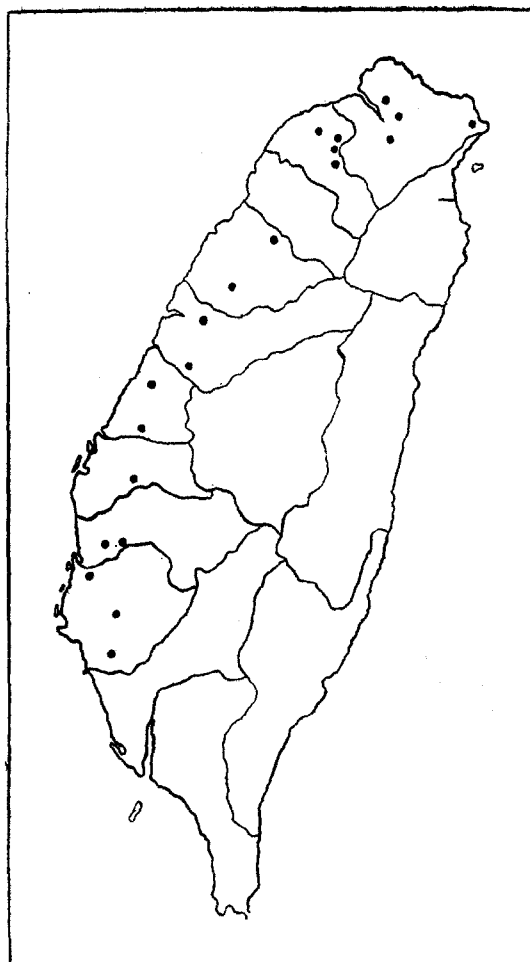
*Centella asiatica* (L.) Urban.

*Umbelliferae*

A. Whole plant with fruits (4)

B. Flower (enlarge)

C. Fruit (enlarge)



Prostrate perennial herbs, rooting at the nodes, leaves simple, orbicular-reniform, margin crenate or lobulate, 2.5-5 cm. in diameter, reniform at the base, glabrous or nearly so, petiole 4-10 cm. long, pubescent, umbel 3-6-flowered, peduncles 2-8 mm. long, pedicels short or almost none, involucre 2, ovate, membranaceous, fruits ellipsoid, 2-3 mm. long.

**Habitat:** On the paddy field of northern and central Taiwan.

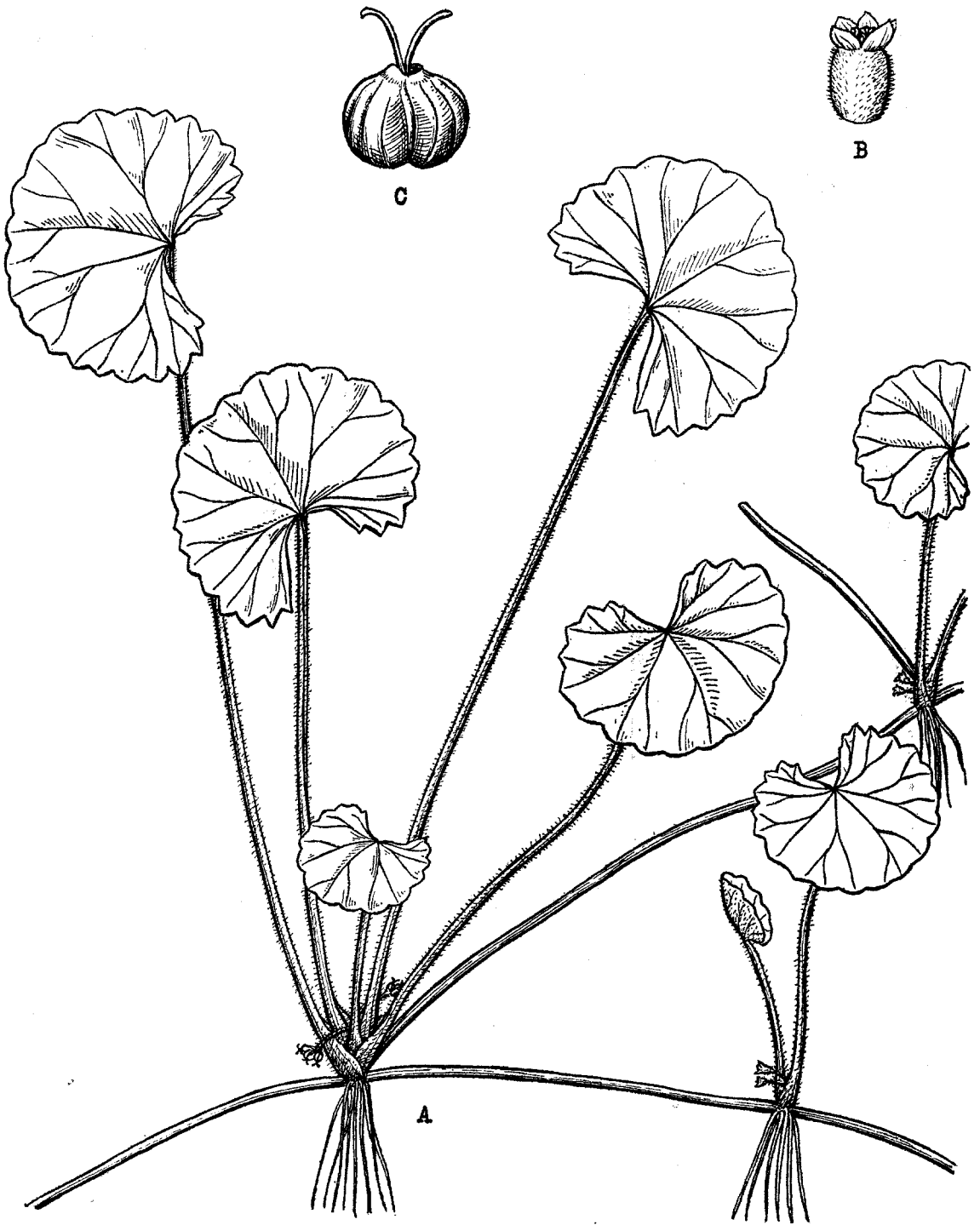


Fig. 10 *Centella asiatica* (L.) Urban.

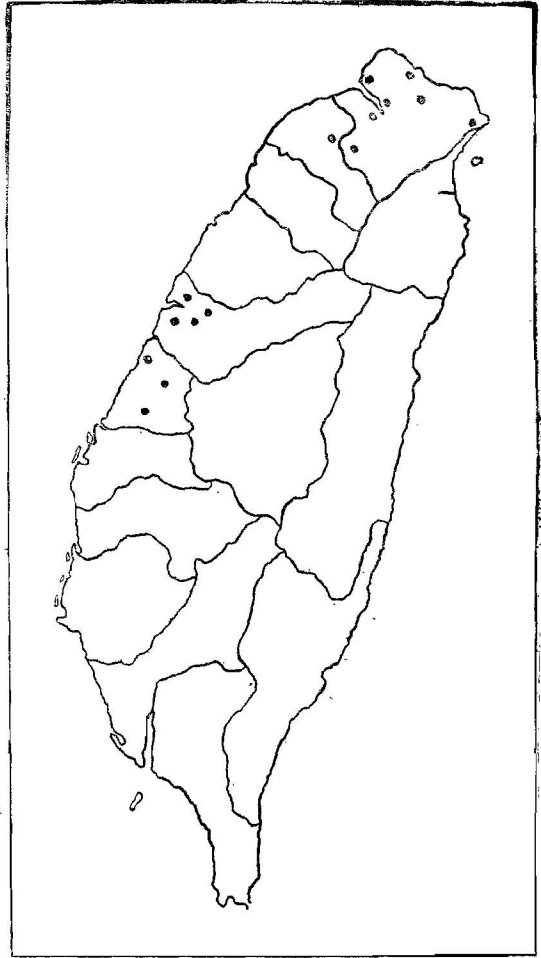


Fig. 11

*Centipeda minima* (Linn.) A. Braunt et  
Aschers

*Compositae*

- A. Whole plant with flowers ( $\frac{1}{4}$ )
- B. Head (X6)
- C. Bisexual flower (X25)
- D. Fruit (X25)



Annuals, stems slender, many branched, spreading sometimes with adventitious roots, 5-15 cm. high, leaves oblong-obovate, 7-10 mm. long, apex with few coarse teeth, sessile, heads globose, axillary, green in color, sessile or short pedicel, involucre bracts 2-rows, outer and inner bracts equal in length, pistillate flower perigynous, bisexual on the central part, corolla green, achene 1.3 mm. long, with appressed hairs, 5-angled, pappus none.

**Habitat:** On the paddy field of central and northern Taiwan.

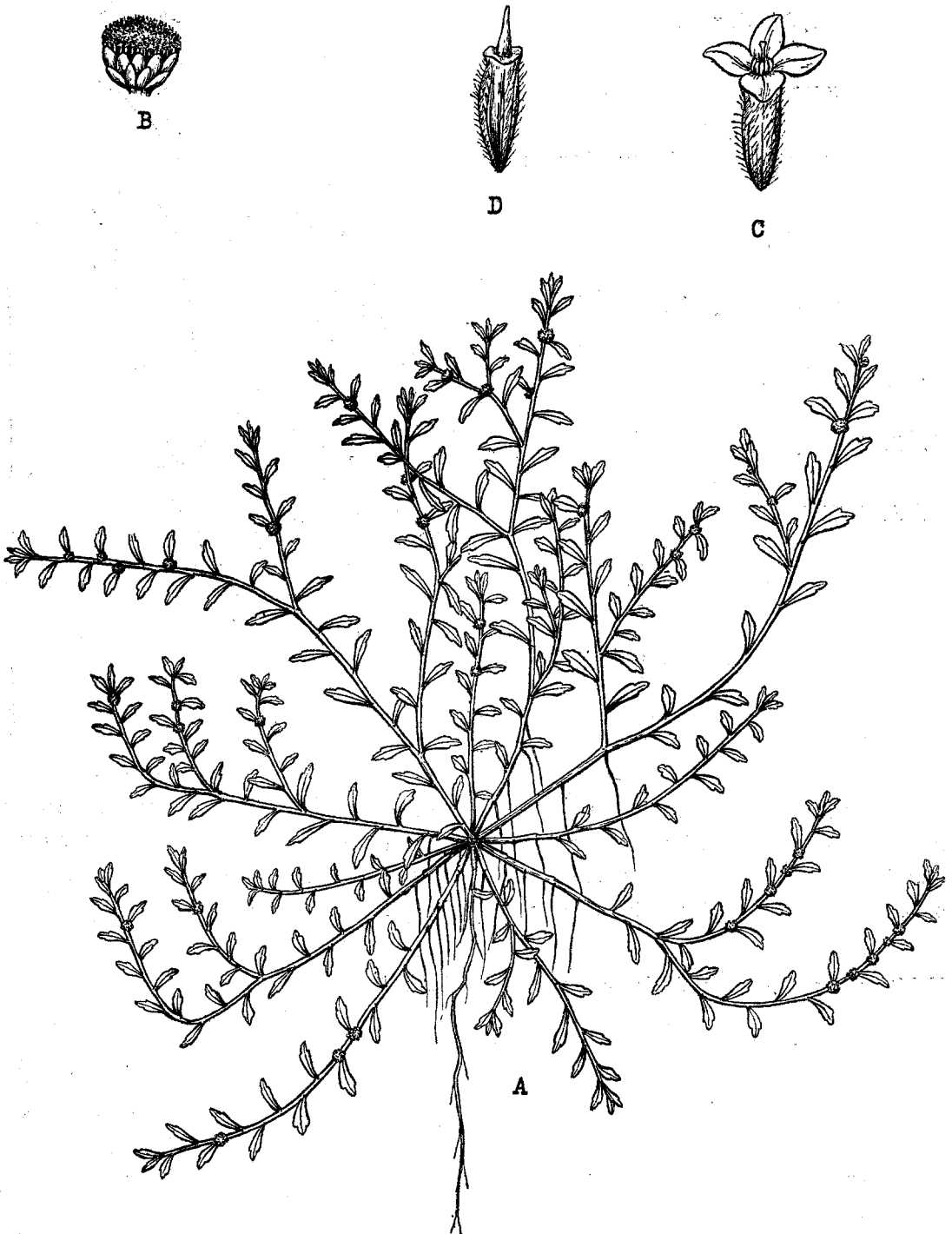


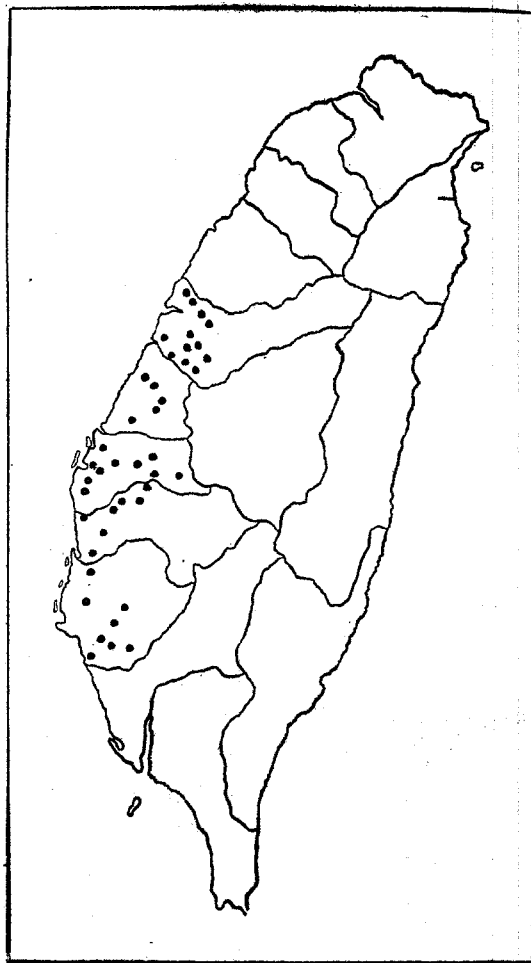
Fig. 11 *Centipeda minima* (Linn.) A. Braun. et Aschers

Fig. 12

*Chenopodium ficifolium* Sm.

*Chenopodiaceae*

- A. Whole plant with fruits and flowers (±)
- B. Flower (X10)
- C. Flower (without perianth) (X10)
- D. Stamen (X20)
- E. Fruit (X7)
- F. Seed (X10)



Annuals, young branches and young leaves glaucous in the lower surface, leaves triangular-elliptical or triangular narrowly ovate, obtuse at the apex, truncate at the base, margins undulate-dentate, 2-4 cm. long, petiole long, flowers in panicle, perianth 5, obovate, back surface with distinct 1-keel, green in color, seeds black, disciform.

**Habitat:** On the paddy fields central and southern Taiwan.



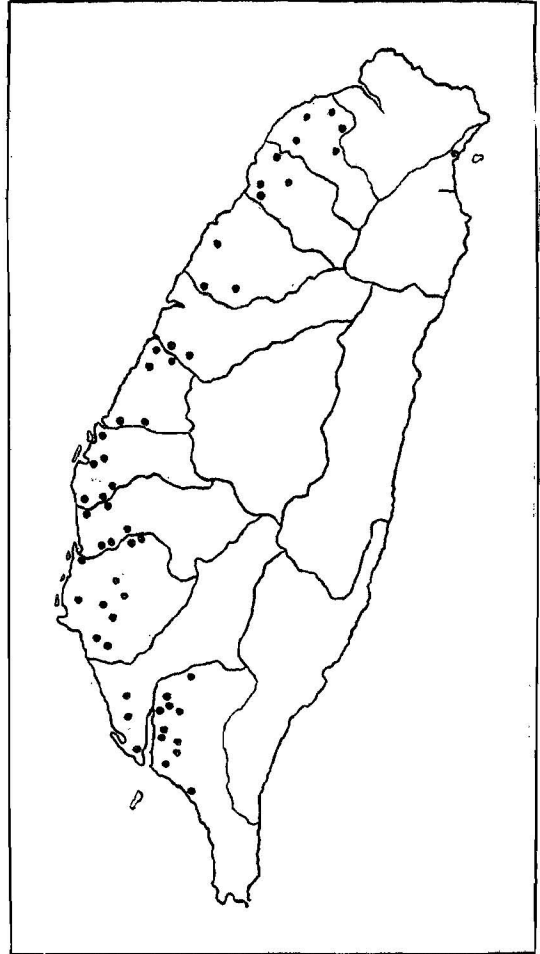
Fig. 12 *Chenopodium ficifolium* Sm.

Fig. 13

*Cynodon dactylon* Pers.

Gramineae

- A. Whole plants ( $\frac{1}{4}$ )
- B. Ligule (X10)
- C. Part of raceme, to show the different sides (X7)
- D. Spikelet (X15)
- E. First glume (X15)
- F. Second glume (X15)
- G. Lemma (X15)
- H. Palea (X15)



Perennial herbs, stems prostrate, usually widely creeping, culms erect, 15-40 cm. high, leaves linear involute, pale green, 5-8 cm. long, 4-15 mm. wide, sheath glabrous, leaves base with long hair, ligule very short, flowers in spike, 2.5-5 cm. long, 3-7 clustered, spikelets sessile, 2-3 mm. long, densely along one side of a rachis, first glume and second glume unequal in length. 1-nerved, both of them shorter than the lemma, lemma ovate, 2.5-3 mm. long, with keel on the back, keels covered with appressed hairs.

**Habitat:** On paddy field throughout the Island.

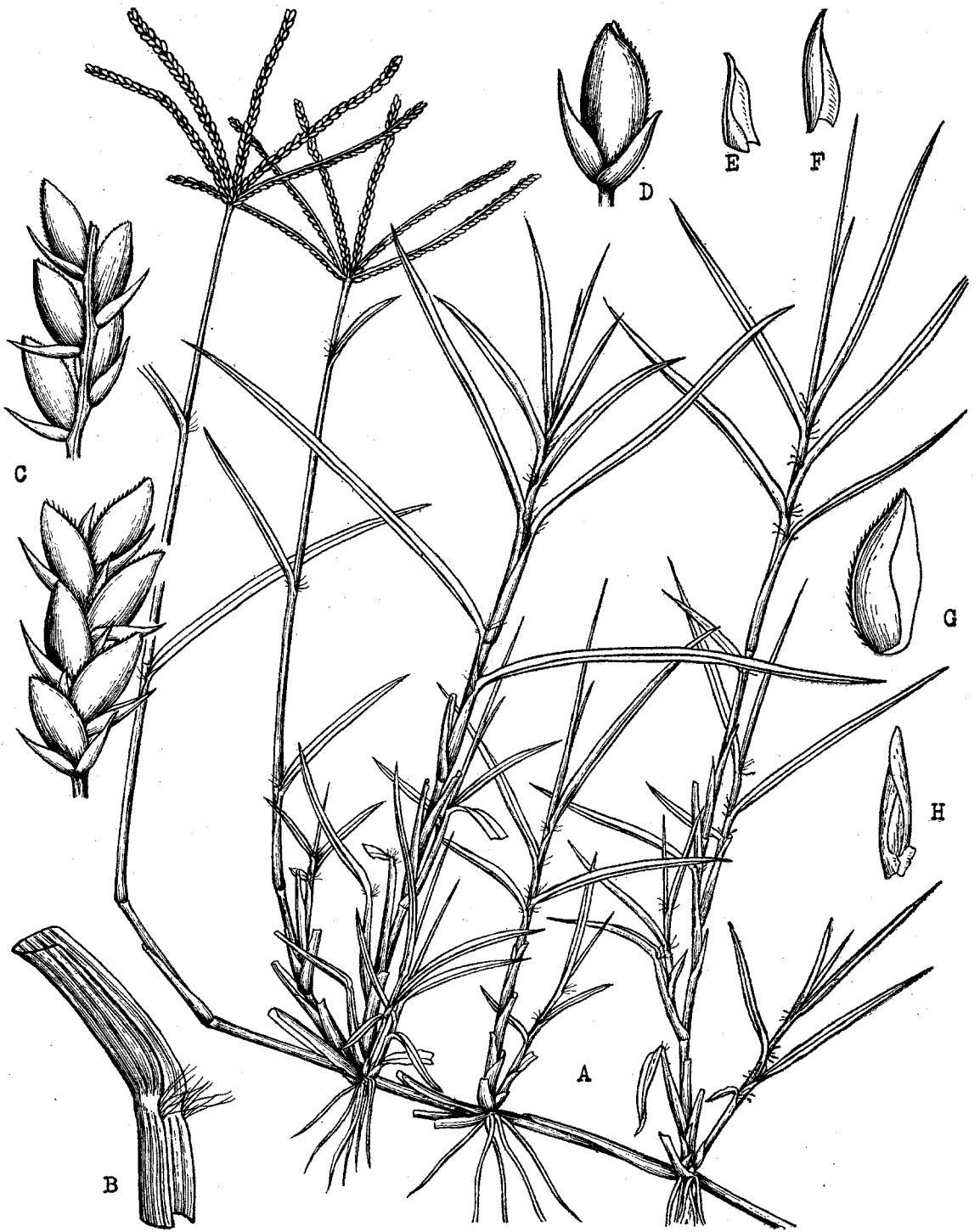


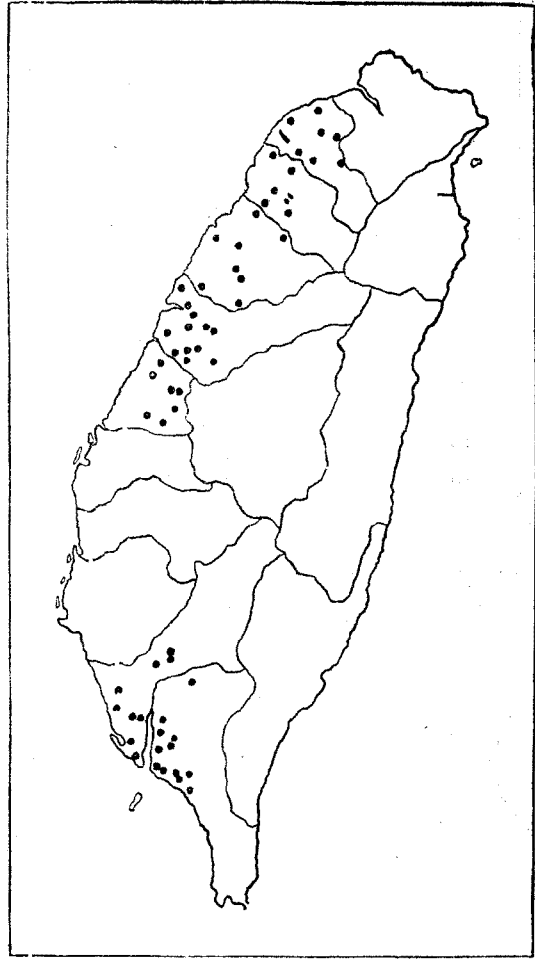
Fig. 13 *Cynodon dactylon* Pers.

Fig. 14

*Cyperus difformis* Linn.

Cyperaceae

- A. Whole plant ( $\frac{1}{2}$ )
- B. Compound umbel (X2)
- C. Spikelet (X20)
- D. Glume (X30)
- E. Seed (X40)



Annual herbs, culms 3-angled, tufted, about 10-30 cm. high, leaves linear, 2-5 mm wide, sheaths tubular united, flower in a compound umbel, sometimes head like densely numerous spikelet, bracts 2-3 at the base, one longer than inflorescence, spikelet linear 3-10 mm. long, flat, with 10-30 florets, parallel distichous, bract obovate, entire, keel green, stigma 3, achenes brown  $\frac{1}{2}$  or  $\frac{1}{3}$  as long as bract, triangular, with distinct transversely wrinkled.

**Habitat:** On the paddy field of western Taiwan.

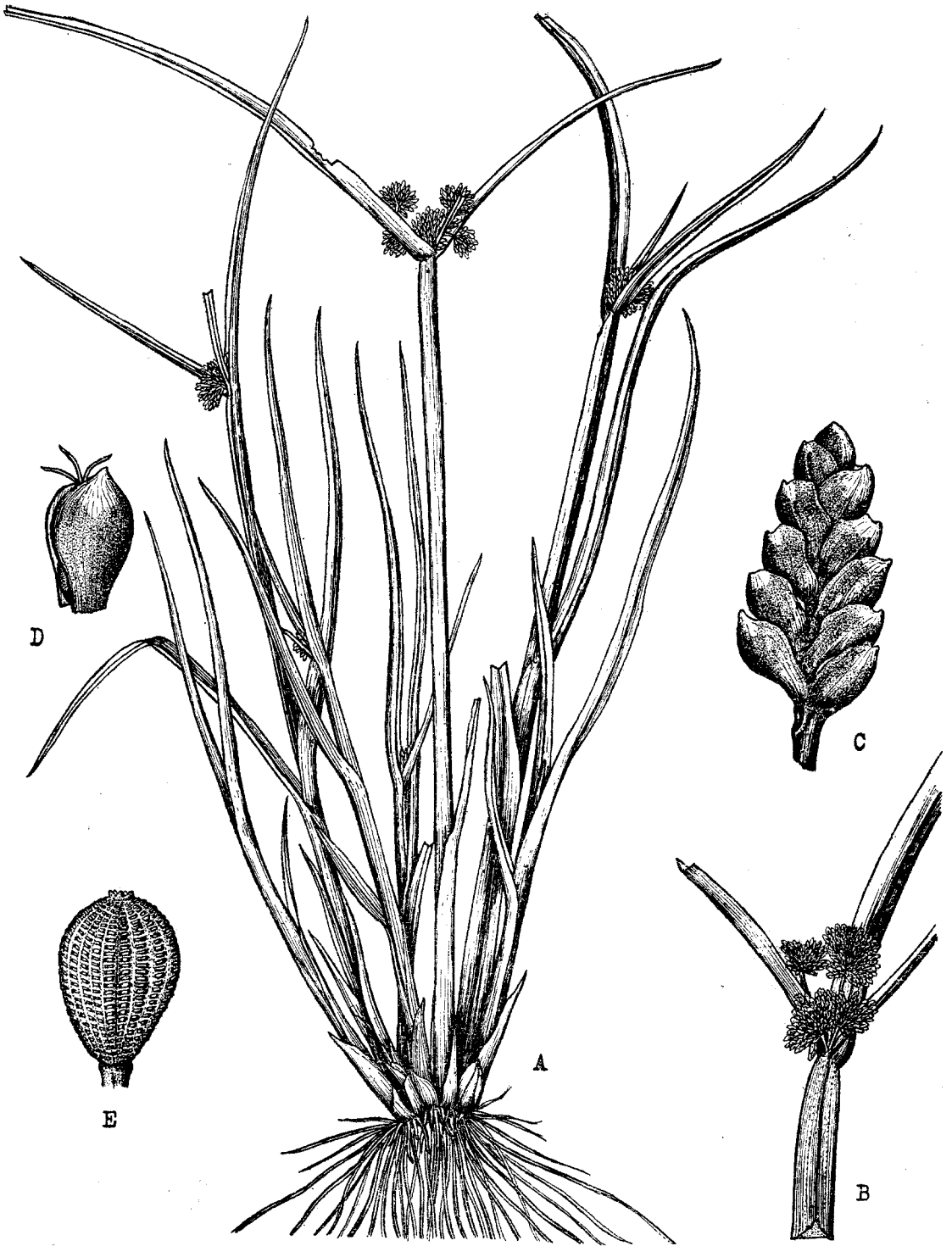


Fig. 14 *Cyperus difformis* Linn.



Fig. 15

*Cyperus iria* Linn.

Cyperaceae

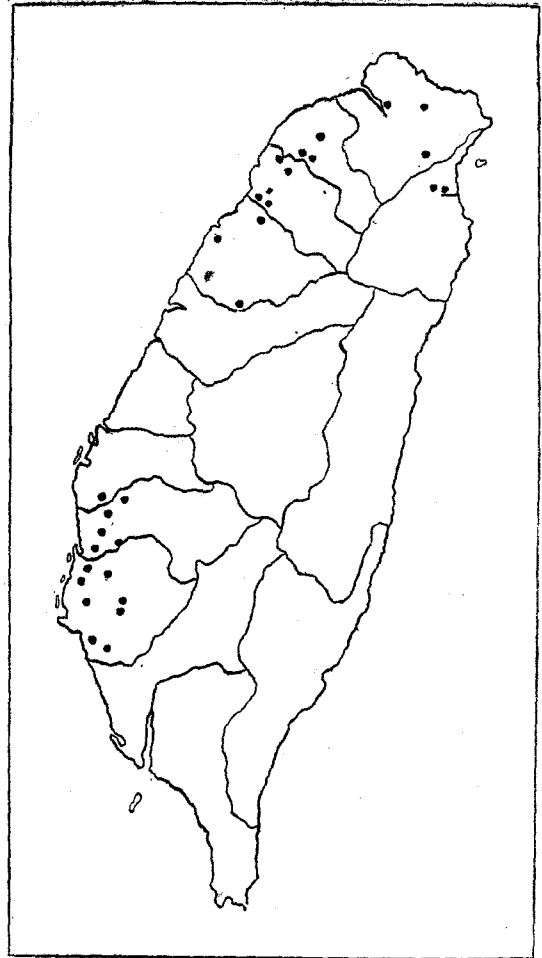
A. Part of culm ( $\frac{1}{2}$ )

B. Compound umbel ( $\frac{1}{2}$ )

C. Spikelet (X4)

D. Glume (X7)

E. Fruit (X6)



Annual herbs, culm tufted, 20-60 cm. high, leaves linear lanceolate, sheath enveloped culm at the base, membranous, inflorescence in a compound umbel 3-5, bracts 4-5, lower one longer than inflorescence, spikelets oblique opening, numerous, crowded, linear parallel distichous, 5-13 mm. long, yellow, glume broad-ovate, 1-1.5 mm. long, midribs green, fruits slightly shorter than the glume, obovate, triangular brown, stigma 3.

**Habitat:** On the paddy field of the northern part and upland of Tainan district.



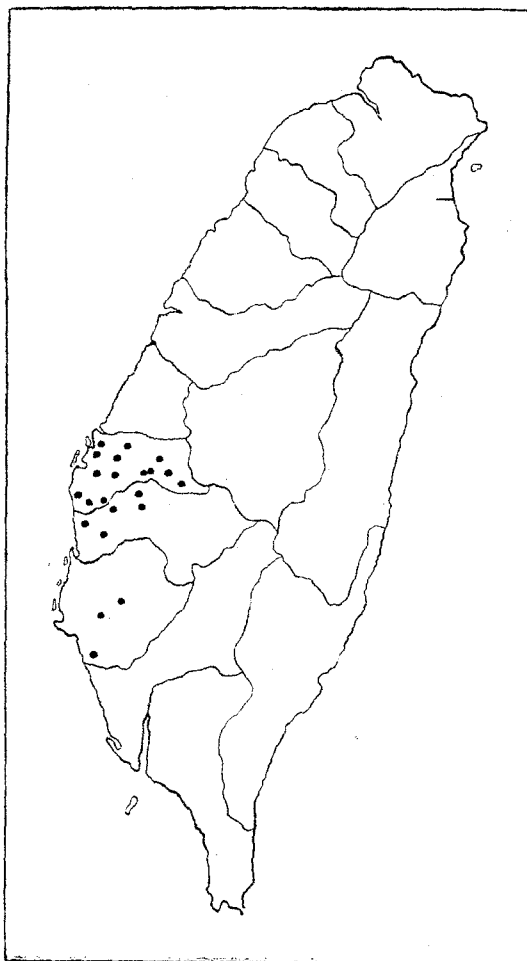
Fig. 15 *Cyperus iria* Linn.

Fig. 16

*Dactyloctenium aegyptium* (Linn.) Richt.

Gramineae

- A. Whole plant ( $\frac{1}{2}$ )
- B. Sheath (X10)
- C. Spikelet (X7)
- D. First glume (X10)
- E. Second glume (X10)
- F. Lemma (X10)
- G. Lateral and dorsal side of palea (X10)
- H. Seed (X15)



Annual herbs, 20-40 cm. high, leaves linear, margins and lower surface with ciliate, sheaths flat, glabrous, flowers in spike, 2-5 in digitate and widely spreading at the top of the culm, spikelet parallel distichous on the rachis to forming vertical angle, each spikelet with 3-4-florets, 2.5 mm. long, first glume ovate, acute at the apex, second glume broad-ovate, with awn at the apex, lemma 3-nerved, palea broad, folded, 2-clefted at the apex, keels rough, stamens 3 short, seeds globose, upper surface papillate.

**Habitat:** On the upland of the southern Taiwan.



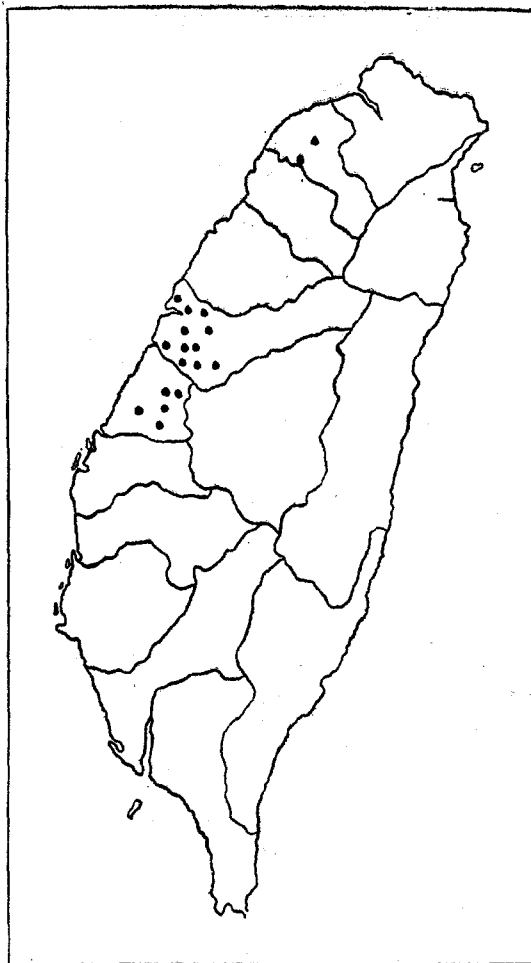
Fig. 16 *Dactyloctenium aegyptium* (Linn.) Richt.

Fig. 17

*Digitaria chinensis* Hornem

Gramineae

- A. Whole plant ( $\frac{1}{2}$ )
- B. Sheath (X4)
- C. Part of raceme (X10)
- D. Spikelets (X10)
- E. Front and back side of spikelet (X15)
- F. First glume (X30)
- G. Second glume (X15)
- H. Sterile lemma (X15)
- I. Fertile lemma (X15)
- J. Fertile palea (X15)
- K. Seed (X15)



Annual herbs, plant slender, dark green, about 25 cm. high, leaves flat linear, membranous, 5-8 cm. long, 2-6 mm. wide, sheaths glabrous, shorter than the internodes, ligule smooth, 1-1.5 mm. long, inflorescence a subcontracted 2-3 digitate raceme, 4-9 cm. long, florets opposite, narrowly lanceolate, 2.8-3 mm. long, acuminate at the apex, first glume small, second glume membranous, 3-veined, margins with white villose, fertile lemma lanceolate, membranous, 7-veined, margins with white villous, sterile lemma coriaceous, lanceolate, palea as long as fertile lemma.

**Habitat:** On the paddy field of the central and northern Taiwan.

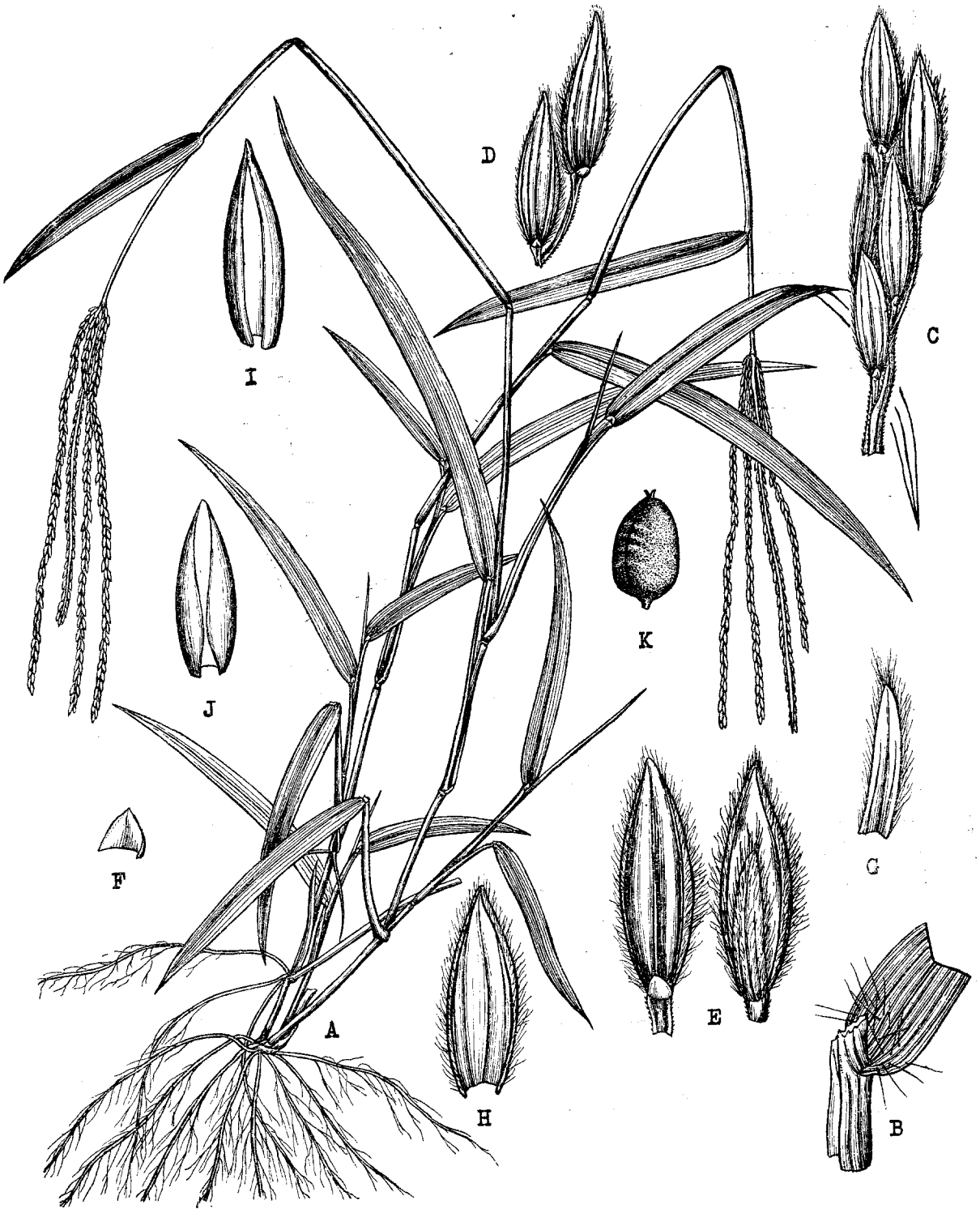


Fig. 17 *Digitaria chinensis* Hornem

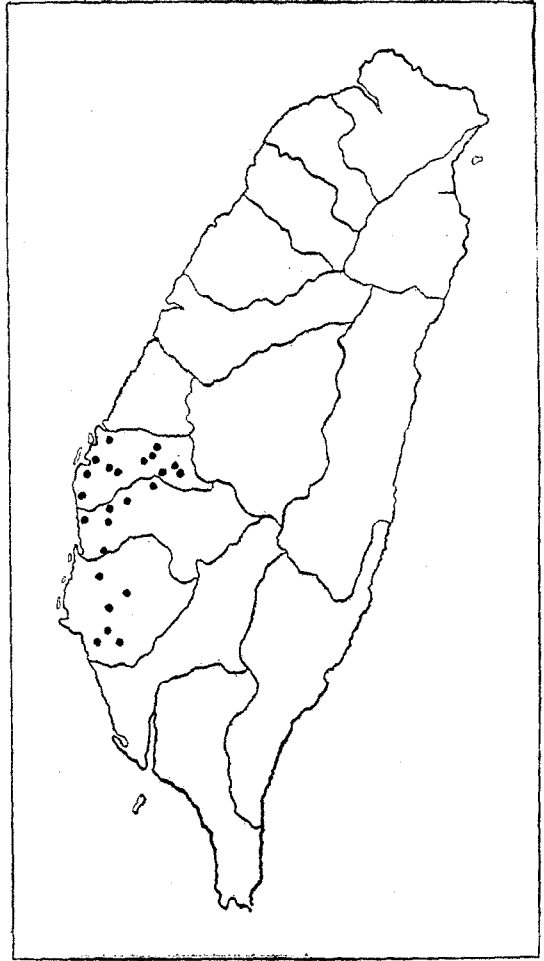
Fig. 18

*Digitaria sericea* (Honda) Honda

Silky-haired Finger Grass

*Gramineae*

- A. Whole plant ( $\frac{1}{2}$ )
- B. Sheath (X5)
- C. Part of raceme (X8)
- D. Spikelet (X10)
- E. Second glume (X10)
- F. Sterile lemma (X10)
- G. Floret (X10)
- H. Fertile lemma (X10)
- I. Sterile palea (X10)



Annual herbs, culms slender tufted, geniculate or nearly erect, 30-50 cm. high, sheath shorter than the internode, hirsute, ligule scabrous and membranous, obtuse, 2 mm. long, glabrous, blades linear-lanceolate, acuminate at the apex, 4-8 cm. long, 3-8 mm. wide, long villose, spikelet ovoid-lanceolate, acute at the apex, 3-4 mm. long, with long pilose, first glume minute, second glume obtuse, lanceolate, 1.5 mm. long, 3-veined, pilose, sterile lemma acute, 3 mm. long, 7-veined, pilose, fertile lemma slightly shorter than sterile lemma, prominent acuminate at the apex, involute glabrous.

**Habitat:** On the field of Tainan District.



Fig. 18 *Digitaria sericea* (digitaria) Honda



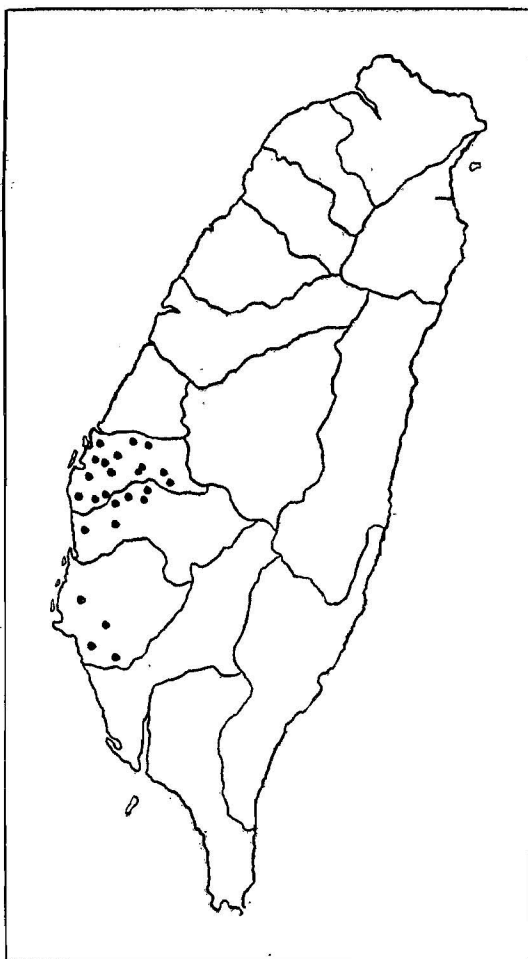
Fig. 19

*Digitaria violascens* Link.

Purple-fruited Finger Grass

*Gramineae*

- A. Whole plant ( $\frac{1}{4}$ )
- B. Sheath (X3)
- C. Part of raceme (X12)
- D.E. Spikelet (X15)
- F. Glume (X15)
- G. Sterile lemma (X15)
- H. Floret (X15)
- I. Fertile lemma (X15)
- J. Fertile palea (X15)



Annual herbs, culms numerous in tufted 20-50 cm. high, leaves usually clustered nearly at the base, sheaths glabrous, or sparingly pilose, ligule truncate, 1-1.5 mm. long, raceme slender, 4-14 cm. long, spikelet paired, the one long pedicelled, the other short, elliptic, acute at the apex, minute, pubescent, about 1.5 mm. long, first glume usually wanting, second glume more than  $\frac{1}{4}$  as long as spikelet, 3-nerved, sterile lemma as long as the spikelet, sparingly pilose, fertile lemma acute, dark brown or blackish purple when maturity.

**Habitat:** On the field of Tainan district.

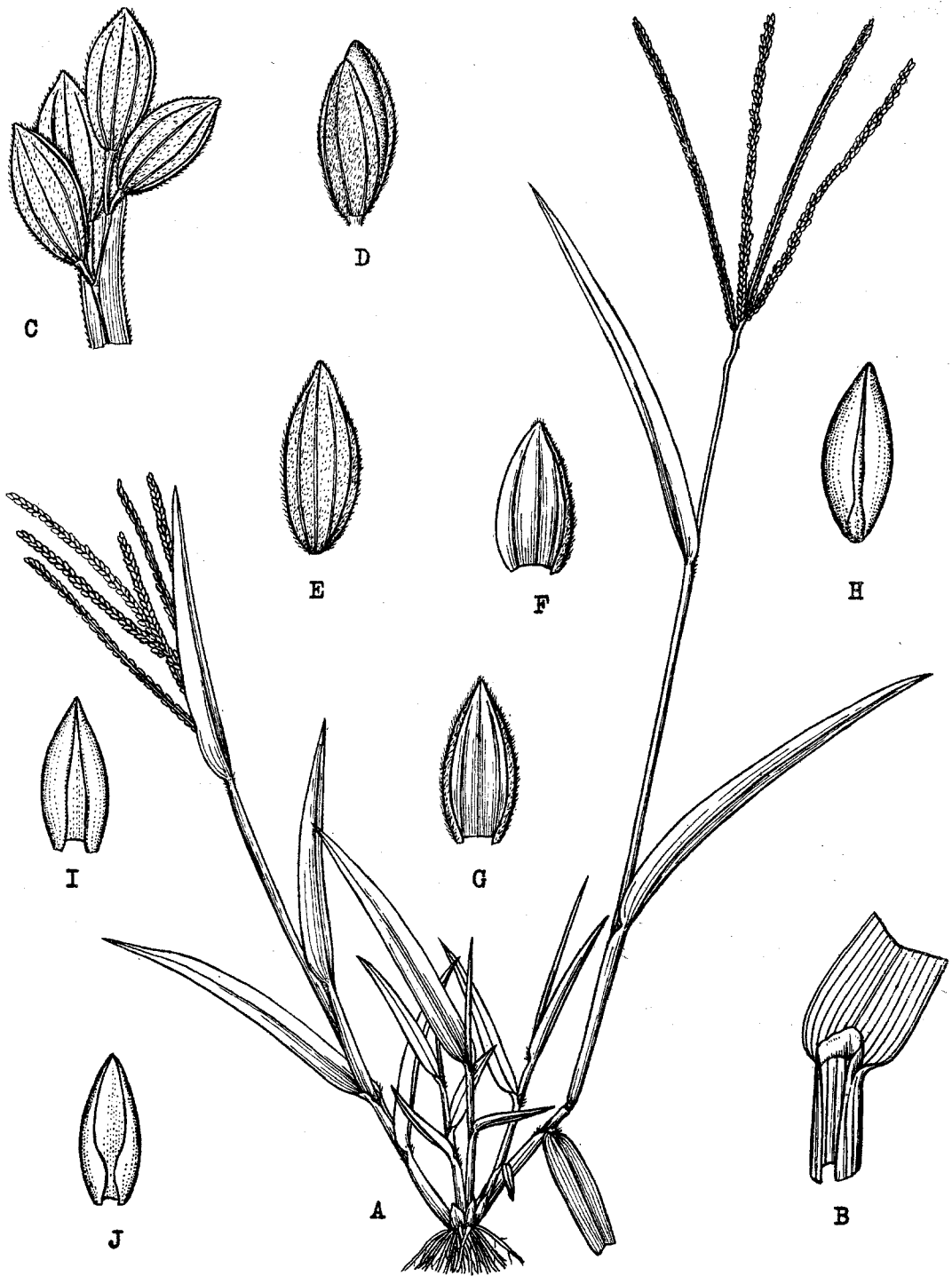


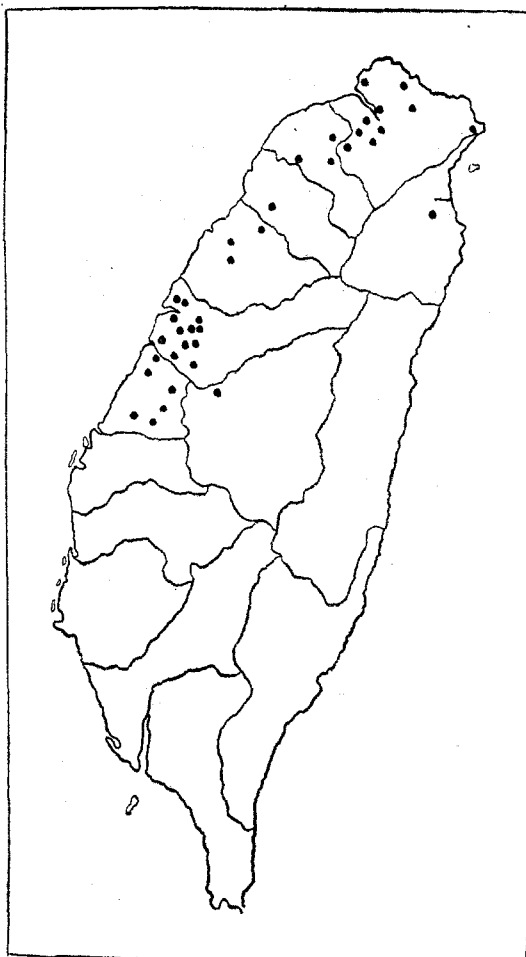
Fig. 19 *Digitaria violascens* Link.

Fig. 20

*Dopatorium junceum* Hamilt.

Scrophulariaceae

- A. Whole plant ( $\frac{1}{4}$ )
- B. Leaf (X4)
- C. Flower (enlargement)
- D. Flower (Without corolla) (X20)
- E. Fruit (X20)



Annual herbs, stems fleshy, erect, usually branched, tufted at the base, 15-20 cm. high, slender, leaves opposite, the base leaves oblong or linear, obtuse at the apex, with few obscure parallel veins, sessile 1-2 cm. long, the stems gradually minute, erect, flowers small labiate, with pedicels in axillary, solitary, calyx deeply 5-cleft, corolla violet, 2 strongly stamens, capsule globous, longer than the calyx, seeds reticulate.

**Habitat:** On the paddy field of the central and northern Taiwan.

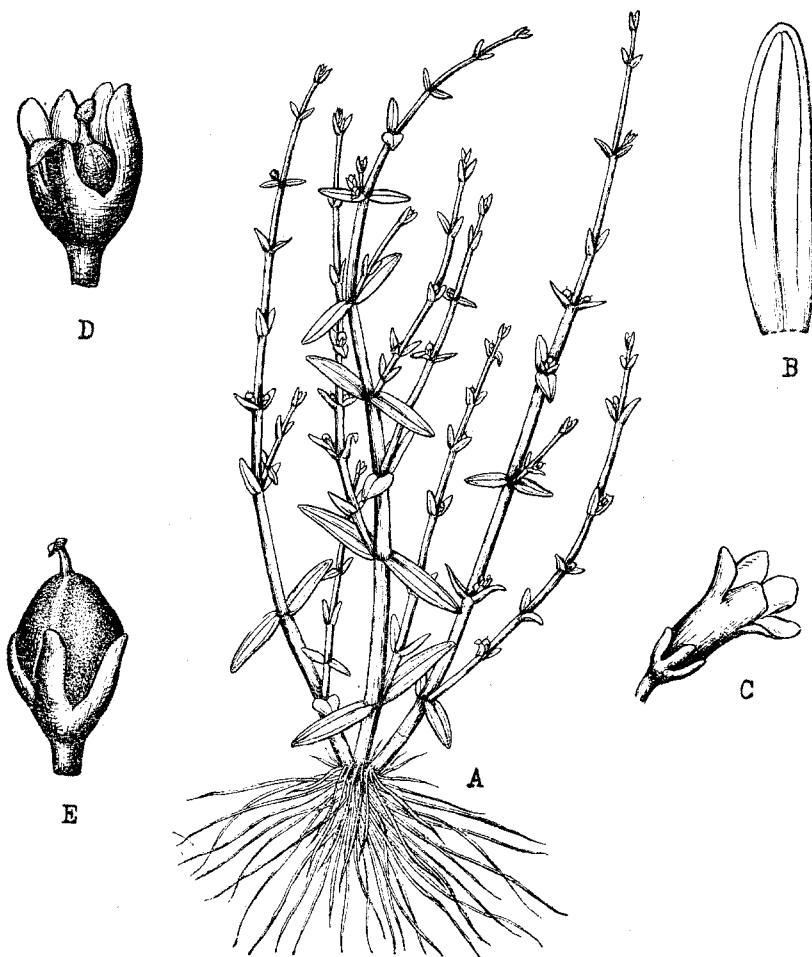


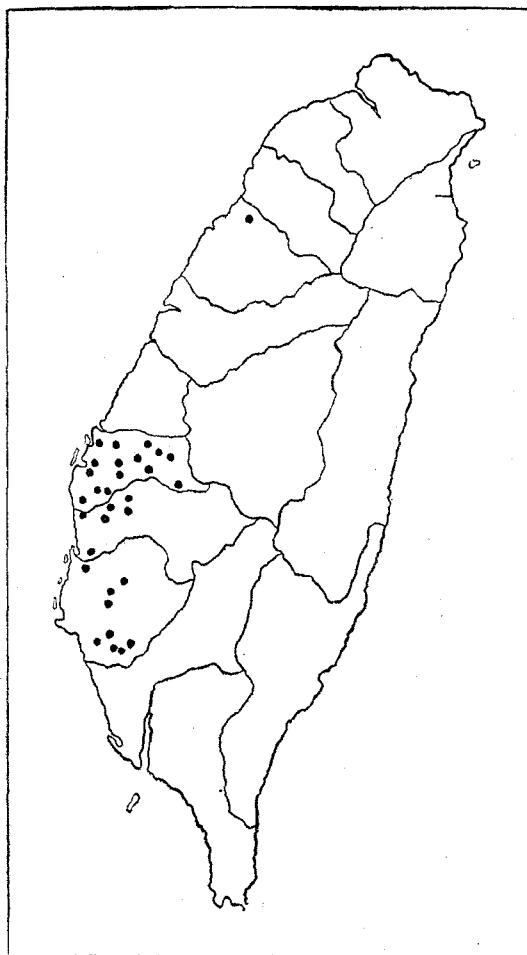
Fig. 20 *Dopatorium junceum* Hamilt.

Fig. 21

*Echinochloa colona* (Linn.) Link.

*Gramineae*

- A. Whole plant (1/2)
- B. Sheath (X5)
- C. Part of panicle (X5)
- D. Spikelet (X10)
- E. First glume (X10)
- F. Second glume (X10)
- G. Sterile lemma (X10)
- H. Sterile palea (X10)
- I. Floret (X10)
- J. Fertile lemma (X10)
- K. Fertile palea (X10)



Annual herbs, culms erect or decumbent, usually much branched at the base, glabrous, 20-80 cm. high, sheaths glabrous, shorter than the internode, ligule wanting, blades 6-15 cm. long, 3-8 mm. wide, margins scabrous, panicle 5-15 cm. long, spikelet 2-3 mm. long, awnless or minutary awned, glume and sterile lemma scabrous-puberulent, first glume one half as long as the spikelet, 3-veined, second glume about equal to the sterile lemma, 5-veined, fertile lemma smooth and glabrous 5-veined, short-acuminate at the apex.

**Habitat:** On the field of the northern part and on the paddy field in Hsinchu district.



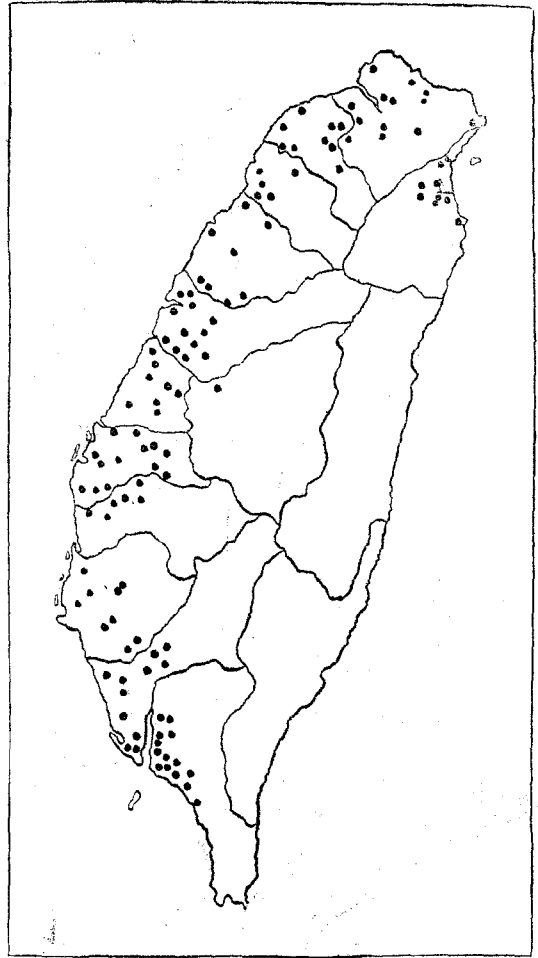
Fig. 21 *Echinochloa colona* (Linn.) Link.

Fig. 22

*Echinochloa crus-galli* Beauv.  
var. *austro-japonensis* Ohwi

Gramineae

- A. Whole plant (±)
- B. Sheath (X2)
- C. Part of panicle (X8)
- D. Florets (X10)
- E. First glume (X20)
- F. Second glume (X10)
- G. Sterile lemma (X10)
- H. Sterile palea (X10)
- I. Fertile lemma (X10)
- J. Fertile palea (X10)
- K. Seed (X12)



This variety similar to *Echinochloa crus-galli* Beauv. var. *formosensis*, but differs from shorter leaves, 2-5 mm. wide, culms slender, purplish, spikelets purplish-brown, first glume slightly small, sterile lemma awned.

**Habitat:** Very common on the northern part of Taiwan.



Fig. 22 *Echinochloa crus-galli* Beauv. var. *austro-japonensis* Ohwi

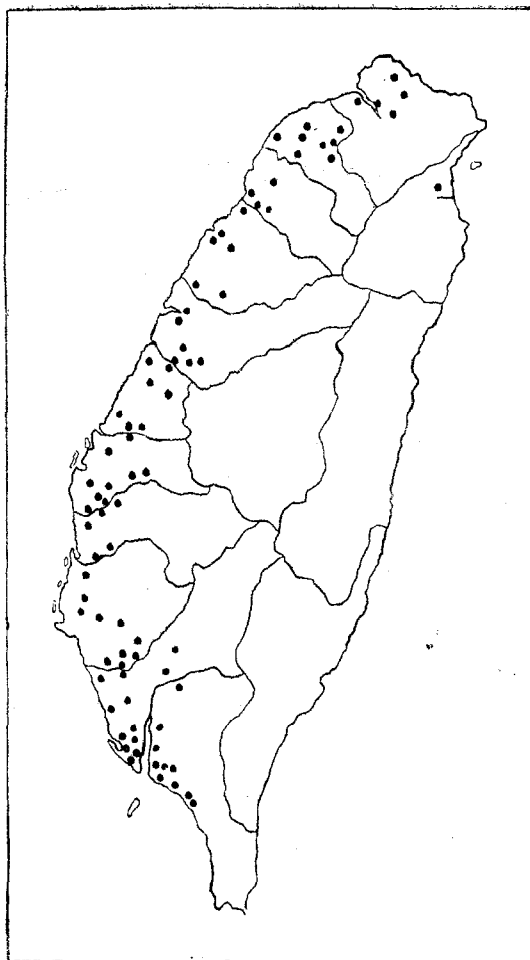


Fig. 23

*Echinochloa crus-galli* Beauv.  
var. *formosensis* Ohwi

*Gramineae*

- A. Whole plant ( $\frac{1}{2}$ )
- B. Sheath (X2)
- C.D. Front and back side of spikelets (X10)
- E. First glume (X12)
- F. Second glume (X8)
- G. Fertile lemma (X8)
- H. Fertile palea (X8)
- I. Sterile lemma (X12)
- J. Sterile palea (X12)



Annual herbs, culms decumbent at the base, green, 50-60 cm. high, sheath smooth, glabrous, blades linear, 5-7 mm. wide, margins coriaceous, panicle with very short stalk, spikelet 3-4 mm. long, ovate, with small or short obliquely-hispid, first glume covered with small hairs, one-third as long as spikelet, second glume equaling the sterile lemma, fertile lemma coriaceous, shining.

**Habitat:** Very common on the central and southern parts of Taiwan.



Fig. 23 *Echinochloa crus-galli* Beauv. var. *formosensis* Ohwi

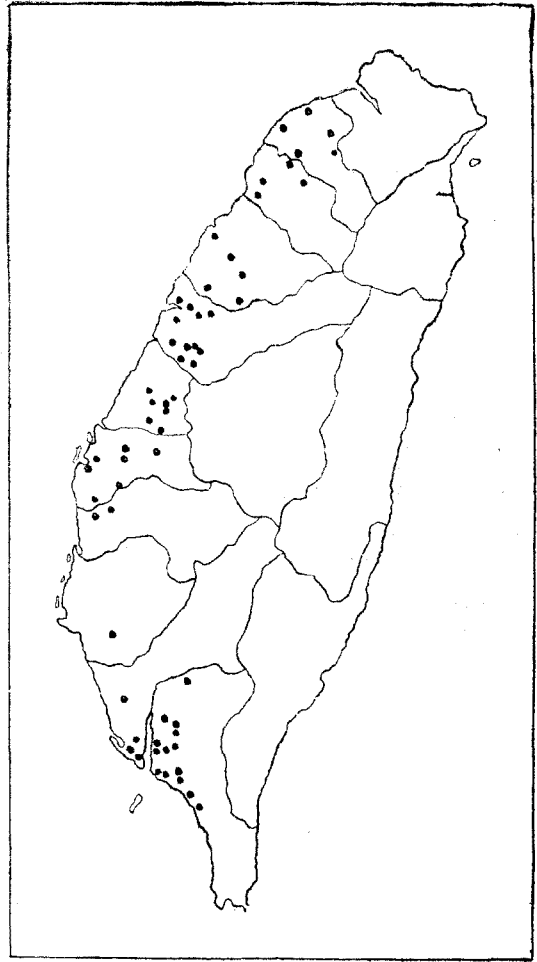
Fig. 24

*Eclipta prostrata* (Linn.) Linn.

Syn.: *Eclipta alba* Hassk.

*Compositae*

- A. Whole plant with flowers and fruits  
( $\frac{1}{2}$ )
- B. Lower part of leaf (X2)
- C. Upper part of leaf (X2)
- D. Head (X5)
- E. Bisexual flower (X12)
- F. Pistillate flower (X13)
- G. Outer bract (X7)
- H. Inner bract (X7)
- I. Fruit (X3)
- J. Seed (X7)



Annual herbs, the stems erect or ascending, 10-60 cm. high, densely clothed with appressed short hispid, leaves lanceolate, acute at the apex, gradually narrow to sessile or very short petioles at the base, the margins serrulate, with 3-main-nerved, both surface densely clothed with hispid, flowers in head with pedicel, the involucre campanulate, bracts 5-6, in 2 rows, oblong, acute at the apex, green, ray-corolla white, apex entire or 2-lobed, tubular corolla of bisexual, 4-lobed at the apex, achene about 2.8 mm. long, ray-floret with 3-angles, other with flat 4-angles, margins with midrib, black, without pappus.

**Habitat:** Very common on the paddy field and upland in Taiwan.

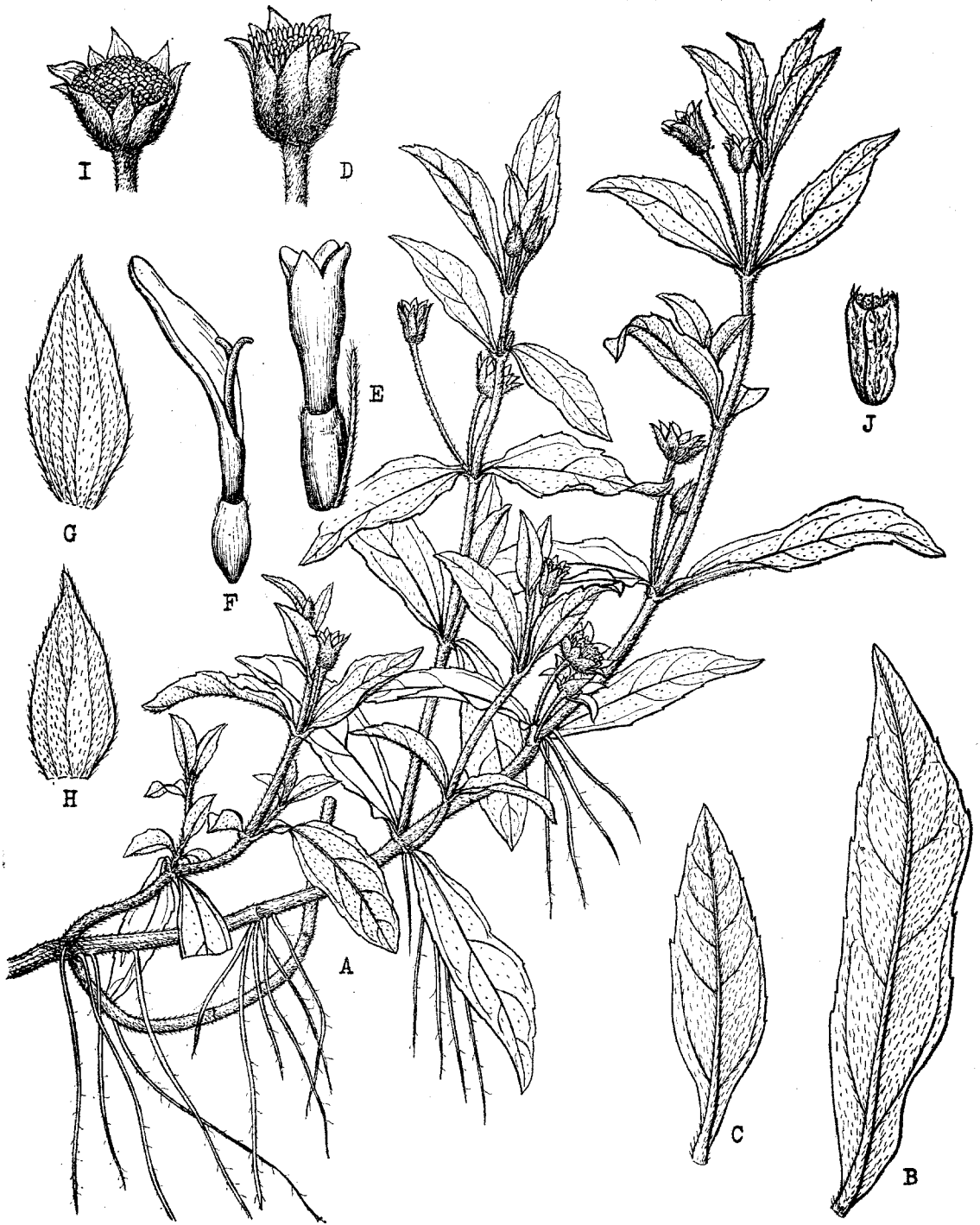


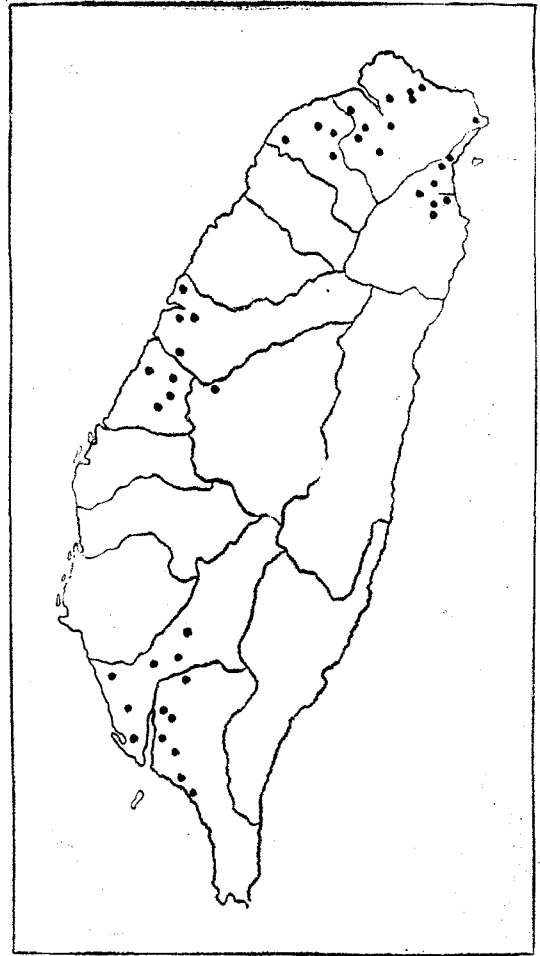
Fig. 24 *Eclipta prostrata* (Linn.) Linn.

Fig. 25

*Eleocharis acicularis* (Linn.) R. & S.  
var. *longiseta* Svenson

Cyperaceae

- A. Tufted whole plant ( $\frac{1}{4}$ )
- B. Whole plant with culms and roots (X3)
- C. Spikelet (X10)
- D. Glume (X15)
- E. Nut (enlargement)
- F. Glume (X15)



Annual herbs, about 3-10 cm. high, cladophylls, slender tufted, caronary stem leaf or leaves radical dark-green, with groove, spikelets ovate--narrowly elliptic, florets few, glumes narrowly ovate, acute at the apex, light green, usually red of some part, 2-4 mm. long, achene elliptical lanceolate or narrowly obovate, dark-brown, with few crowned and many bulbous, 3-bristles unequal in length, bristle as long as nut.

**Habitat:** On the paddy field and winter catch cropping field of Taichung district in Taiwan.

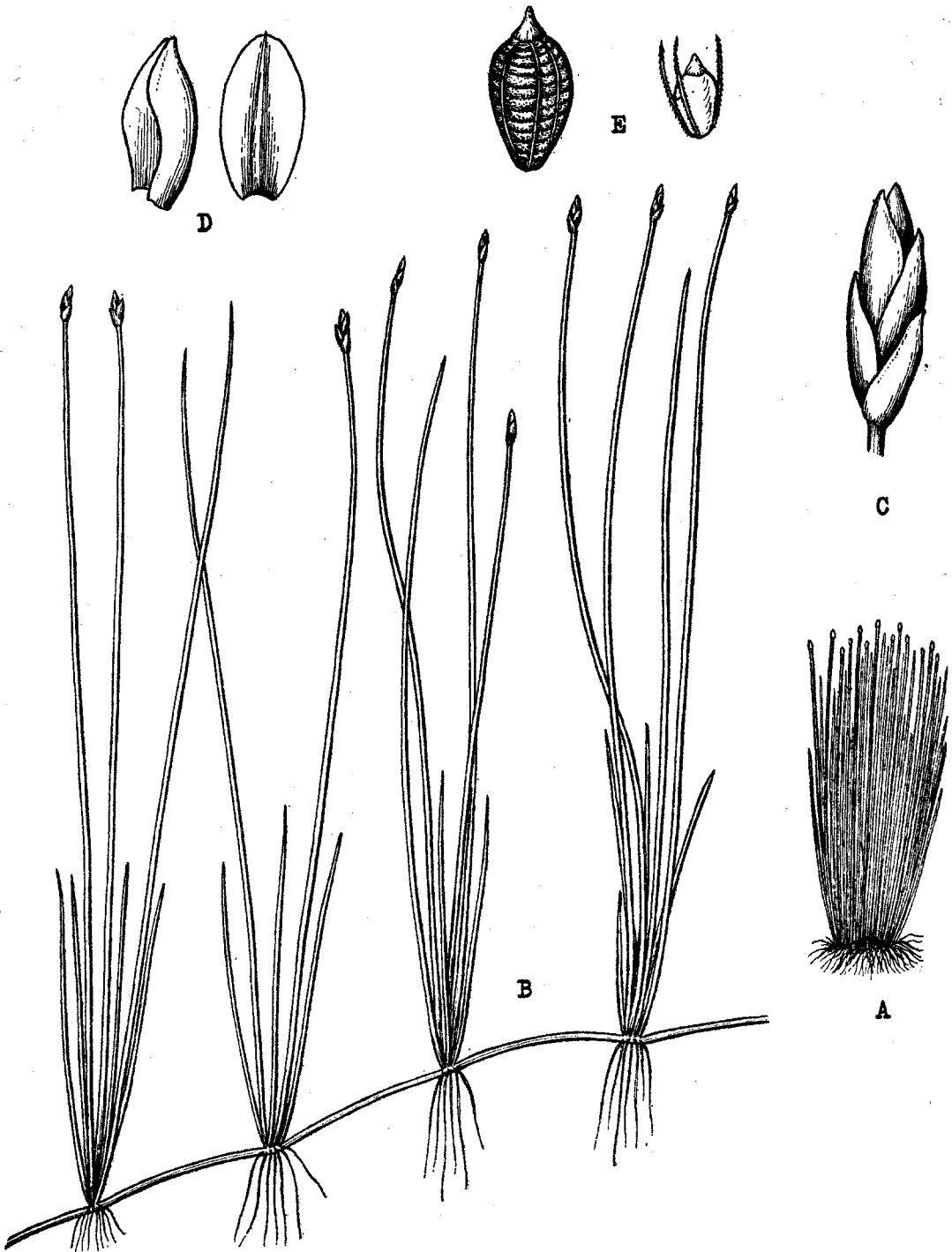


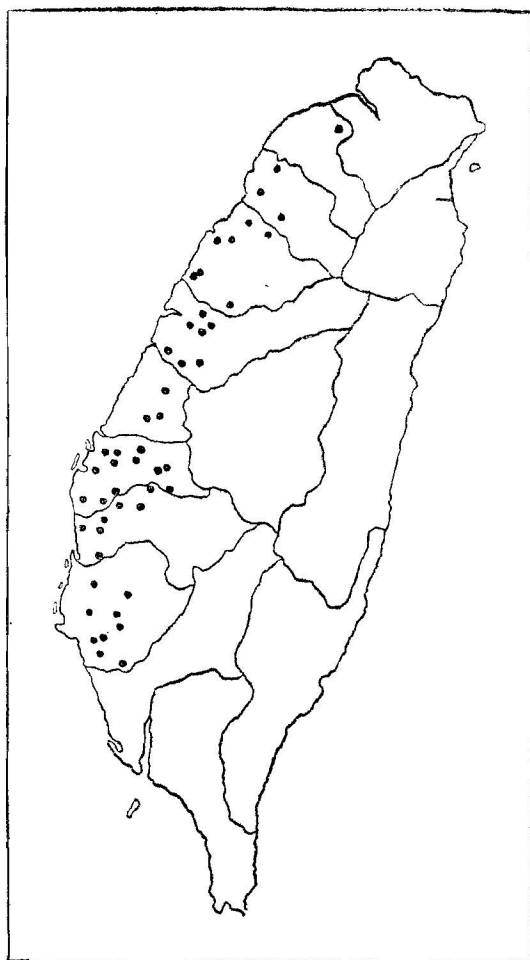
Fig. 25 *Eleocharis acicularis* (Linn.) R. & S. var. *longiseta* Svenson

Fig. 26

*Eleusine indica* Gaertn.

*Gramineae*

- A. Whole plant ( $\frac{2}{3}$ )
- B. Spikelet (X10)
- C. First glume (X20)
- D. Second glume (X20)
- E. Floret (X20)
- F. Lemma (X20)
- G. Palea (X20)
- H. Fruit (X20)



Annual herbs, culms somewhat tufted, about 30-80 cm. high, leaves linear, green, 15-40 cm. long, 3-7 mm. wide, usually sparsely covered with white silky hairs at the base, ligules 1 mm. long, white, serrate, flowers in spike, 3 to 6, all in a terminal whorl, digitate, 7-15 cm. long, spikelets in 2-seriate on one side of rachis, ovate, 4-5 cm. long, florets 4-5, awnless, first glume and second glume about the same length, shorter than spikelets, keels acute, lemma 2-lateral nerved, palea with acute-angled, anthers oblong, caryopsis ovoid, 3-obtuse-angled.

**Habitat:** On the upland of central and southern parts, and the paddy fields of northern parts of Taiwan.



Fig. 26 *Eleusine indica* Gaertn.

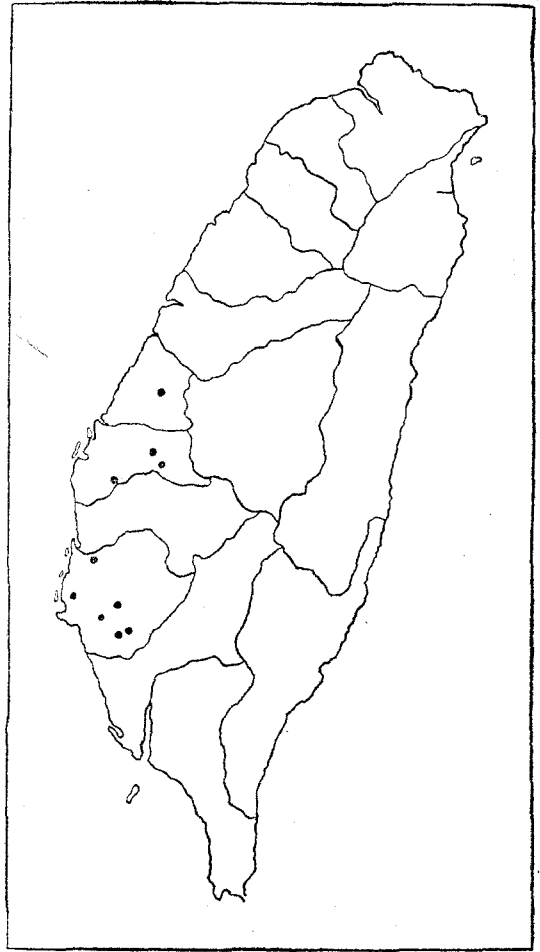


Fig. 27

*Epaltes australis* Less.

Compositae

- A. Whole plant ( $\frac{1}{2}$ )
- B. Outer bract of involucre (X10)
- C. Inner bract of involucre (X8)
- D. Bisexual flower (X9)
- E. Unisexual flower (X9)



Annual herbs, up to 30 cm. high, stems creeping, pubescent, leaves alternate, oblanceolate or obovate, both surfaces covered with hairs, margins dentate or pinnately divided, terminal segments larger, flowers in axillary head, with short pedicels, yellow, involucre semi-globose, bracts obtuse, outer surface covered with bristles, pistillate flowers in outer rows of head, corolla tubular, usually 3 to 5 clefted, fruits without pappus.

**Habitat:** On the upland of Tainan district of Taiwan.

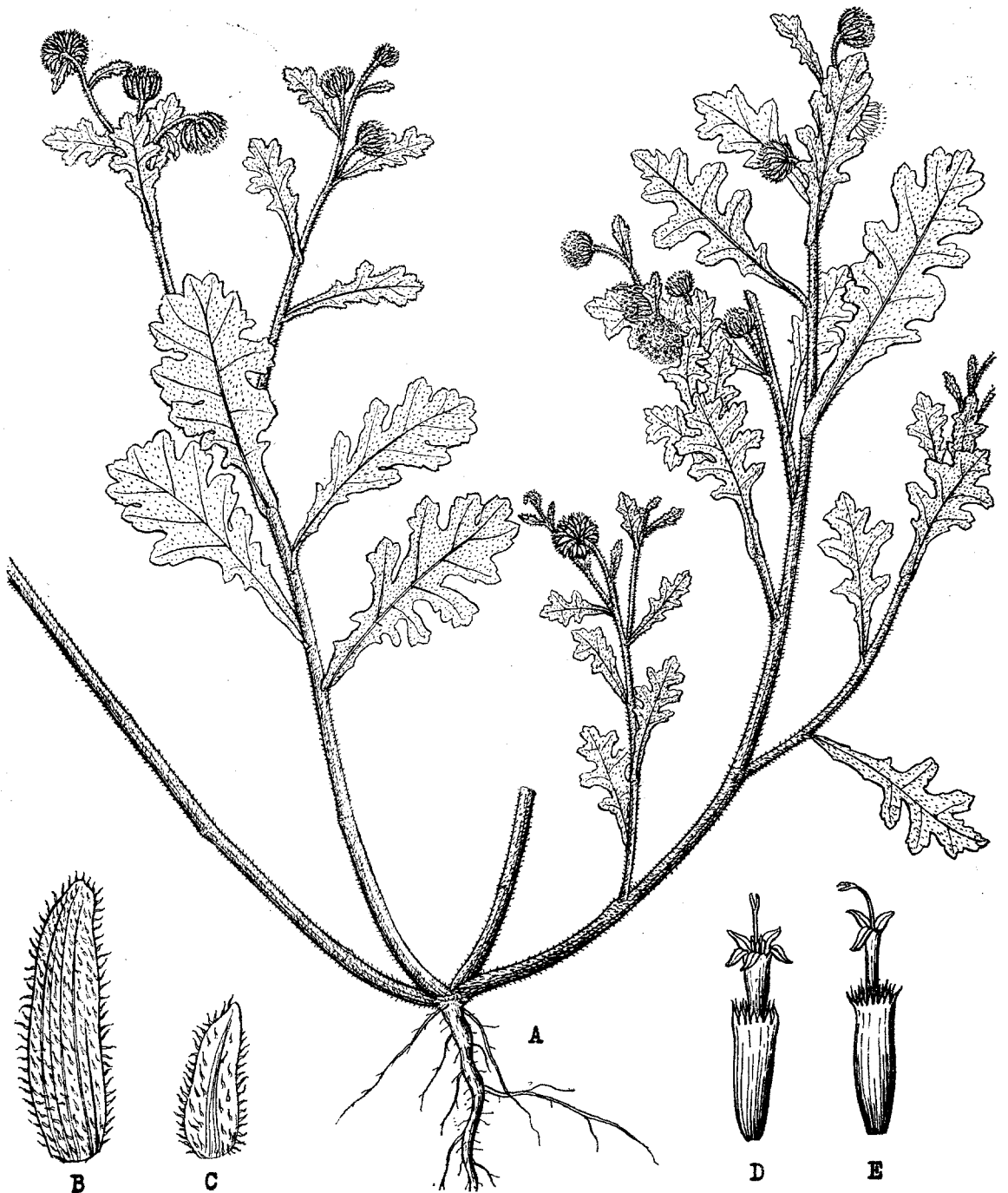


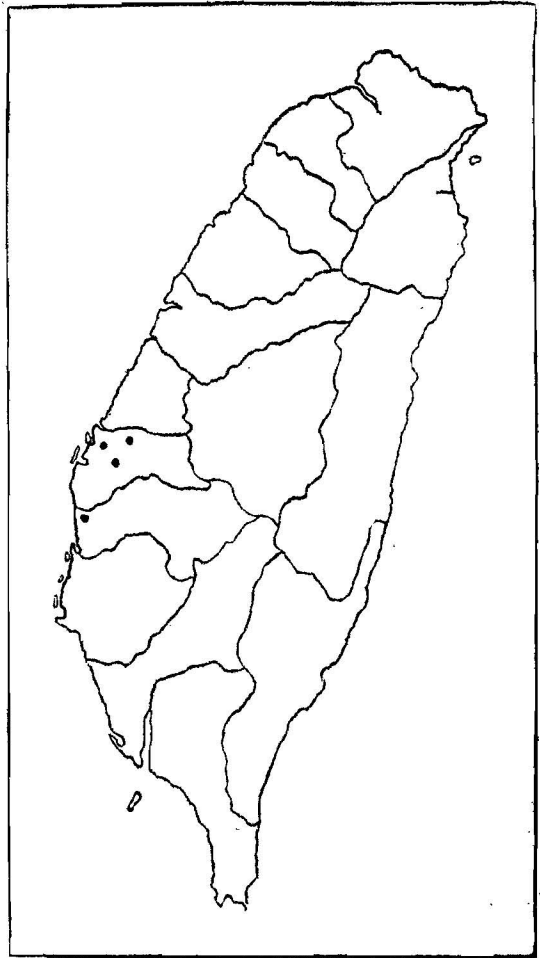
Fig. 27 *Epaltes australis* Less.

Fig. 28

*Equisetum ramosissimum* Desv.

*Equisetaceae*

- A. Plant with stobili (1/4)
- B. Sheath (X5)
- C. A cross section of stem (enlargement)



Perennial herbs, usually fascicled 30-100 cm. high, stems cylindrical, slender, whorled branches at the base, hollow in central, cortex rather thick, surface coarse, with 8-15 longitudinal groove in whitish green, leaves sheath-like in each node, margins teeth dark brown, narrow lanceolate 3-5 mm. long, easily falling, strobili on terminal, oblong, apiculate, yellow, 1-2 cm. long, usually sessile.

**Habitat:** On the upland of southern Taiwan.

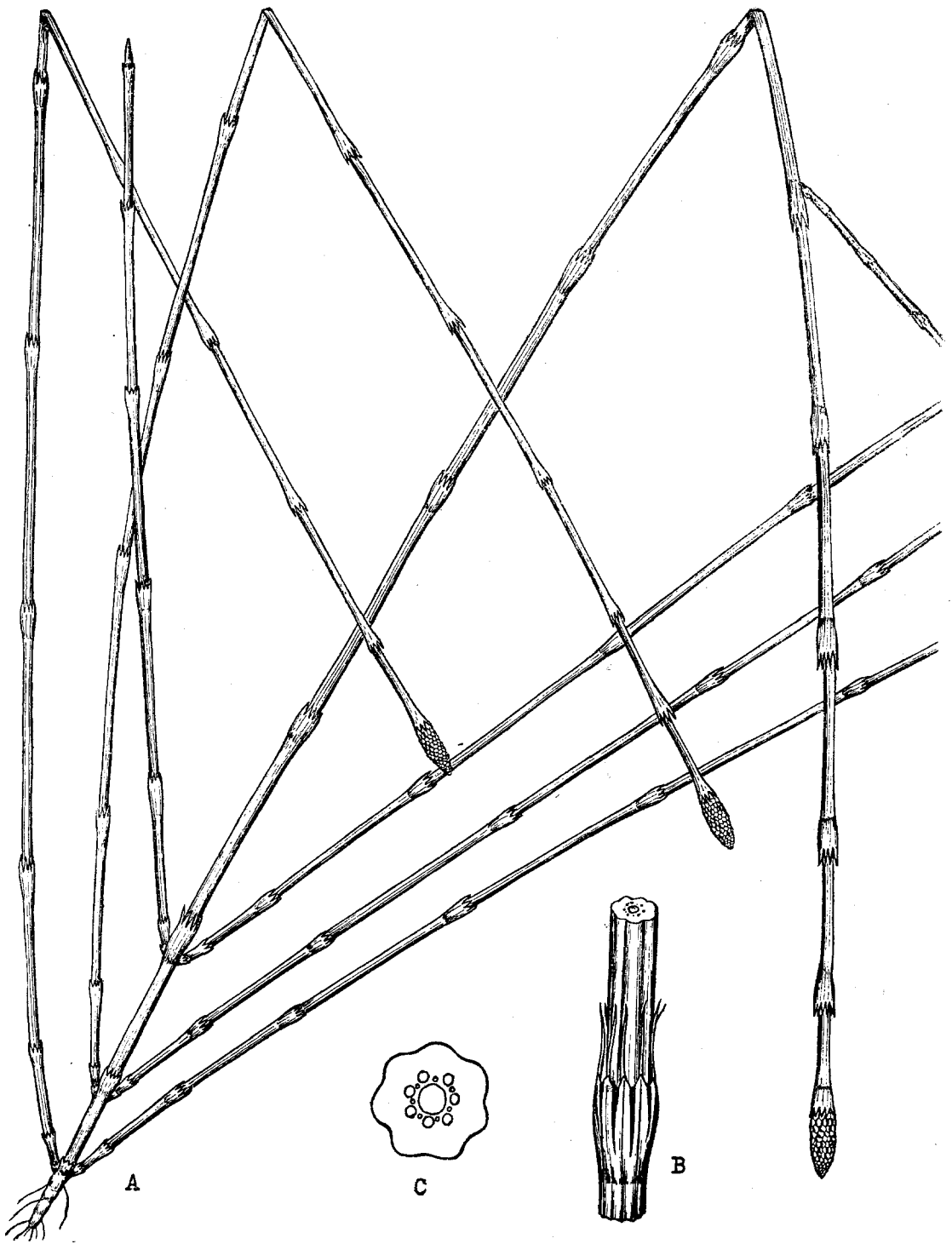


Fig. 28 *Equisetum ramosissimum* Desv.

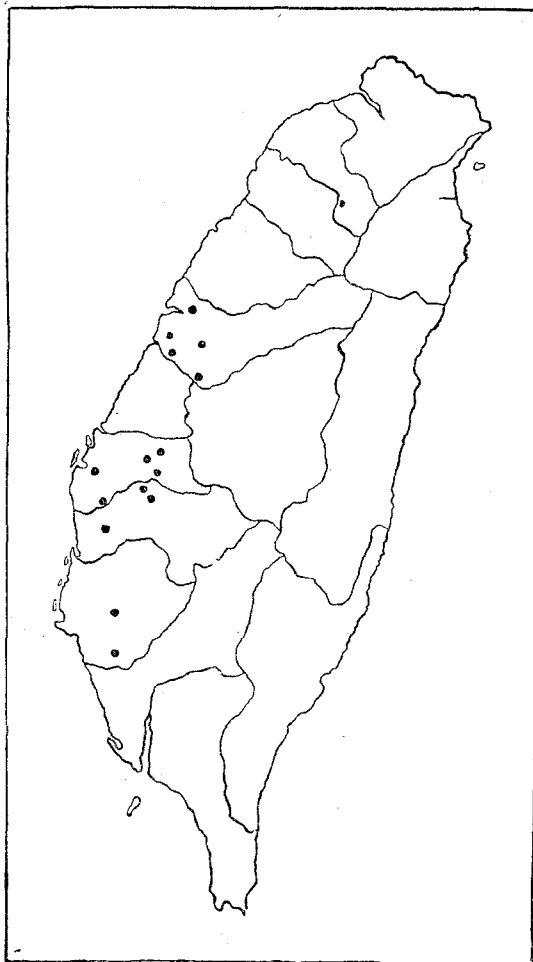
Fig. 29

*Eragrostis amabilis* (Linn.) Wight. et Arn.

Syn.: *Eragrostis plumosa* Link.

*Gramineae*

- A. Whole plant ( $\frac{1}{4}$ )
- B. Sheath (X7)
- C. Spikelet (X15)
- D. First glume (X27)
- E. Second glume (X25)
- F. Floret (X25)
- G. Second palea (X25)
- H. Second lemma (X25)



Annual herbs, culms slender up to 30 cm. high, leaves linear-lanceolate, sheath margins hirsute, ligule covered with long hairs, flowers in terminal open panicle, ovate-oblong, spikelet with long pedicel, floret 3-9, flatten ovate, rachis persistent, glume shorter than floret, first glume one nerved, second glume larger than first glume, one nerved, lemma 2 nerved, palea with keel, keel with hirsute.

**Habitat:** On the upland of Tainan district and winter crop fields in Taichung district.



Fig. 29 *Eragrostis amabilis* (Linn.) Wight. et Arn.

Fig. 30

*Euphorbia hirta* Linn.

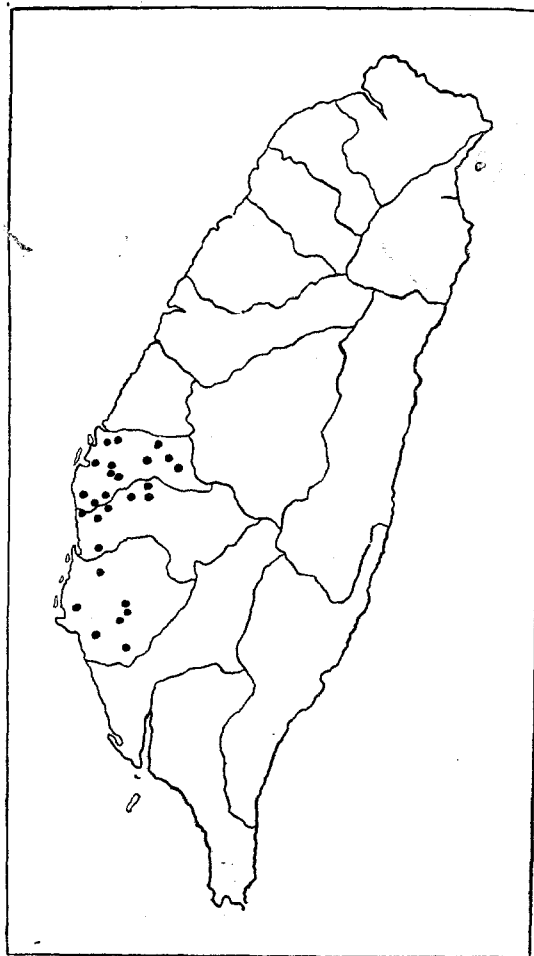
*Euphorbiaceae*

A. Habit ( $\frac{1}{4}$ )

B. Fruiting branchlet ( $\frac{1}{4}$ )

C. Fruit (X4)

D. Seed (X5)



Annual herbs, stems many branched at the base, erect or ascending about 20-40 cm. high, clothed with pubescent, leaves opposite, narrowly ovate-triangular, oblong, ovate or narrowly ovate, 2-4 cm. long, margins serrulate or serrate, apex acute, base unequal or slightly round, upper surface sparsely with short hairs, lower surface yellowish, clothed with pubescent, lateral veins 3-4, involucre in dense axillary sessile or short stalked clusters or crowded cymes, glands oblong, capsule 3-angled, clothed with geniculate short hairs, 1.3 mm. in diameter, seeds ovate, 3-angled, with transverse wrinkled, about 0.7 mm. long.

**Habitat:** On the upland of Tainan district of Taiwan.



Fig. 30 *Euphorbia hirta* Linn.

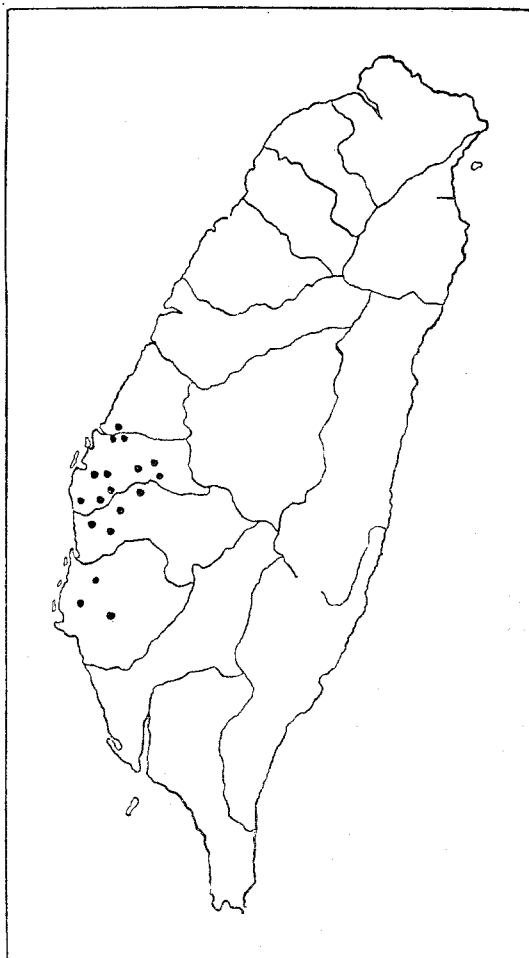


Fig. 31

*Euphorbia thymifolia* Linn.

*Euphorbiaceae*

- A. Whole plant with fruits ( $\frac{1}{4}$ )
- B. Fruiting branchlet (X3)
- C. Leaf (X6)
- D. Fruit (X10)



Annual herbs, stems creeping and spreading, usually reddish, clothed with pubescence, often with milky juice, leaves opposite, oblong or ovate-oblong, round at the apex, oblique at the base, margin obscurely crenulate, 7-15 mm. long, flowers unisexual, on upper branchlets, terminal and axillary, without perianth, surrounded by purplish involucre, capsules 3-angled, pubescent, seeds smooth.

**Habitat:** On the upland of Tainan district of Taiwan.



Fig. 31 *Euphorbia thymifolia* ♀ inn.

Fig. 32

*Fimbristylis miliacea* (Linn.) Vahl.

Cyperaceae

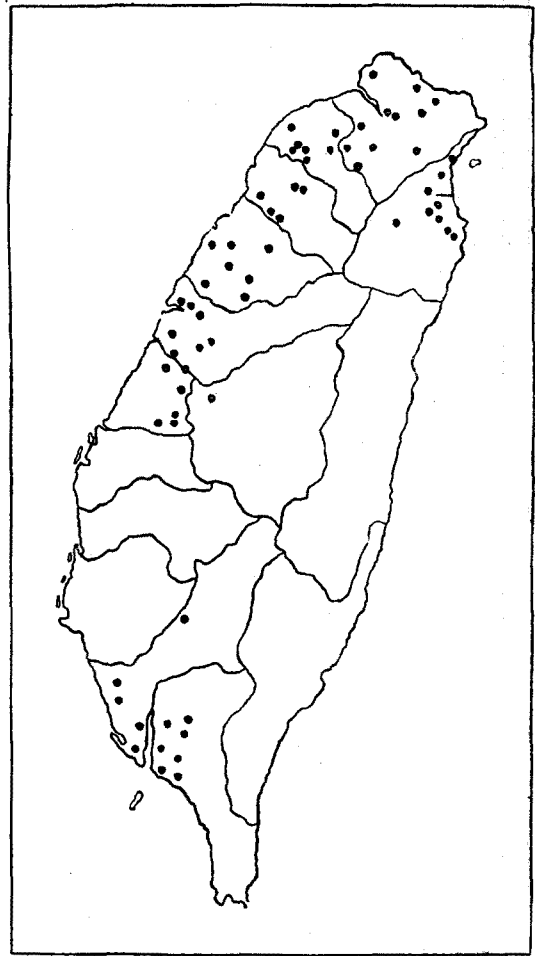
A. Whole plant ( $\frac{1}{4}$ )

B. Compound umbel ( $\frac{1}{4}$ )

C. Spikelet (X10)

D. Glume (X25)

E. Fruit (X25)



Annuals, without rhizomes, culms tufted, about 10-60 cm. high, lower parts covered by 2 or 3 sheaths, leaves linear, flat distichous, flowers in umbels decomound, involucre shorter than the inflorescence, 2-4, bristle-like, spikelets small, globose, many-flowered, glumes ovate, obtuse membranous, convex, style 3-fid, nuts obovoid, white or yellow, surface rugose.

**Habitat:** Spread throughout all paddy fields of Taiwan and winter catch cropping fields in Taichung.

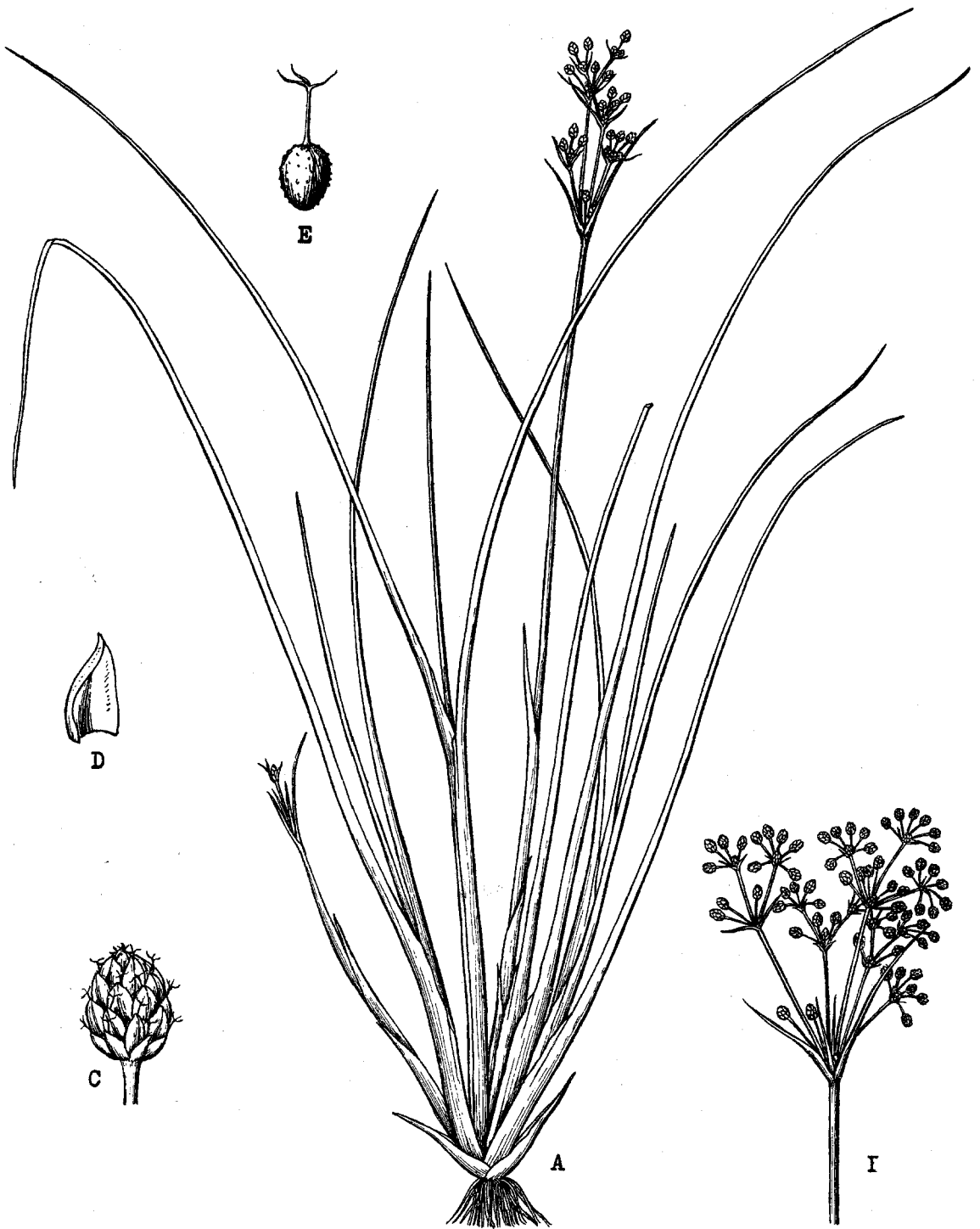


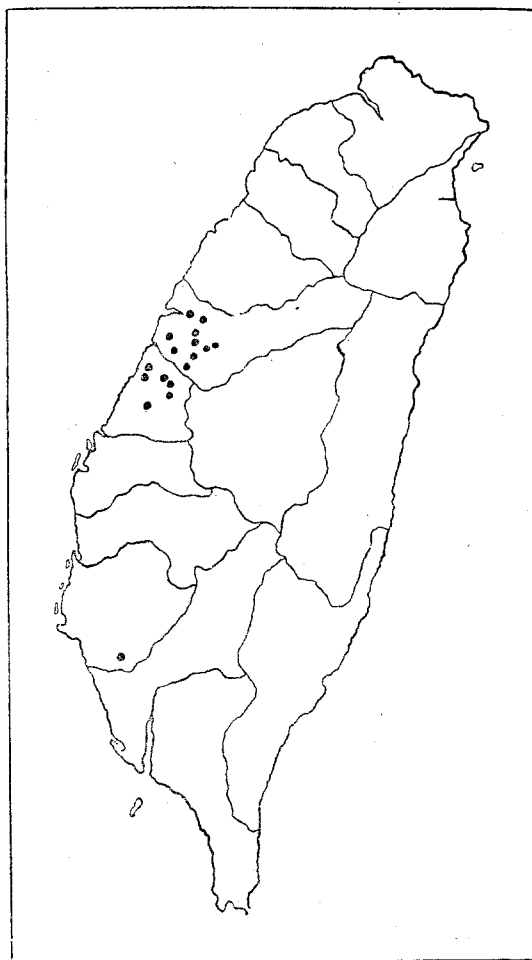
Fig. 32 *Fimbristylis miliacea* (Linn.) Vahl.

Fig. 33

*Gnaphalium purpureum* Linn.

*Compositae*

- A. Whole plant with flowers ( $\frac{1}{2}$ )
- B. Head (X10)
- C. Bisexual (X30)
- D. Pistillate flower (X30)
- E. Ovary of bisexual flower (X30)
- F. Perianth (X20)



Annual herbs, stems many branched at the base, densely silvery wool hairs, 10-30 cm. high, leaves alternate, spatulate or linear-obovate, obtuse, apiculate, 1.5-4 cm. long, head simple or spike decomposed in axillary, involucre campanulate, bract linear-oblong, acute, pistillate flowers filiform, corolla 3-4, hermaphrodite long tubular 5-lobed, pale brown, achene minute, without angled, papillate, pappus unite at base one row.

**Habitat:** On the fields of southern part of Taiwan.



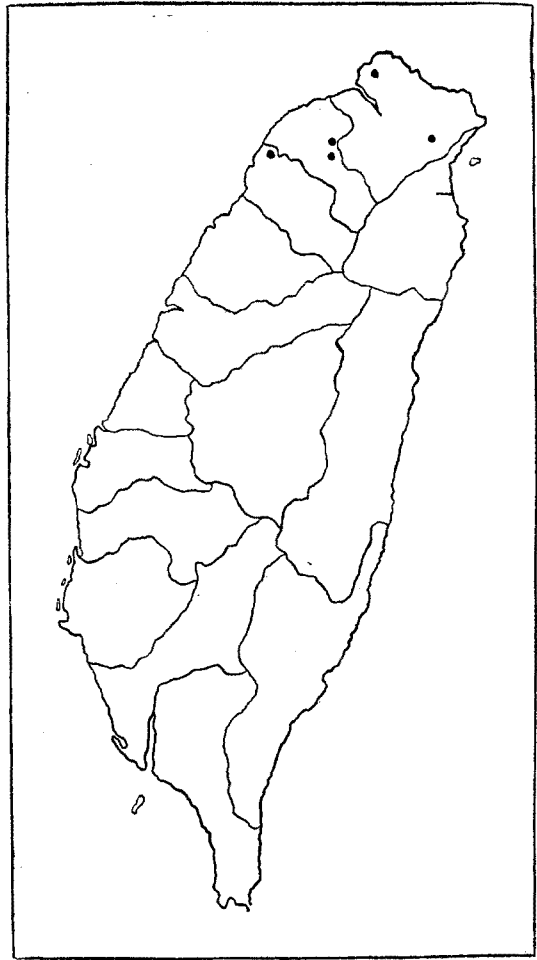
Fig. 33 *Gnaphalium purpureum* Linn.

Fig. 34

*Hedyotis diffusa* Willd.

*Rubiaceae*

- A. Whole plant ( $\frac{1}{2}$ )
- B. Flower (enlargement)
- C. Fruit (X6)
- D. Seed (X30)



Annuals, glabrous, stems branched at the base, about 10-20 cm. high, leaves sessile, linear or linear-lanceolate, lateral nerves obscure, margin somewhat involute, 1-3 cm. long, flowers solitary in pairs, axillary, pedicels 2-12 mm. long, calyx 4-lobed, lobes triangular-acute, corolla 4-lobed, lobe as long as the tubular, glabrous, white, stamens 4, capsules ovoid, glabrous, about 3mm. in diameter not protruded beyond the calyx-lobes, seeds small, angled.

**Habitat:** On the paddy fields of northern part of Taiwan.

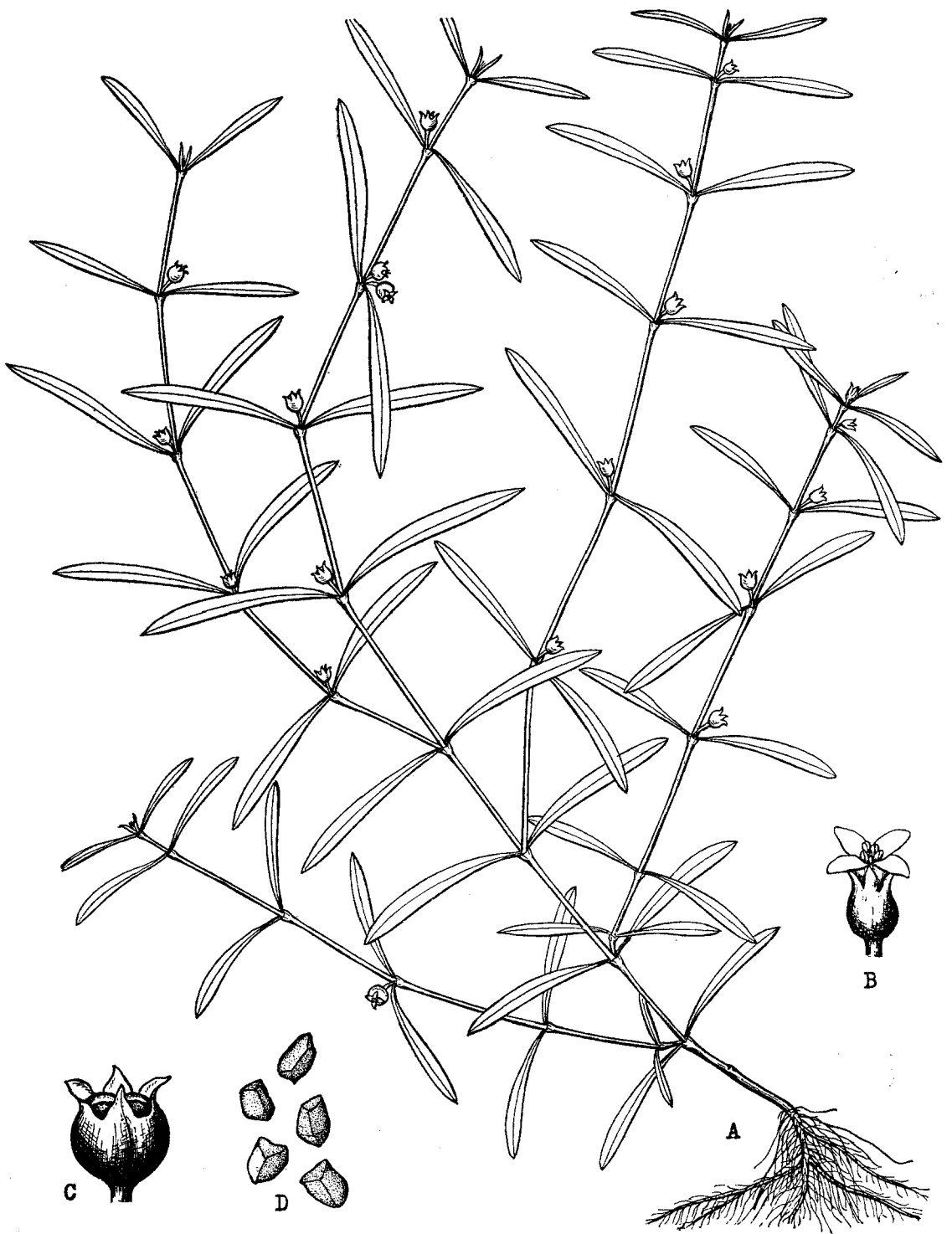


Fig. 34 *Hedyotis diffusa* Willd.

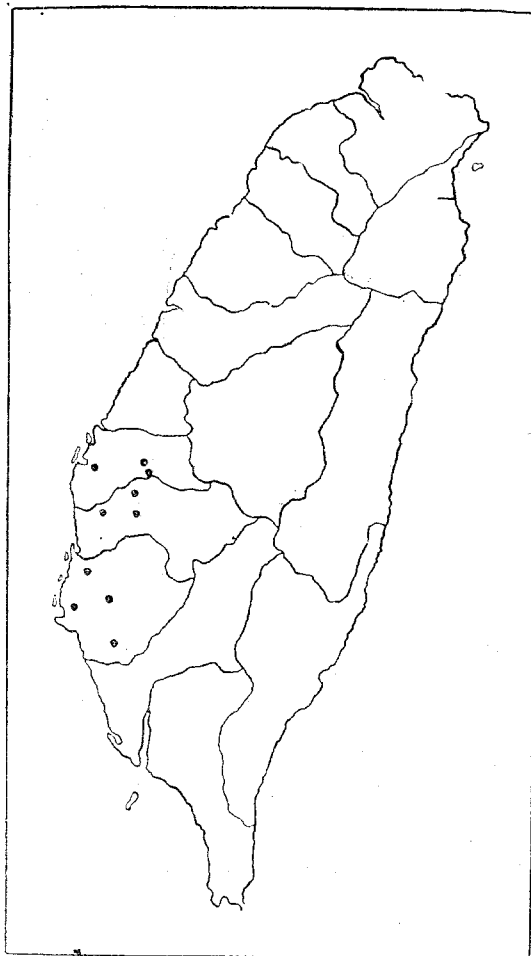


Fig. 35

*Heliotropium indicum* Linn.

*Borraginaceae*

- A. Fruiting branchlet ( $\frac{1}{4}$ )
- B. Fruit (X10)
- C. Fruit (enlargement.)
- D. Fruit (To show dehiscence) (X15)



Annual herbs, plants densely clothed with hirsute, about 30-60 cm. high, leaves ovate, acute, margin crenate-serrate, 3-10 cm. long, both surfaces tomentose, spikes in terminal or leaf-opposed, curved, flowers all on one side, densely, pale-lavender to nearly white. calyx deeply 5-lobed, segments linear-lanceolate, tomentose, corolla tubular 5-lobed, without scale, segments rounded, dentate, stamens 5, ovary 4-celled, stigma ending in a conical disk, fruit broadly ovate, divided into 2 nutlets, when maturity.

**Habitat:** On the fields of Tainan district of Taiwan.

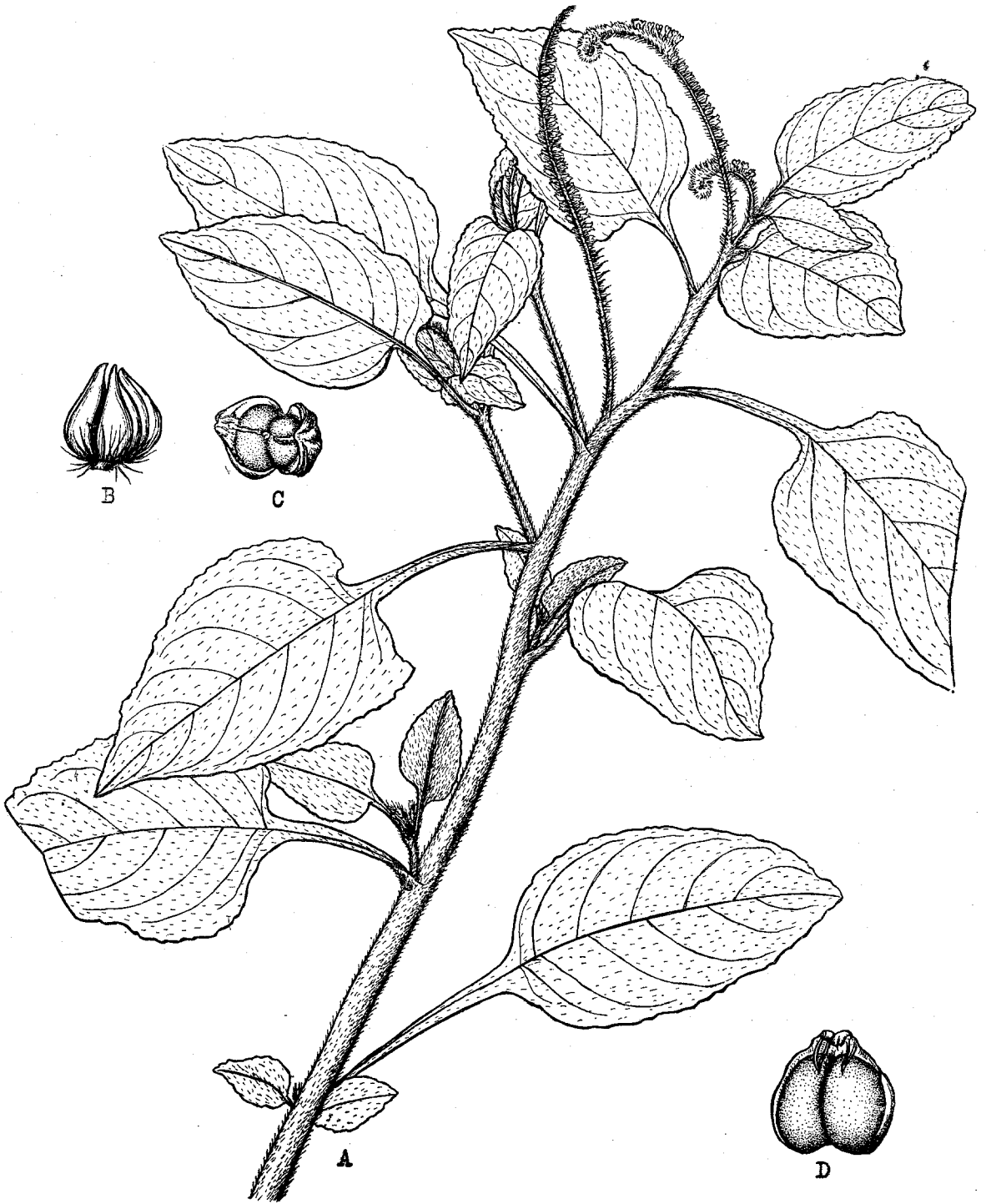


Fig. 35 *Heliotropium indicum* Linn.

Fig. 36

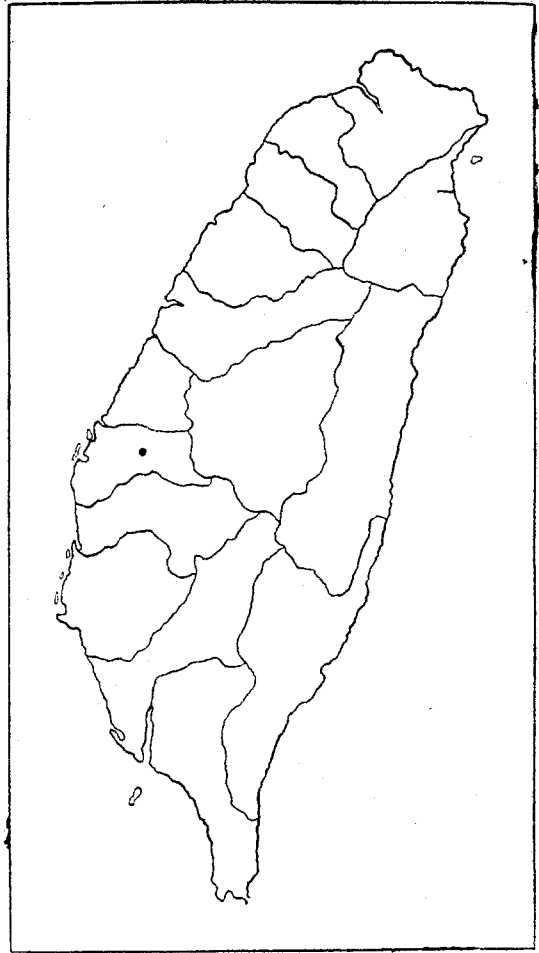
*Hemistepta lyrata* Bunge.

Syn: *Hemistepta carthamoides* O.K.

*Saussurea affinis* Spring.

*Compositae*

- A. Whole plant ( $\frac{1}{2}$ )
- B. Fruiting branchlet ( $\frac{1}{2}$ )
- C. Outer and inner bract of involucre  
(X10)
- D. Flower (X5)
- E. Fruit (X5)



Biennial herbs, about 20-90 cm. high, leaves petiolate at lower stems, sessile at upper parts alternate, broadly oblanceolate, deeply pinnate divided, ultimate segments largest deltoid, lateral segments serrate, upper surface green, lower surface densely covered with white silky, head usually many, forming a conical-corymb, involucre ovoid 8-rows, imbricate, upper surface with cristate appendage, outer rows ovate-deltoid, inner one lanceolate, acute at the apex, flowers small, tubular, corolla purple, achene oblong, glabrous, 15-angled pappus 2-rows, outer one short, few, persistent, inner one pinnate, fugacious.

**Habitat:** On the upland of Tainan district.

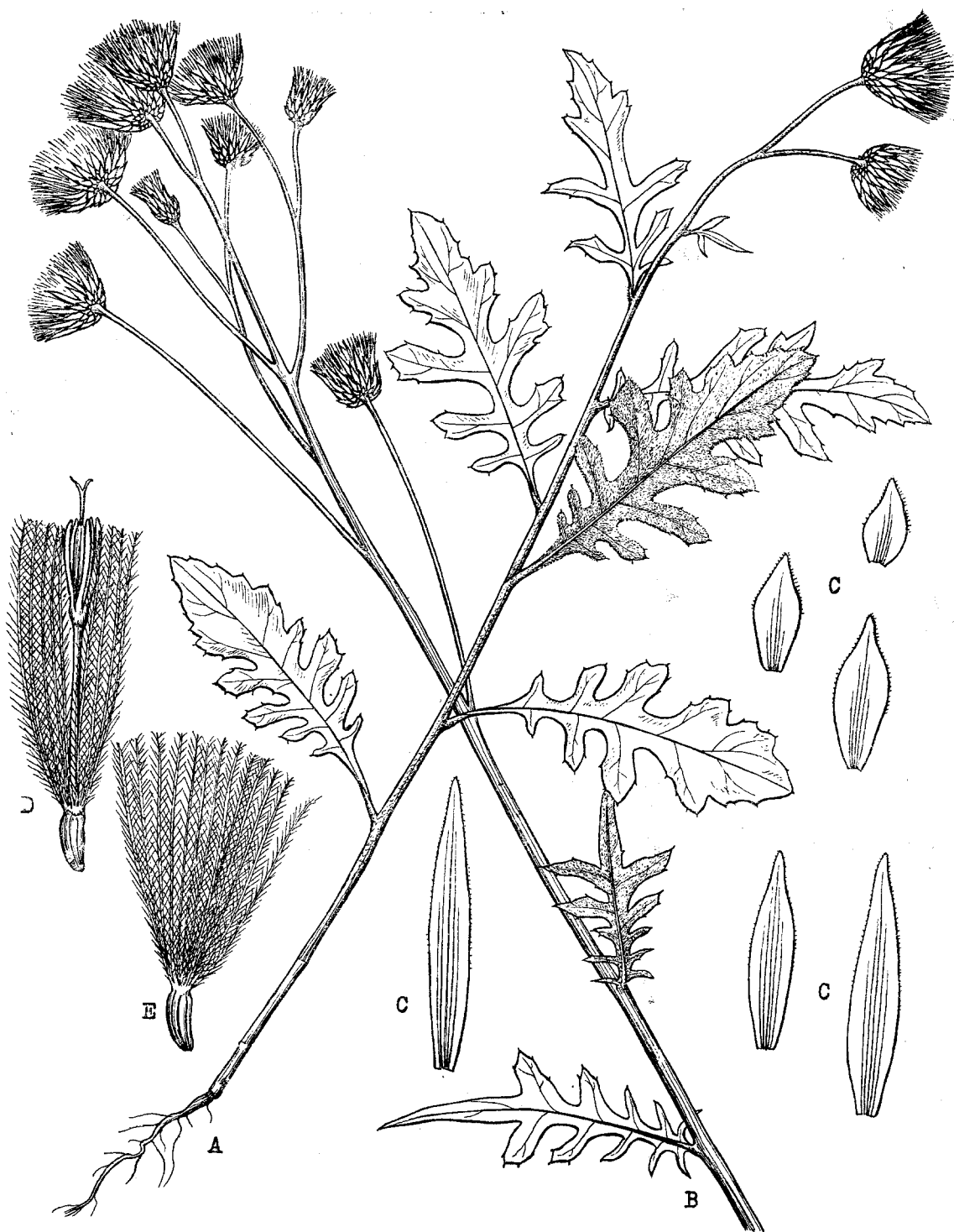


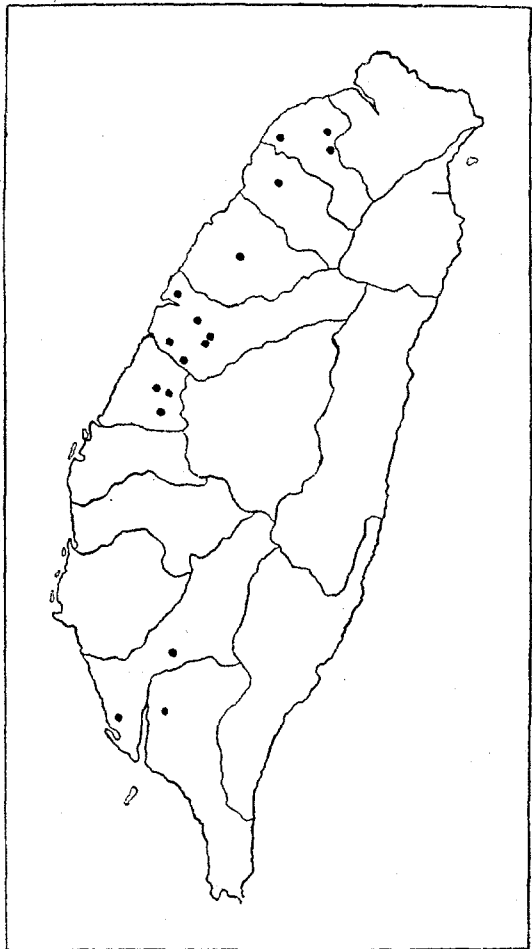
Fig. 36 *Hemistepta lyrata* Bunge.

Fig. 37

*Hydrocotyle formosana* Masamune

*Umbelliferae*

- A. Whole plant with fruits ( $\frac{1}{4}$ )
- B. Leaf (X2)
- C. Umbel (X5)
- D. Fruit (X10)



Prostrate herbs, branches ascending, leaves round in outline, deeply palmately 3-lobed, almost to the base, 1-3 cm. in diameter, glabrous or sparsely covered with white long hairs, petioles 1-4 cm. long, stipules membranaceous, umbel simple, long pedunculate, about 10-flowered, fruits laterally compressed.

**Habitat:** Very common on paddy fields of Taiwan.



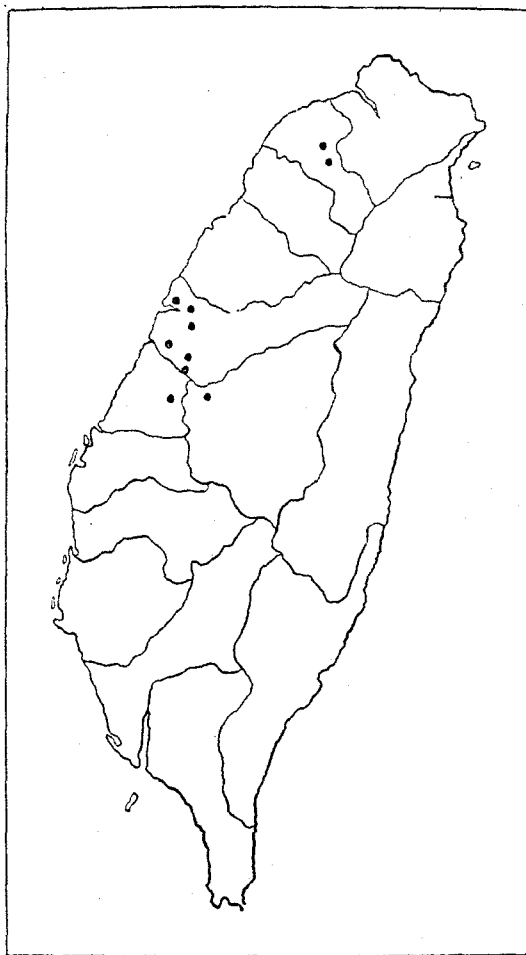
Fig. 37 *Hydrocotyle formosana* Masamune

Fig. 38

*Hypericum japonicum* Thunb.

*Guttiferae*

- A. Roots and stems ( $\frac{1}{4}$ )
- B. Fruiting branchlet ( $\frac{1}{4}$ )
- C. Leaf (X5)
- D. Fruit (X5)
- E. Seed (X40)



Perennial herbs, stems glabrous, 4-angled, upper parts branched, 20-50 cm. high, leaves opposite, ovate, obtuse somewhat perfoliate, entire, 5-12 mm. long, densely covered with minute hyaline spots. Flowers pedicellate, calyx 5, broadly lanceolate, persistent, corolla 5, shorter than the length of calyx, with several nerves, without spots, style 0.5-1 mm. long, capsule ovate, shorter than the calyx, without spots, seeds oblong, with several longitudinal angled and minute net.

**Habitat:** On the paddy fields of central and northern parts of Taiwan.



Fig. 38 *Hypericum japonicum* Thunb.

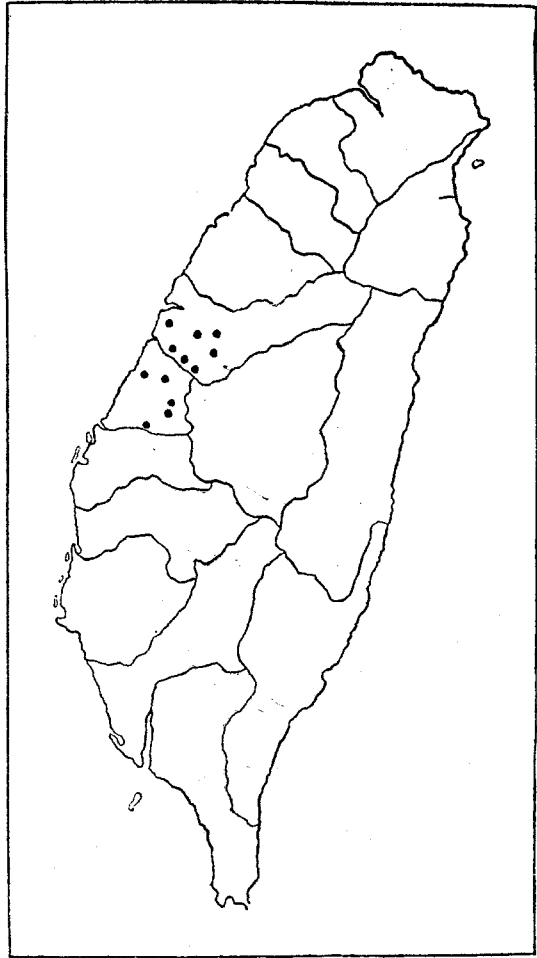


Fig. 39

*Ixeris laevigata* (Blume) Sch.  
var. *lanceolata* Makino  
Syn.: *Ixeris oldhami* (Maxim.) Kitam.

*Compositae*

- A. Whole plant ( $\frac{1}{2}$ )
- B. Inner bracts (X10)
- C. Flower (X10)
- D. Fruit (X25)



Perennial herbs, plants glabrous, stems about 20-40 cm. high, with few leaves. Leaves oblong or lanceolate-oblong, at the base of stems, linear or petiole-liked at the upper parts of stems, acute at the apex, thin chartaceous, entire or pinnately divided about 6-12 cm. long, head in panicle, flowers yellow, achene and involucre as same as in the length, narrowly lanceolate, pappus about 3 mm. long.

**Habitat:** On the upland of Tainan district of Taiwan.



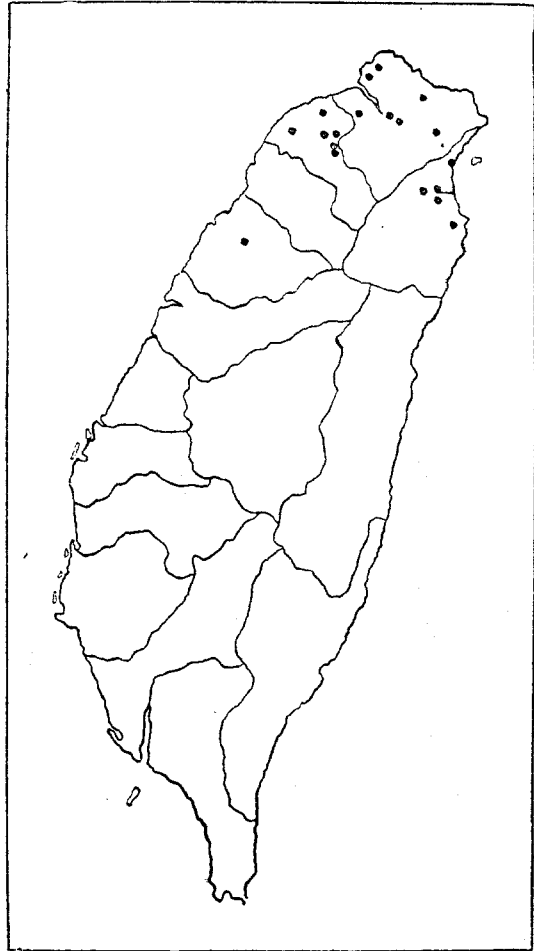
Fig. 39 *Ixeris laevigata* (Blume) Sch. var. *lanceolata* Makino

Fig. 40

*Juncus prismatocarpus* R. Br.

*Juncaceae*

- A. Whole plant ( $\frac{1}{4}$ )
- B. Leaf apex (X3)
- C. Flower (X8)
- D. Perianth (X10)
- E. Flower (without perianth) (X15)
- F. Fruit (X5)
- G. Seed (X26)



Annual herbs, stems about 10-20 cm. high, tufted, flat, usually with 2-narrow wings, 2 mm. wide, leaves few, flat, sword-like, somewhat geniculate, 10-20 cm. long, 2-3 mm. wide, flowers in terminal compound cyme, the lowest bract foliose, shorter than inflorescence, head with few flowers, pale greenish brown, perianth narrowly lanceolate, acute at the apex, stamens 3, about  $\frac{1}{3}$ - $\frac{1}{2}$  in the length of perianth, capsule 3-angled, lanceolate, longer than perianth, acute at the apex, membranous, seeds obovate.

**Habitat:** On the paddy fields of northern part of Taiwan.



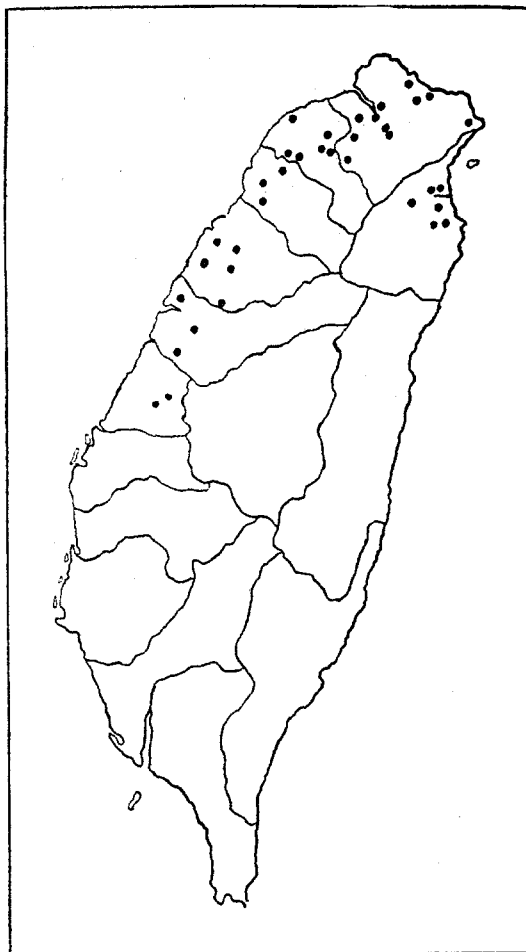
Fig. 40 *Juncus prismatocarpus* R. Br.

Fig. 41

*Kyllinga brevifolia* Rottb.

Cyperaceae

- A. Whole plant ( $\frac{1}{4}$ )
- B. Spikelet (X5)
- C. First glume (X6)
- D. Second glume (X6)
- E. Fruit (X15)



Perennial herbs, rhizome spreading and prostrate, culms erect, soft, about 10-25 cm. high, leaves 2-3 mm. wide, flowers in head, sessile, solitary on terminal, spherical or ovoid, densely many spikelets, pale green, bracts 3, spikelets 3-3.5 mm. long, broadly lanceolate, acute at the apex, flatten, glume membranous, pale green or with brown spots, keels with bristle or none, apex somewhat capitate, stamens 3 or 2, achene  $\frac{1}{2}$  of the length of glume, obovate.

**Habitat:** On the paddy fields of central and northern parts, and winter catch cropping field of central Taiwan.



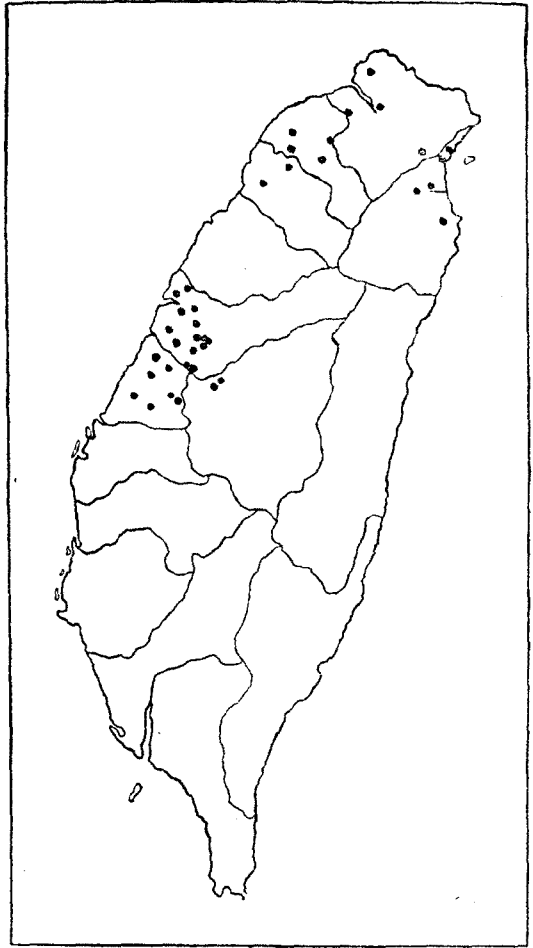
Fig. 41 *Kyllinga brevifolia* Rottb.

Fig. 42

*Lindernia cordifolia* Merr.

Scrophulariaceae

- A. Whole plant ( $\frac{1}{2}$ )
- B. Flower (X2)
- C. Calyx (X5)
- D. Pistil (X15)
- E. Fruit (X5)
- F. Seed (X40)



Annual herbs, stems about 20-30 cm. high, erect and many-branched, leaves opposite, ovate, margin serrulate, about 1.5-2 cm. long, 1-1.2 cm. wide. Petiolate short, flowers small, solitary, pedicels slender about twice as the length of leaf, white or pale purple, calyx campanulate 5-lobed, lobe narrowly lanceolate, free, corolla tubular, 2-lipped, upper slightly 2-lobed, lower large 3-lobed, stamens 4, capsule narrowly cylindrical, longer than the persistent calyx.

**Habitat:** On the paddy fields of central and northern parts and winter catch cropping field of central Taiwan.

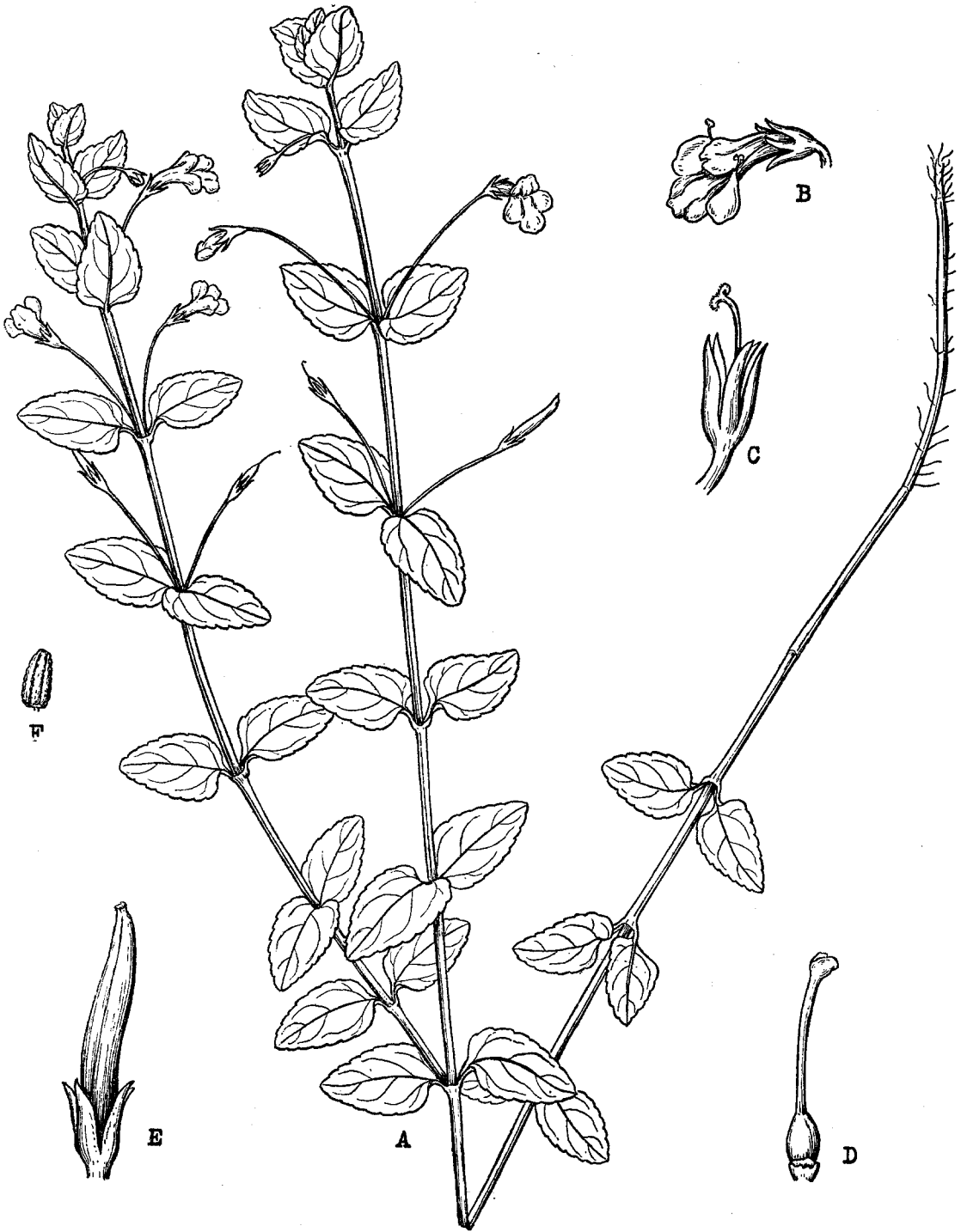


Fig. 42 *Lindernia cordifolia* Merr.

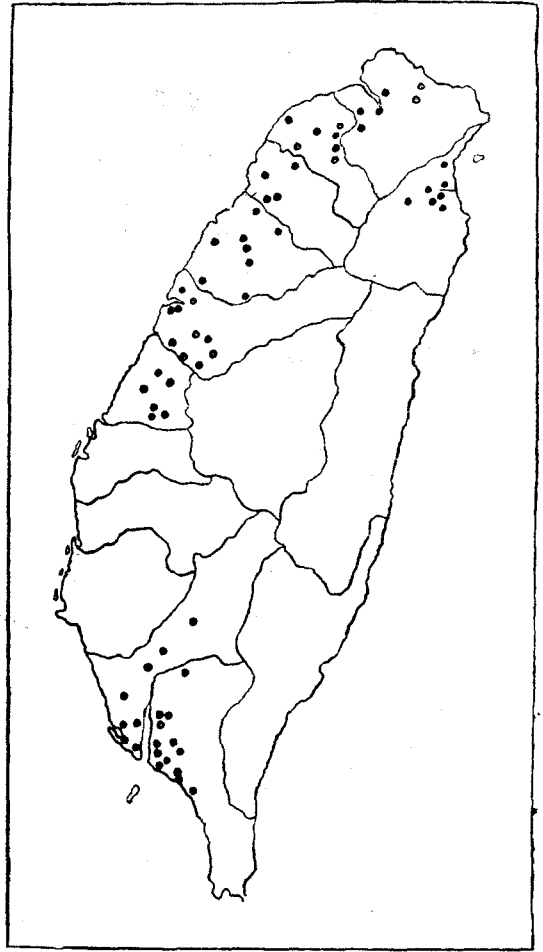


Fig. 43

*Lindernia pyxidaria* All.

*Scrophulariaceae*

- A. Whole plant ( $\frac{1}{2}$ )
- B. Flower (enlargement)
- C. Fruit (X5)
- D. Seed (X40)



Annual herbs, plants glabrous, many-branched at the base of stems, 7-15 cm. high, soft, leaves opposite, sessile, ovate or oblong, obtuse at the apex, entire, parrallel vein 3 or 5, about 1.5-3 cm. long, flowers solitary in axillary, pedicels slender, longer than the leaves, calyx campanulate, 5-lobed, lobe lanceolate or linear, shorter than fruits, persistent, corolla pale red, tubular lipped, upper lip emarginate at the apex, lower lip broad 3-lobed, stamens 4, didynamous, capsule, oblong.

**Habitat:** On the paddy fields of western Taiwan.



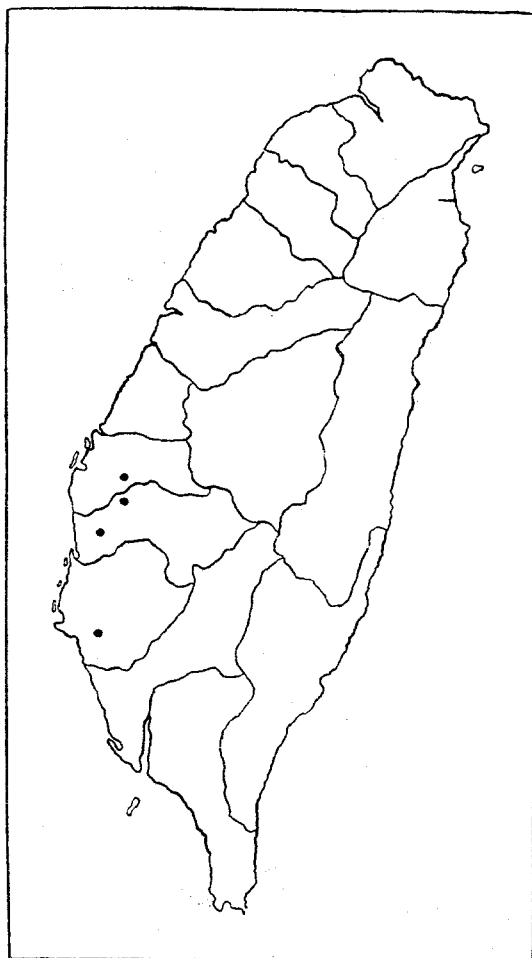
Fig. 43 *Lindernia pyxidaria* All.

Fig. 44

*Lippia nodiflora* Rich.

Verbenaceae

- A. Fruiting and flowering branchlets (†)
- B. Spike (X4)
- C. Flower with bract (X8)
- D. Inner surface of bract (X8)
- E. Flower (X8)
- F. Fruit (X9)



Perennial herbs, plants clothed with short appressed-hairs, stems slender, prostrate, branched, leaves opposite, obovate, round or obtuse at the apex, cuneate at the base, nearly sessile, margin sharply serrate in the upper half, entire in the lower half, midribs distinct, 2-4 cm. long, 4-15 mm. wide, spike solitary axillary, in long peduncled, oblong or short cylindrical, 8-20 mm. long, densely with many flowers, bract fan-shaped, apiculate at the apex, calyx short, flat, 2 narrow-winged, pubescent, corolla pink, tube slender, the limb 2 lipped spreading, lower lip longer than upper one, ovary 2-celled, fruits broadly obovate about 2 mm. long, pericarp somewhat woody.

**Habitat:** On the upland of Tainan district of Taiwan.

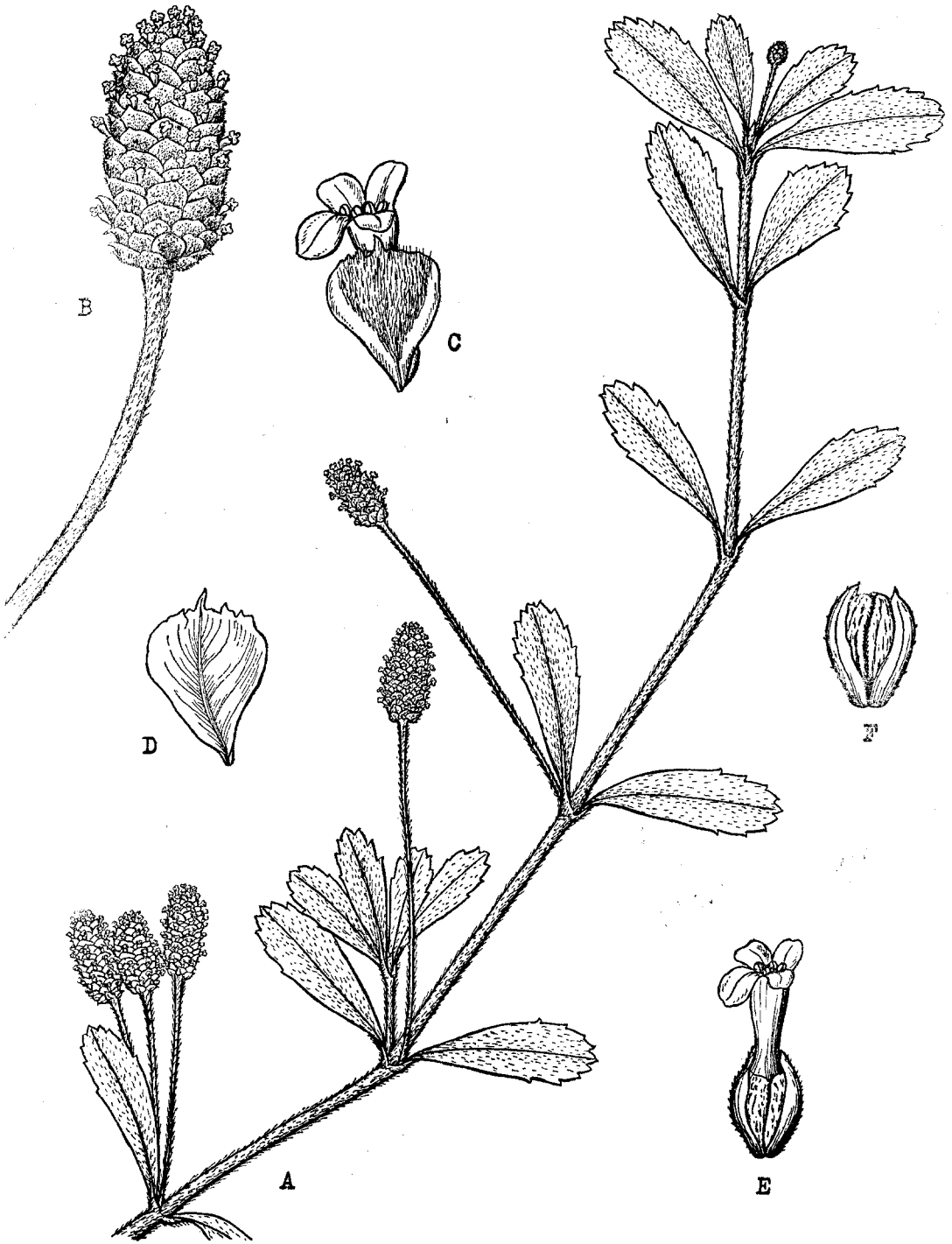


Fig. 44 *Lippia nodiflora* Rich.

Fig. 45

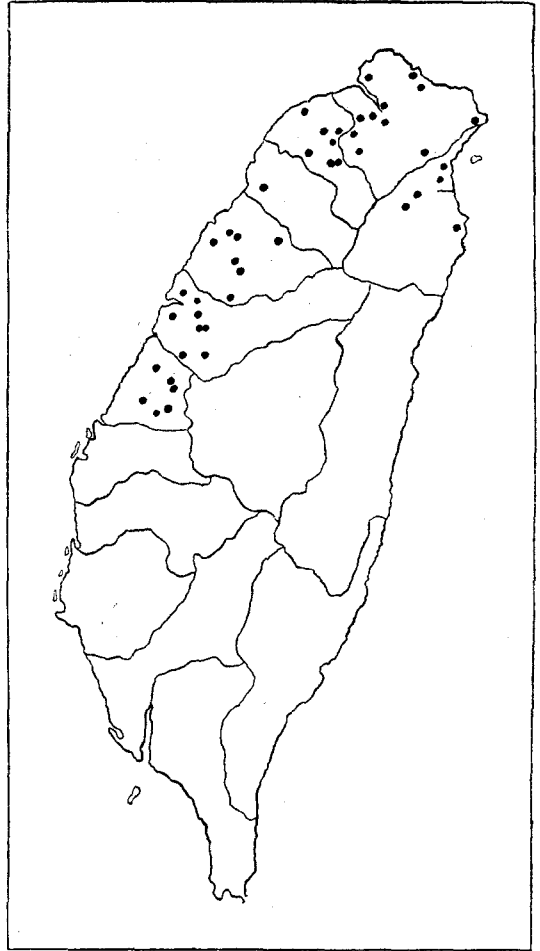
*Lobelia radicans* Thunb.

Campanulaceae

A. Whole plant ( $\frac{1}{4}$ )

B. Pistil and stamens (X8)

C. Corolla (X5)



Perennial herbs, glabrous, stems slender, creeping, branched, branches ascending 3-15 cm. high, leaves opposite, lanceolate or oblong-lanceolate, obtuse at the apex, somewhat petiolated, about 1-2 cm. long, margin with few obscurely crenate, flowers white somewhat pink, solitary, axillary, pedicels 1.5-3 cm. long, corolla deeply 5-clefted, calyx 5, ovary inferior, capsule conically clubshaped 5-7 mm. long, seeds reddish brown, smooth, with small spot, broadly ovate.

**Habitat:** On the paddy fields of the central and northern parts and winter catch cropping field in the central Taiwan.



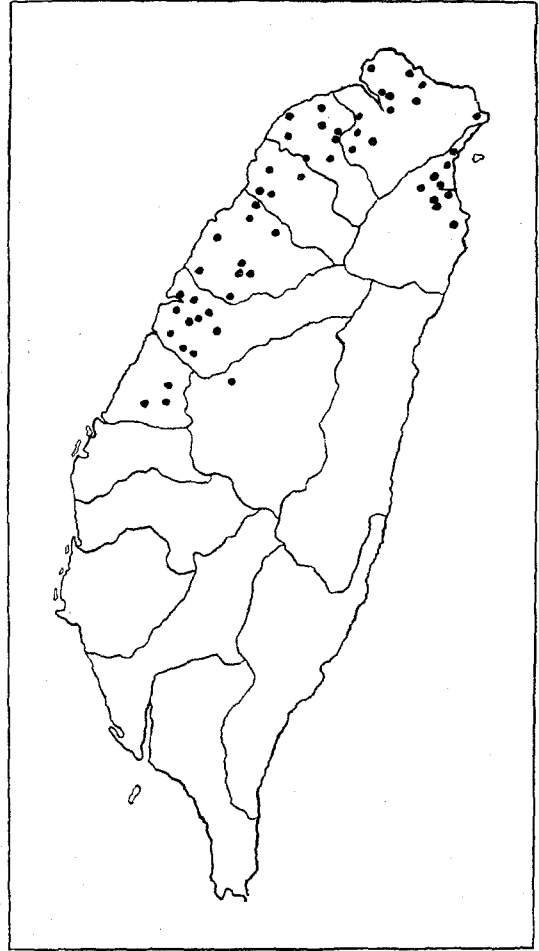
Fig. 45 *Lobelia radicans* Thunb.

Fig. 46

*Ludwigia prostrata* Roxb.

Oenotheraceae

- A. Fruiting branchlet ( $\frac{1}{4}$ )
- B. Flower (X5)
- C. Fruit (X3)
- D. Seed (X25)



Annuals, stem erect or ascending, branched, somewhat with angled, reddish brown, 30-60 cm. high, leaves alternate, lanceolate or oblong-lanceolate, acute at the apex, margin entire, 3-12 cm. long, 1-3 cm. wide, lateral nerves 7-15 pairs, curved before margin, flowers sessile, solitary, in axillary, ovary clothed with appressed hairs, calyx lobes ovate, acute at the apex, corolla small, yellow, stamens 4, capsule linear-cylindrical, 1.5-3 cm. long, seeds fusiform about 0.9 mm. long with brown longitudinal line, surrounded by the spongy-like pericarp.

**Habitat:** On the paddy fields of the central and northern parts of Taiwan.



Fig. 46 *Ludwigia prostrata* Roxb.



Fig. 47

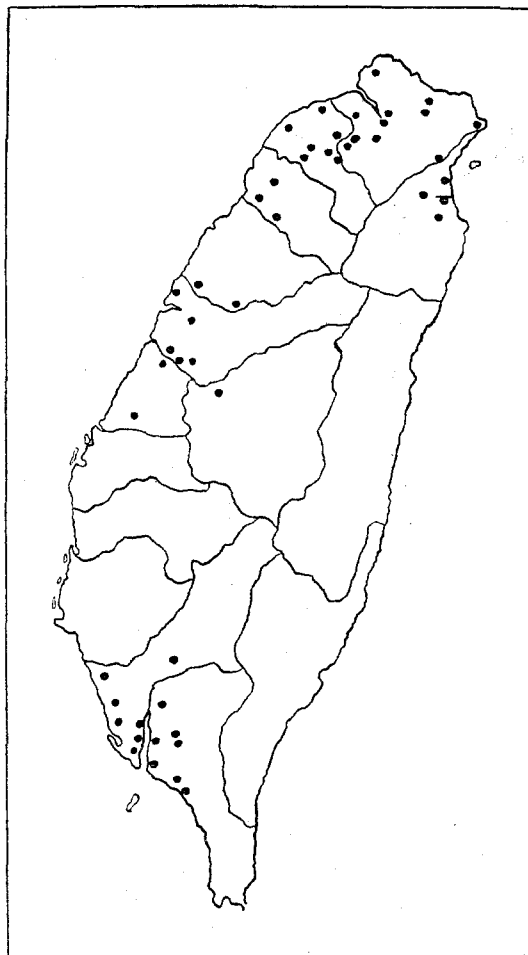
*Marsilea quadrifolia* Linn.

Marsiliaceae

A. Whole plant ( $\frac{1}{4}$ )

B. Leaflet (X2)

C. Sporocarp (X5)



Perennial ferns, aquatic or marsh plants, rhizome slender, creeping in mud, irregularly branched, leaves 4-lobed floating on surface of water and petioles arising from rhizomes, leaf-blade fan-shaped, some what round and at the apex, entire, glabrous, 1-1.5 cm. long, petiole about 7-15 cm. long, sporocarps 1-3, hard, broadly oblong, borne on the petioles laterally or at the base, stalked, containing 2 rows of indusiated sori within megasporangia and microsporangia included in the sori.

**Habitat:** On the paddy fields of Western Taiwan.

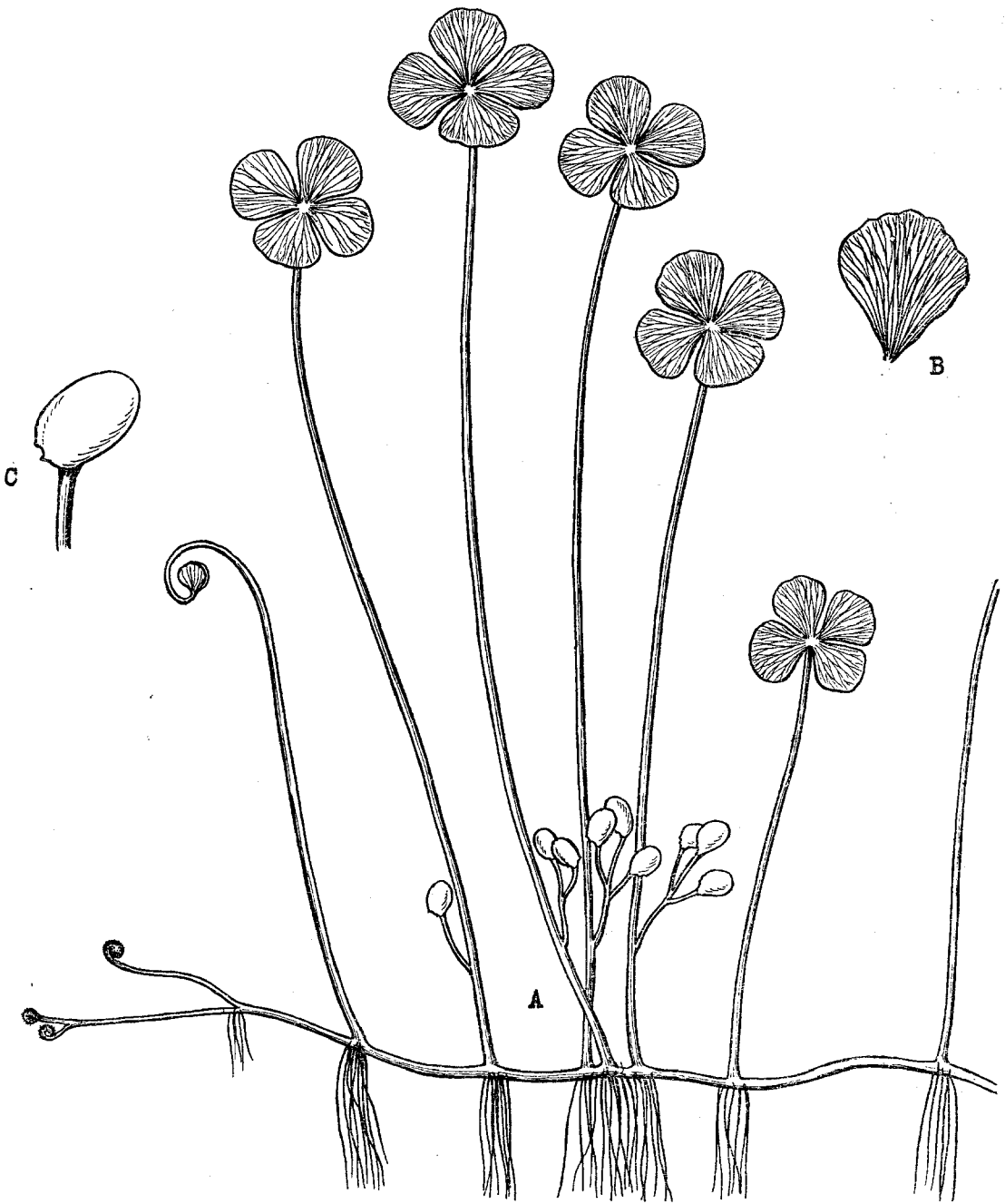


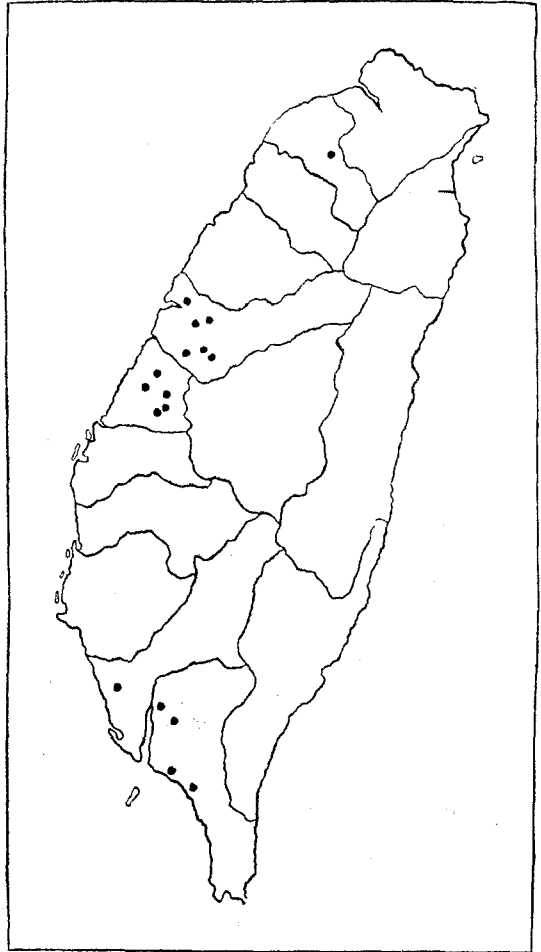
Fig. 47 *Marsilea quadrifolia* Linn.

Fig. 48

*Mazus japonicus* (Thunb.) O. Kuntze

*Scrophulariaceae*

- A. Whole plant ( $\frac{1}{2}$ )
- B. Flower (X3)
- C. Ovary (X2)
- D. Calyx (X4)
- E. Fruit (enlargement)



Annual herbs, plant pubescent, stems 5-15 cm. long, erect, branched, leaves grow on lower parts or the base of stems, obovate, obtuse, crenate base narrowed, decurrent along the petiole, 2-4 cm. long, 8-15 mm. wide, sessile or short petiole, flowers few, in terminal raceme, pedicels longer than calyx, pubescent, calyx campanulate, 5-lobed, corolla pale purple, tubular, the upper lip small, the lower lip large 3-lobed white, covered with club-shaped hairs inside, capsule included in the calyx, globose.

**Habitat:** On the paddy fields of Kaohsiung, Taichung and Taipei and winter catch cropping field of central Taiwan.



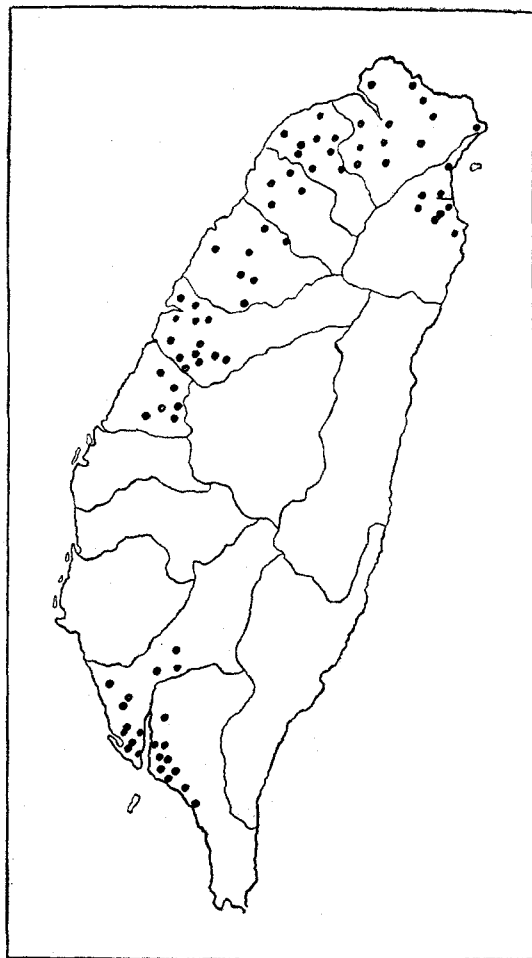
Fig. 48 *Mazus japonicus* (Thunb.) O. Kuntze

Fig. 49

*Monochoria vaginalis* (L.) Presl.

*Pontederiaceae*

- A. Whole plant ( $\frac{1}{2}$ )
- B. Flower (X3)
- C. Stamens (X5)
- D. Pistil (X5)
- E. Fruit (X3)



Annual herbs, plant smooth, glabrous, leaves broadly lanceolate or deltoid-ovate, obtuse or acute at the apex, round or cordate at the base, thick, inflorescence shorter than leaves, spicate, flowers 3-5, purple, perianth lobe, oblong, stamens one, inserted at the base of the perianth-lobes, capsule oblong, acute at the apex, seeds oblong, with wrinkles.

**Habitat:** On the paddy field of western Taiwan.



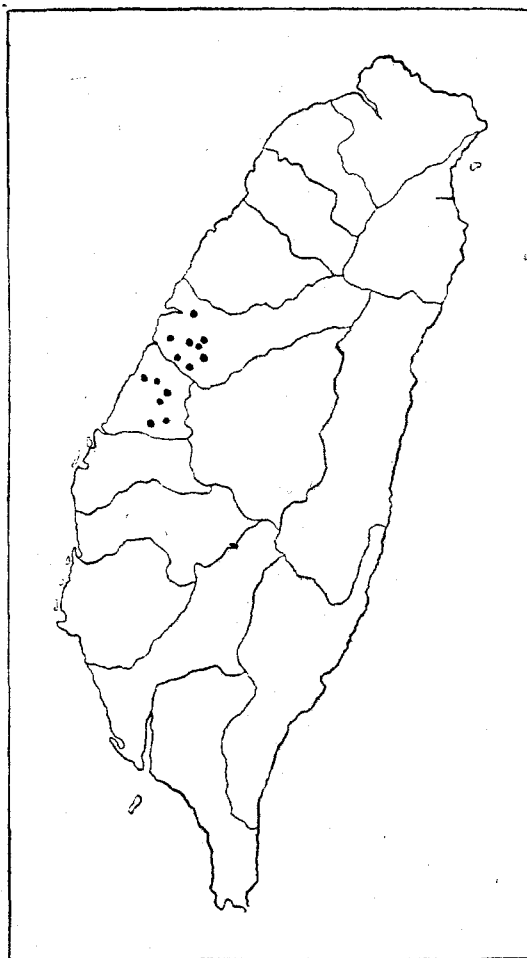
Fig. 49 *Monochoria vaginalis* (L.) Presl.

Fig. 50

*Rorippa atrovirens* (Hornem.) Ohwi et Hara  
Syn. *Nasturtium indicum* auct. japon.,  
non DC.

*Cruciferae*

- A. Whole plant ( $\frac{1}{4}$ )
- B. Flower (X10)
- C. Silique (X4)
- D. Seed (X15)



Perennial herbs, plants glabrous, stems branched about 20-40 cm. long, leaves alternate, lower parts of leaves petiolate, oblong, margin serrate or pinnately lobed, 5-10 cm. long, upper parts of leaves, small, lanceolate, sessile, flowers in terminal raceme, usually branched at the base, yellow, petal 4, short, narrowed below oblanceolate, styles short, silique, spreading, slender, cylindric, somewhat curved, about 2 cm. long, with short stalked.

**Habitat:** On the paddy fields and winter catch cropping field of central parts of Taiwan.



Fig. 50 *Rorippa atrovirens* (Hornem.) ohwi etHnra



Fig. 51

*Oenanthe javanica* (Blume) DC.

*Umbelliferae*

A. Roots ( $\frac{1}{2}$ )

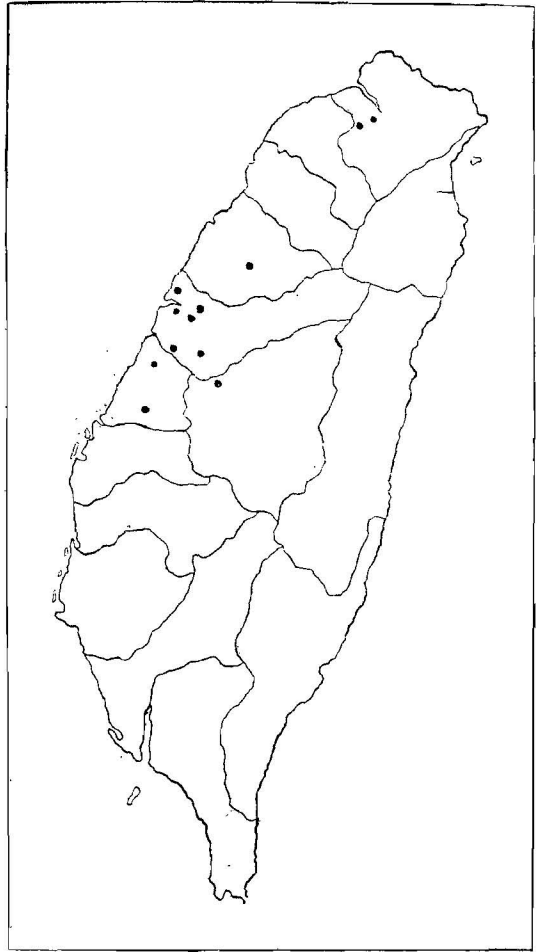
B. Flowering branchlet ( $\frac{1}{2}$ )

C. Flower (X10)

D. Petal (X20)

E. Pistil (X20)

F. Fruit (X10)



Perennial herbs, glabrous, stem prostrate, branched at the base, about 20-40 cm. high, leaves oblong to ovate, pinnate to tripinnate, ultimate segments ovate, narrow-ovate or linear, 1-5 cm. long, 0.5-1.5 wide, margin serrate or entire, petiole 2-10 cm. long, umbels compound, involucre lacking, or of a few linear bracts, rays 5-15, flowers white, style long, persistent, fruit glabrous oblong, about 2.5 mm. long, vittae one in two interval, 2 on the commissure.

**Habitat:** On the paddy fields of central and northern parts of Taiwan.



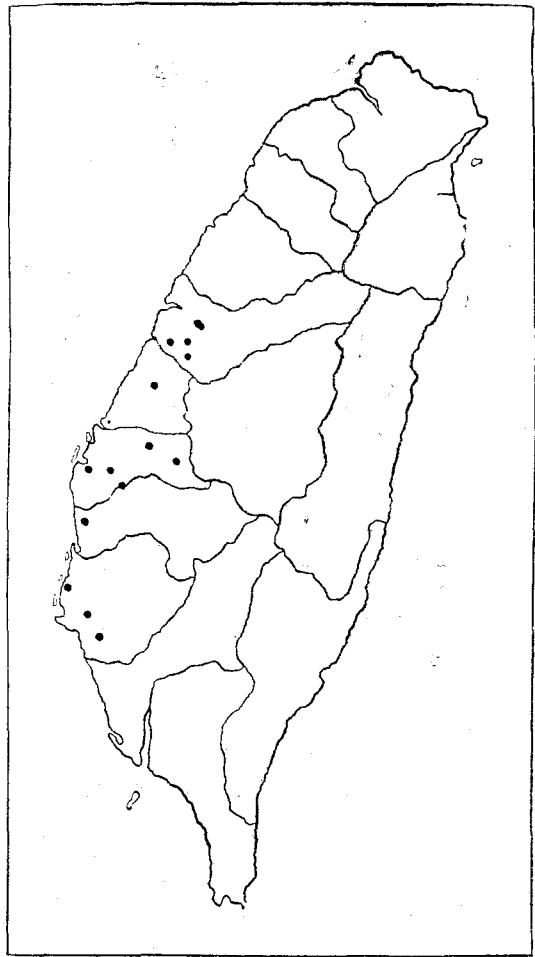
Fig. 51 *Oenanthe javanica* (Blume) DC.

Fig. 52

*Oxalis corniculata* Linn.

*Oxalidaceae*

- A. Root ( $\frac{1}{2}$ )
- B. Whole plant with fruits ( $\frac{1}{2}$ )
- C. Under surface of leaf (X2)
- D. Stipule (X10)
- E. Fruit (X4)
- F. Seed (X30)



Perennial herbs, stems creeping, internode distant, usually rooting at the nodes, tap-roots often turgid, radish-like, several branches erect at the nodes, leaves 3-foliolate, alternate, petiolate, leaflets obcordate, emarginate at the apex, about 1 cm. long, 1-2 cm. wide, usually glabrous above, sparsely hairs on both margins and under surface, stipules conspicuous small at the base of petiole, stems, petioles and usually pubescent, flowers yellow, 1-8 in umbel, capsule cylindrical, tomentose, seeds numerous, broadly ovate, both surfaces 7-9 wrinkled.

**Habitat'** On the upland of Tainan district and winter field of Taichung district of Taiwan.

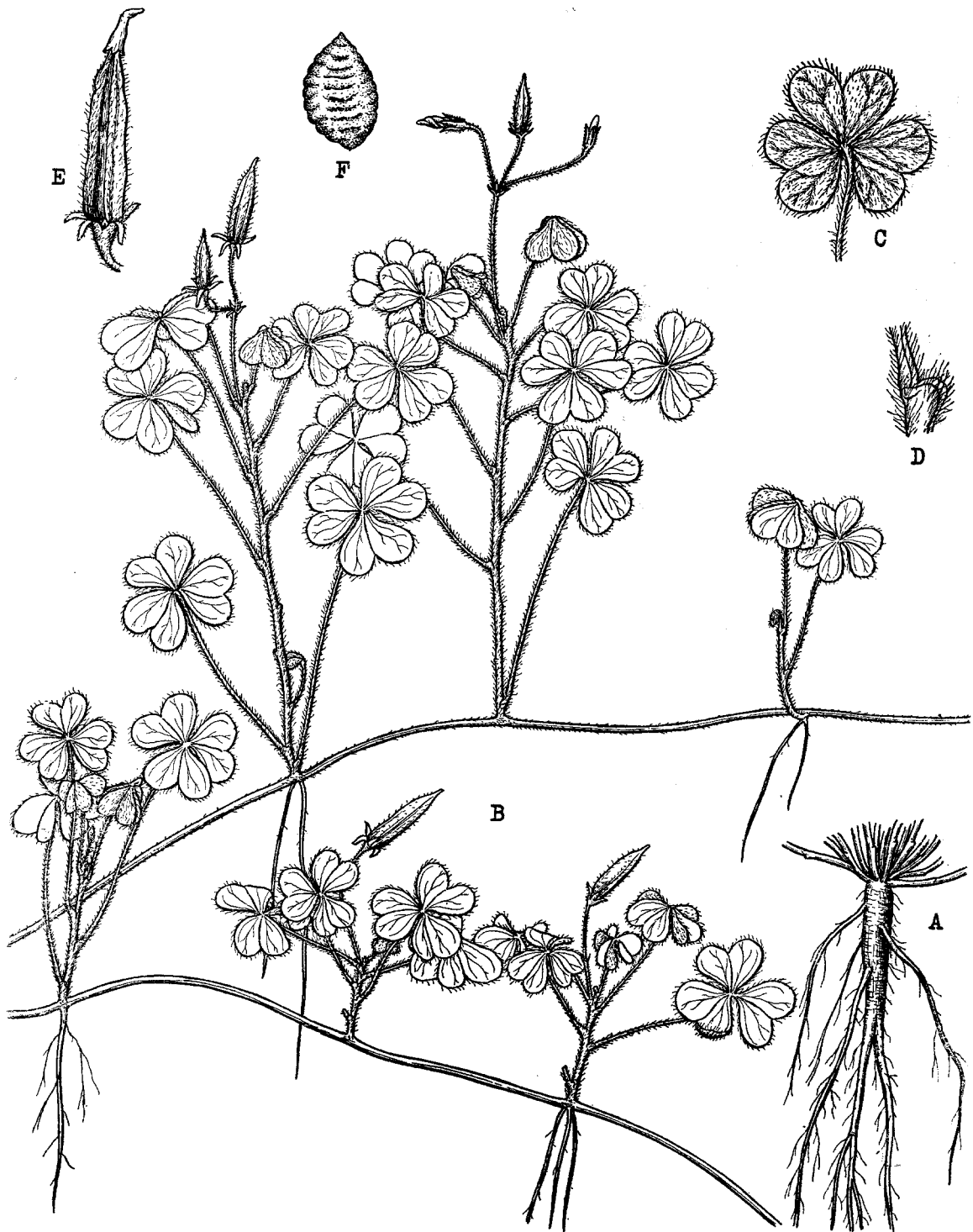


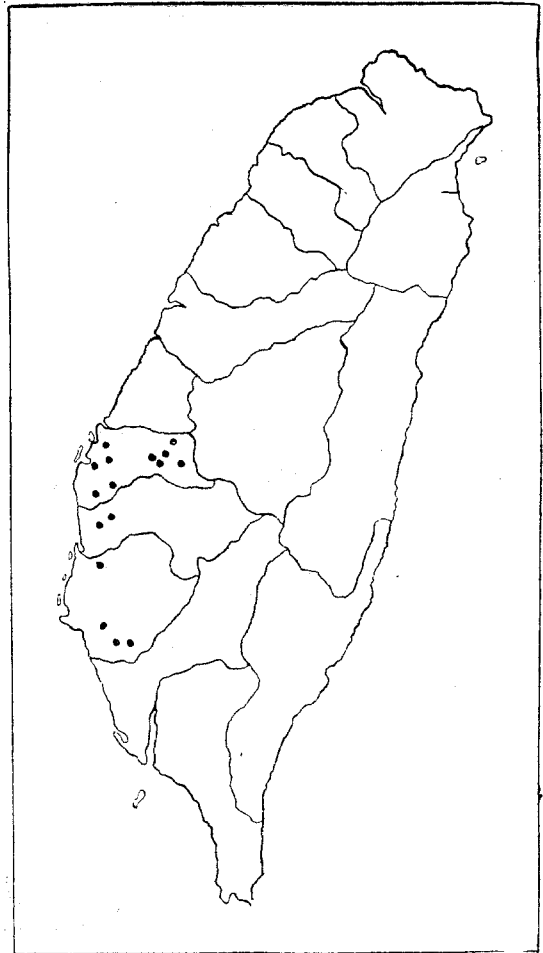
Fig. 52 *Oxalis corniculata* Linn.

Fig. 53

*Panicum repens* Linn.

*Gramineae*

- A. Culm and rhizome ( $\frac{1}{2}$ )
- B. Branchlet with fruits ( $\frac{1}{2}$ )
- C. Sheath (X3)
- D. Spikelet (X10)
- E. First glume (X10)
- F. Second glume (X10)
- G. Sterile lemma (X10)
- H. Sterile palea (X10)
- I. Floret (X10)
- J. Fertile lemma (X10)
- K. Fertile palea (X10)



Perennial herbs, culms pale green, slightly hardened, rhizomes creeping and spreading, flowering branches erect, about 30-100 cm. high, usually simple, or rarely branched, blades linear, margin involute sparsely hairy, 8-20 cm. long, 5-8 mm. wide, sheath margins pubescent, ligule membranous, white, truncate, very short in a ring of hairs, flowers in panicle up to 20 cm. long, spikelets apart, about 3 mm. long, narrowly elliptic, slightly shining glabrous, first glume truncate or broadly triangular, about  $\frac{1}{2}$ - $\frac{2}{3}$  long of the spikelets, second glume obscurely 7-9-veined, acute, sterile lemma staminate, similar to second glume, fertile lemma ovate-elliptic, smooth, acute at the apex.

**Habitat:** On the field of central and southern Taiwan.



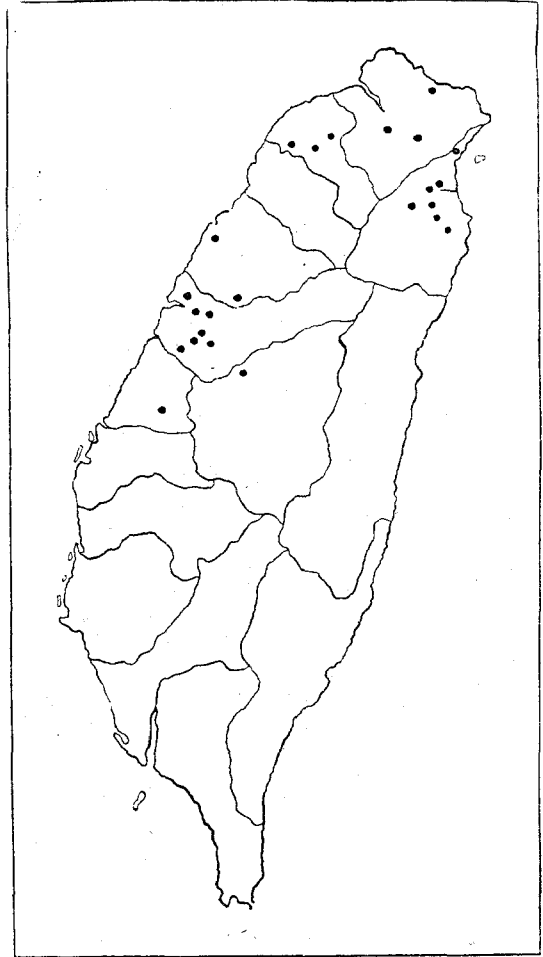
Fig. 53 *Panicum repens* Linn.

Fig. 54

*Paspalum conjugatum* Berg.

Gramineae

- A. Whole plant with fruits ( $\frac{1}{2}$ )
- B. Sheath (X5)
- C. A part of raceme (X10)
- D. Spikelet (X20)
- E. Fertile lemma (X15)
- F. Fertile palea (X25)
- G. Seed (X20)



Perennial herbs, extensively stoloniferous, flowering branches erect 20-60 cm. high, glabrous or often pubescent at the nodes, sheath compressed, ligule membranous, about 0.5 mm. long, blades linear, flat thin, 8-12 cm. long, 5-15 mm. wide, margins ciliate, usually glabrous, racemes in pairs, very slender, rachis narrowly flattened, spikelets solitary orbicular to ovate, 1.5-1.7 mm. long, light yellow, conspicuously silky-ciliate on the margins, hairs 1-2 mm. long, first glume absent, second glume and sterile lemma equal in length, membranous, fertile lemma and palea strongly indurate.

**Habitat:** On the paddy fields on central and northern parts and winter catch cropping fields in central Taiwan.

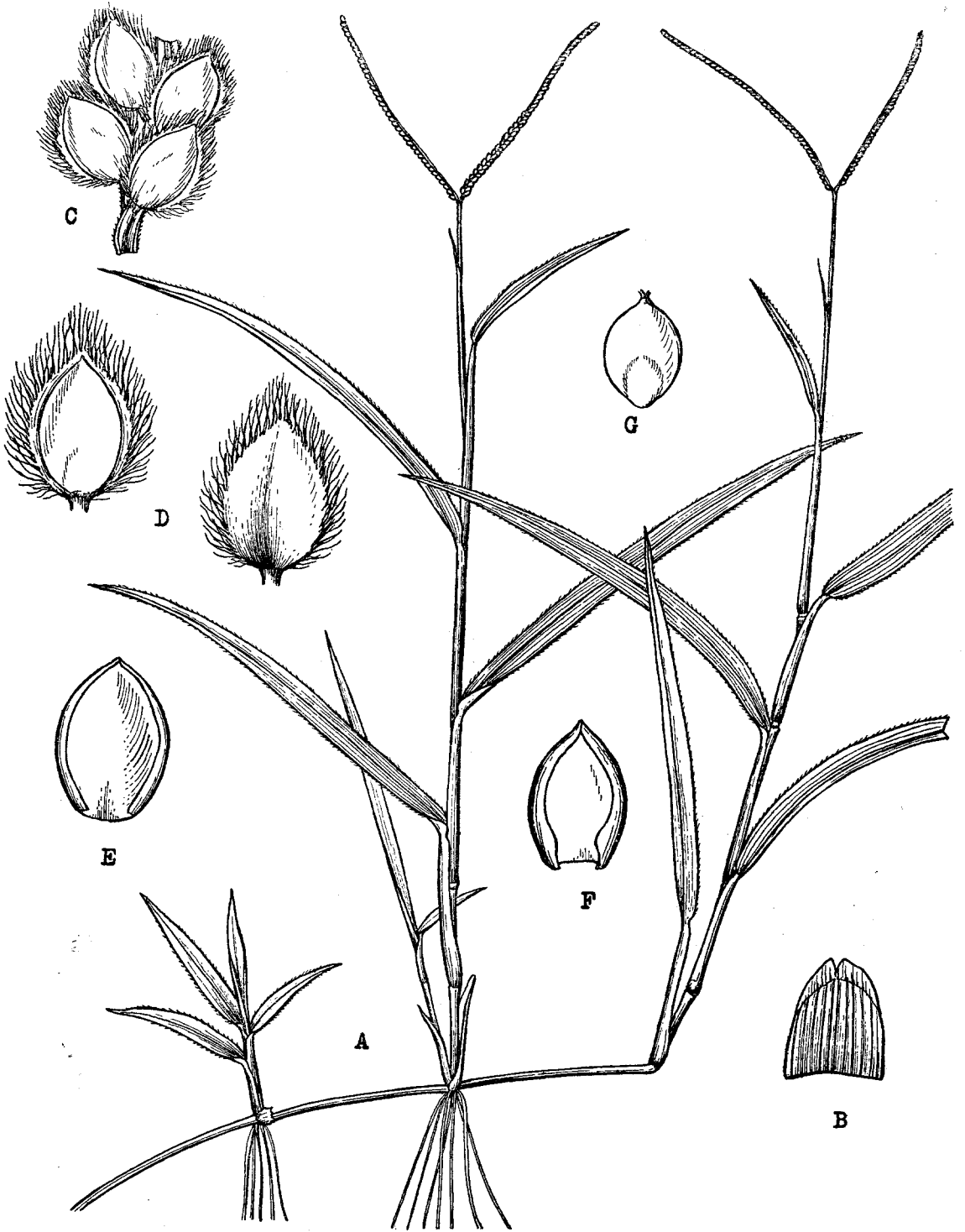


Fig. 51 *Paspalum conjugatum* Berg.

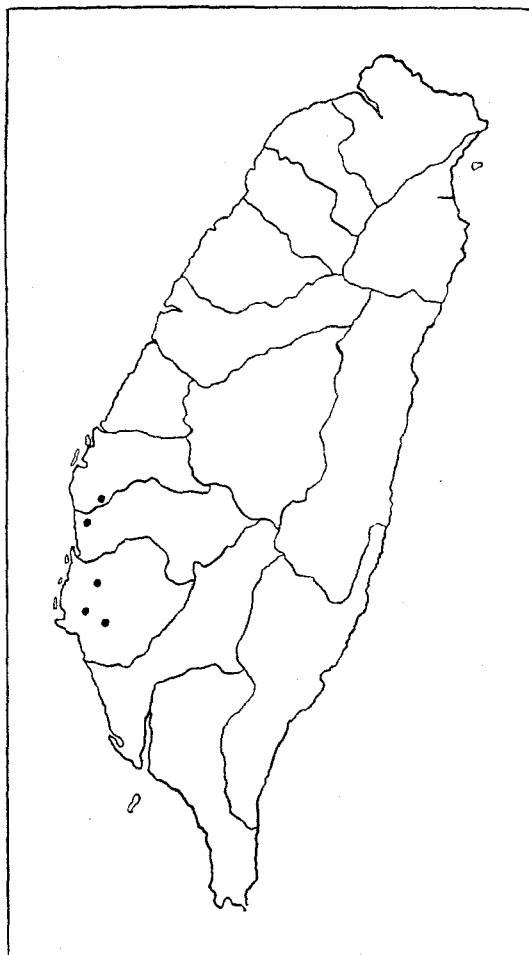


Fig. 55

*Pedicellaria pentaphylla* Schrank

Capparidaceae

- A. Root ( $\frac{1}{2}$ )
- B. Flowering branchlet ( $\frac{1}{2}$ )
- C. Flower (X3)
- D. Petal (X16)
- E. Fruiting branchlet ( $\frac{1}{2}$ )
- F. Seed (X50)



Annual herbs, about 30-90 cm. high, branches cylindrical, densely clothed with mucilaginous hairs, usually purplish, leaves alternate, palmately compound, petioles very long, leaflets 3-5 obovate, margins entire, flowers white, in terminal raceme, sepals 4, linear-lanceolate, petals 4, obovate with long unguis at the base, stamens 6, anthers yellow, gynophore as long as the length of stamens, seeds round-reniform, black in maturity.

**Habitat:** On the upland of southern Taiwan.

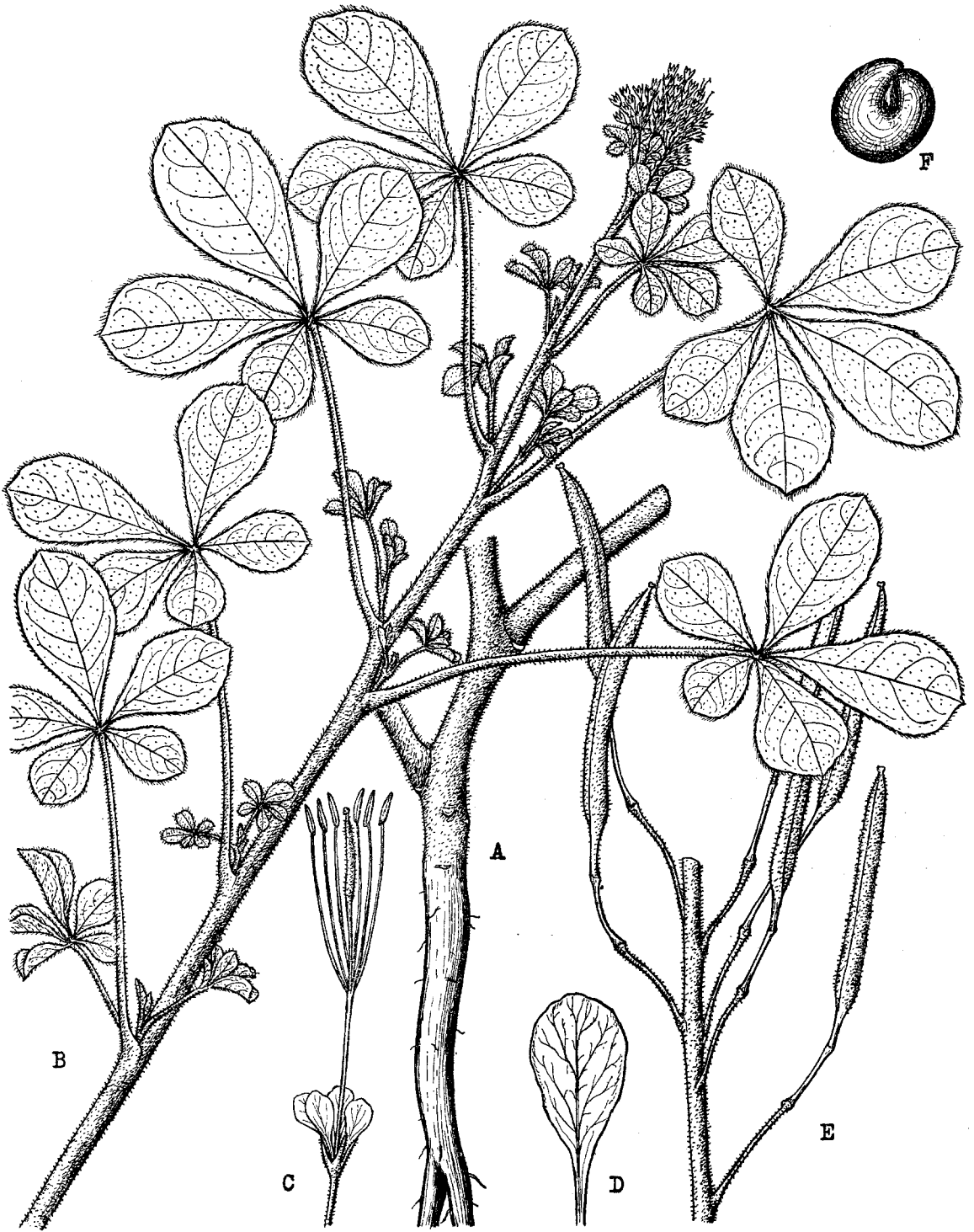


Fig. 55 *Pedicellaria pentaphylla* Schrank

Fig. 56

*Phyllanthus niruri* Linn.

*Euphorbiaceae*

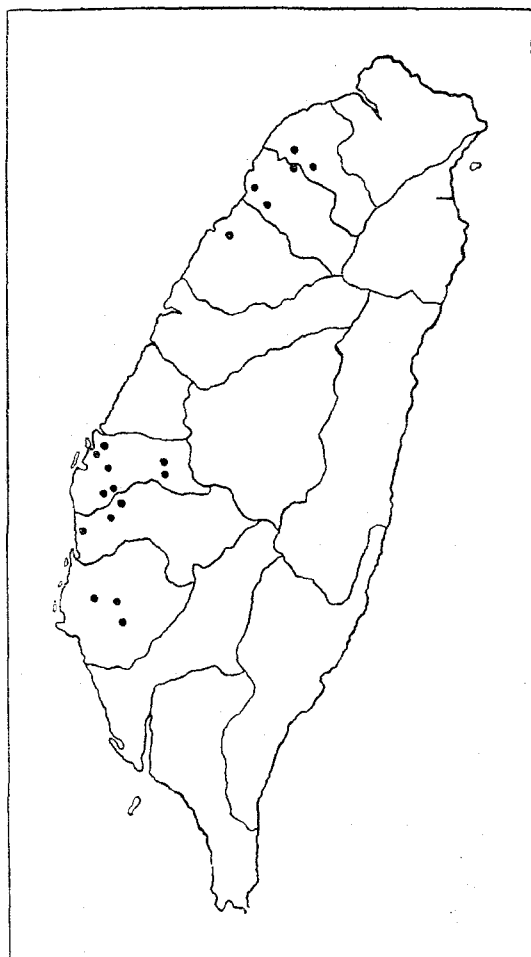
A. Whole plant with fruits ( $\frac{1}{4}$ )

B. Under surface of leaf (X5)

C. Fruiting branchlet. (X3)

D. Fruit (X5)

E. Seed (X10)



Annual herbs, about 30-60 cm. high, leaves alternate, oblong or elliptic obtuse, 3-6 mm. long, margins entire, flowers small, unisexual, axillary in pairs, pedicels short, staminate flowers sepals 5, stamens 3, pistillate flowers sepals narrowly obovate-oblong, capsule depressedglobose, smooth, reddish when maturity, seed triangular.

**Habitat:** On paddy field of Hsinchu district and upland of Tainan district of Taiwan.

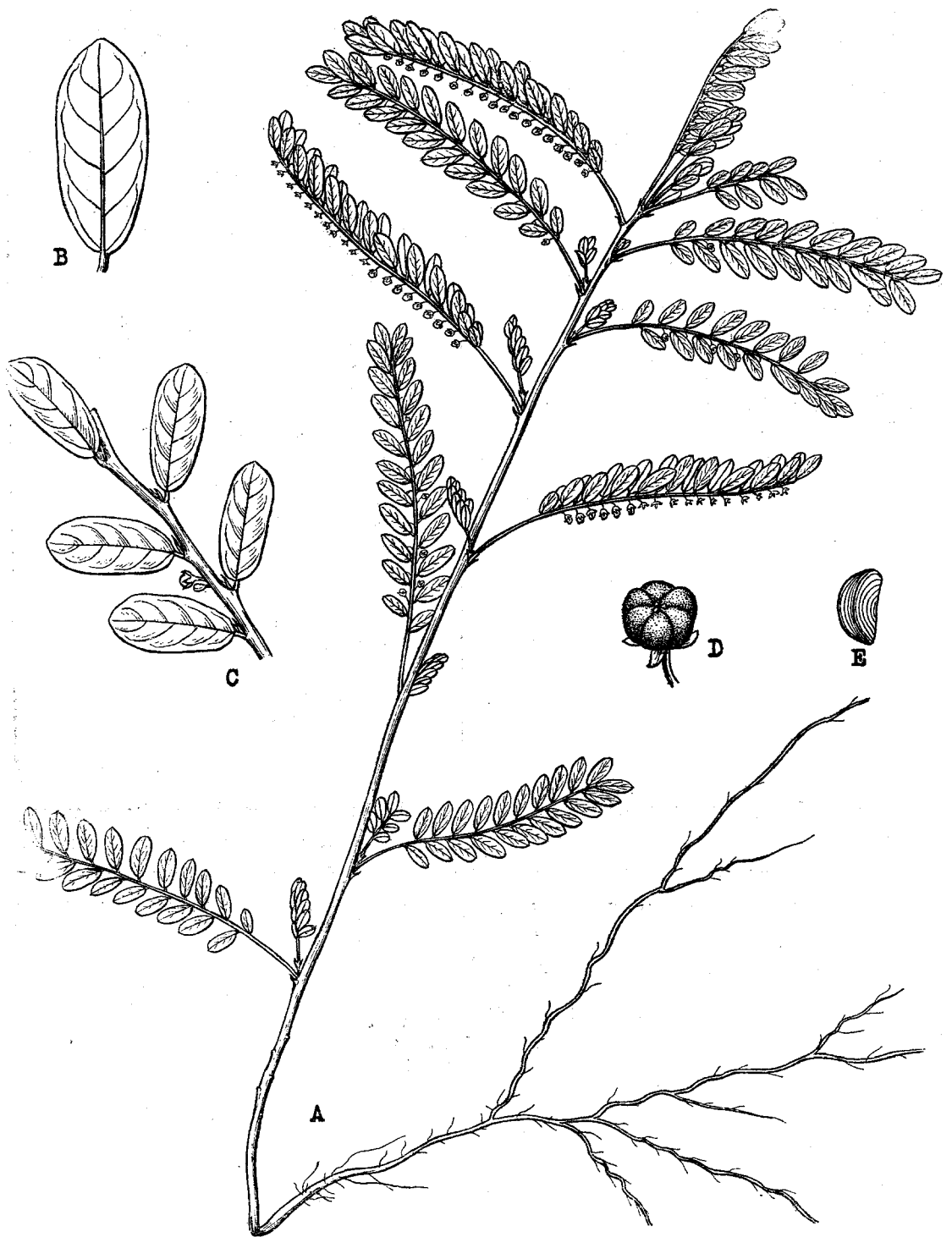


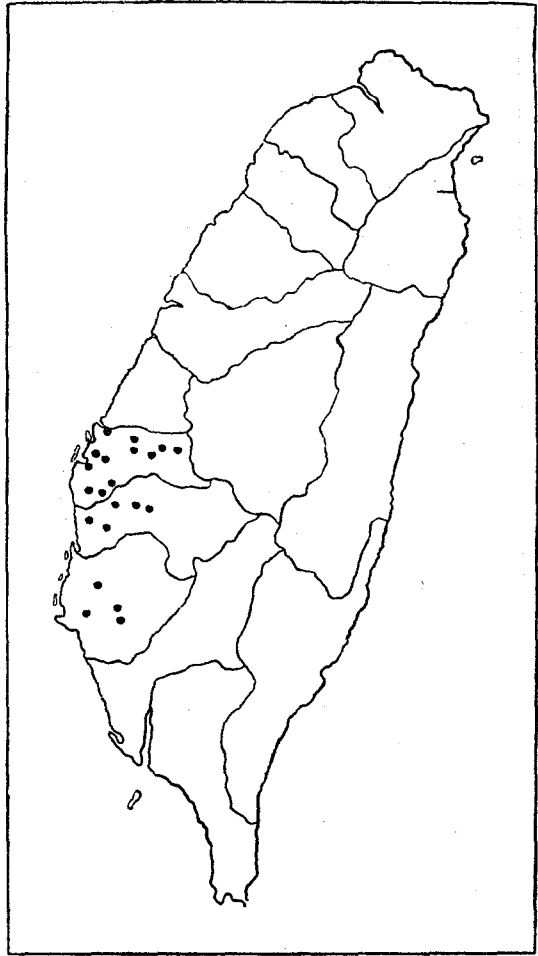
Fig. 56 *Phyllanthus niruri* Linn.

Fig. 57

*Physalis angulata* Linn.

*Solanaceae*

- A. Roots with base of stem ( $\frac{1}{4}$ )
- B. Fruiting branchlet ( $\frac{1}{4}$ )
- C. Flower (enlargement)
- D. Longitudinal section of flower (enlargement)
- E. Longitudinal section of fruit ( $\frac{1}{4}$ )
- F. Seed (X10)



Annual herbs, slightly short pubescent, about 30-50 cm. high, branchlet ascending, leaves ovate, acute at the apex, rounded at the base, margins with few inconspicuous teathed or somewhat entire, 3-5 cm. long, flowers solitary in axillary, greenish white, pedicels with hairs, calyx persistent, often enlarged when fruiting, with 10-angled, yellowish green, berry globose, 1 cm. in diameter.

**Habitat:** On the upland of Tainan district of Taiwan.

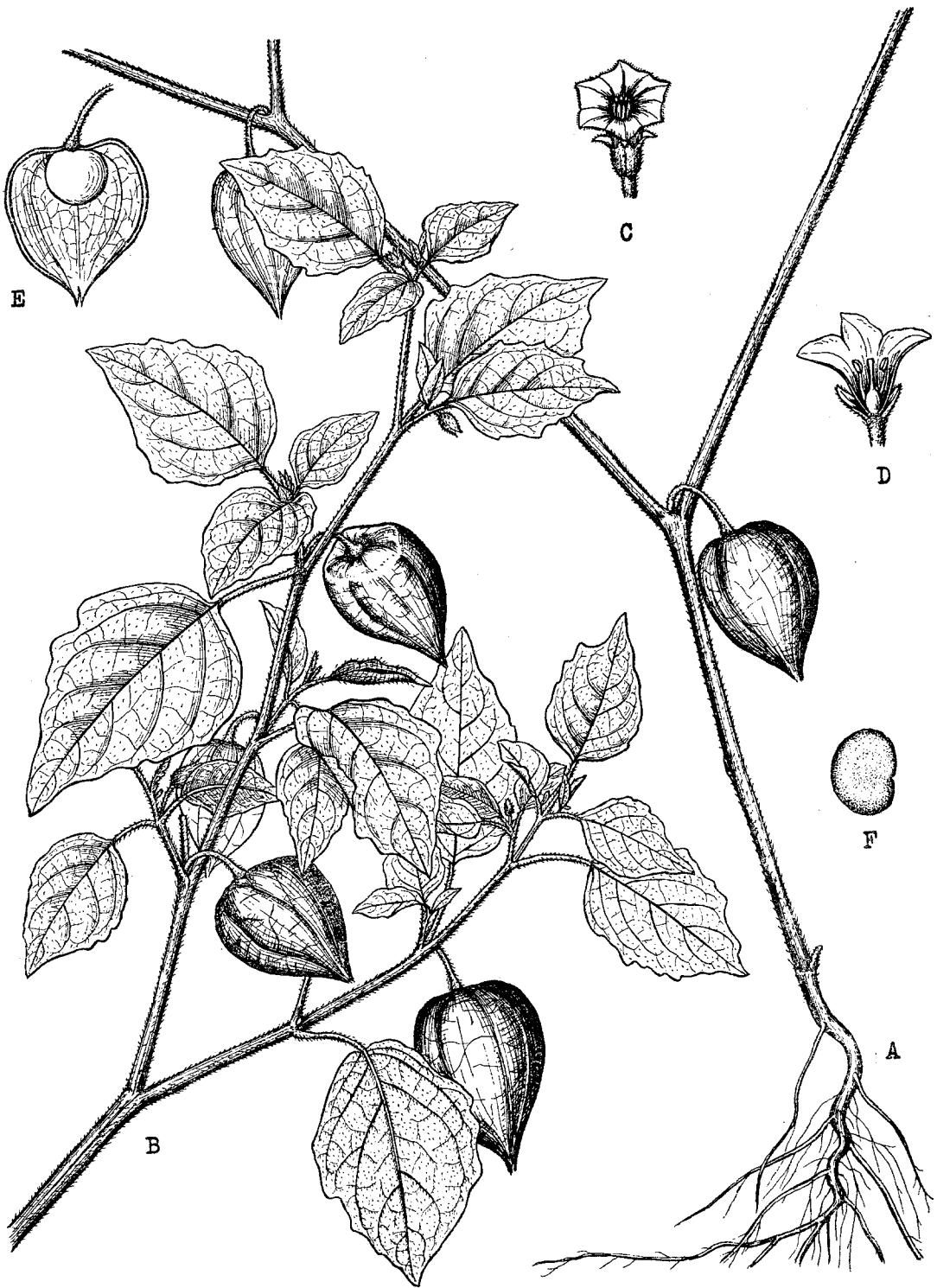


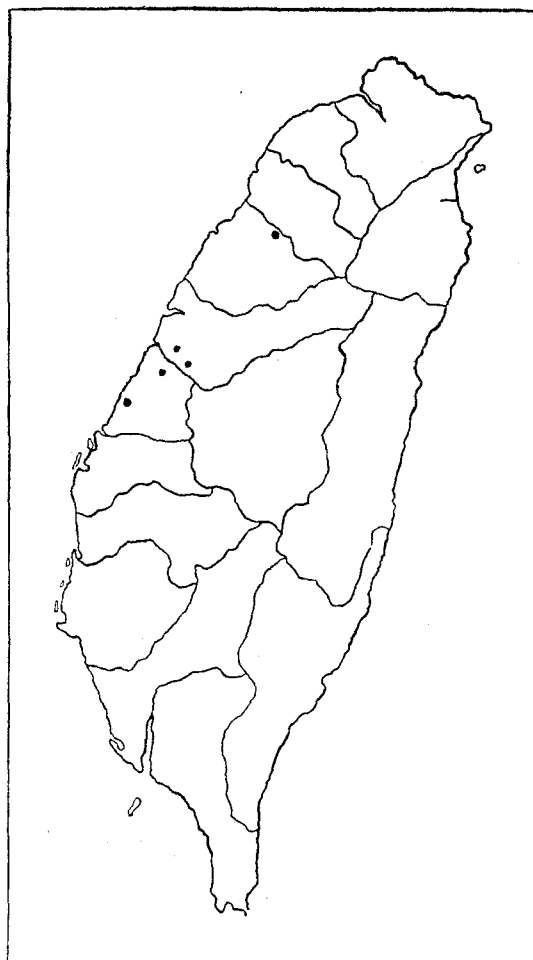
Fig. 57 *Physalis angulata* Linn.

Fig. 58

*Plantago major* L. var. *kimurae* Yamamoto

*Plantaginaceae*

- A. Whole plant ( $\frac{1}{2}$ )
- B. Flower (X10)
- C. Young flower (X10)
- D. Fruit (X7)
- E. Seed (X10)



Perennial herbs, glabrous, leaves usually radical, ovate or broadly ovate, 10-15 cm. long, obtuse at the apex, attenuate at the base, margin undulate, veins 5, the base of petiole swelling, scapes about up to 40 cm. high, spikes slender as long as  $\frac{1}{3}$  of scapes in the length, flowers numerous, dense, usually glabrous, bract shorter than the calyx, carinate, sepal round at the apex, margins white, membranuous, corolla 4-lobed reflexed, stamens 4, slender, style hairy, pyxis elliptic, twice as long as the calyx, seeds 9-12.

**Habitat:** On the paddy fields of Hsinchu and Taichung district of Taiwan.

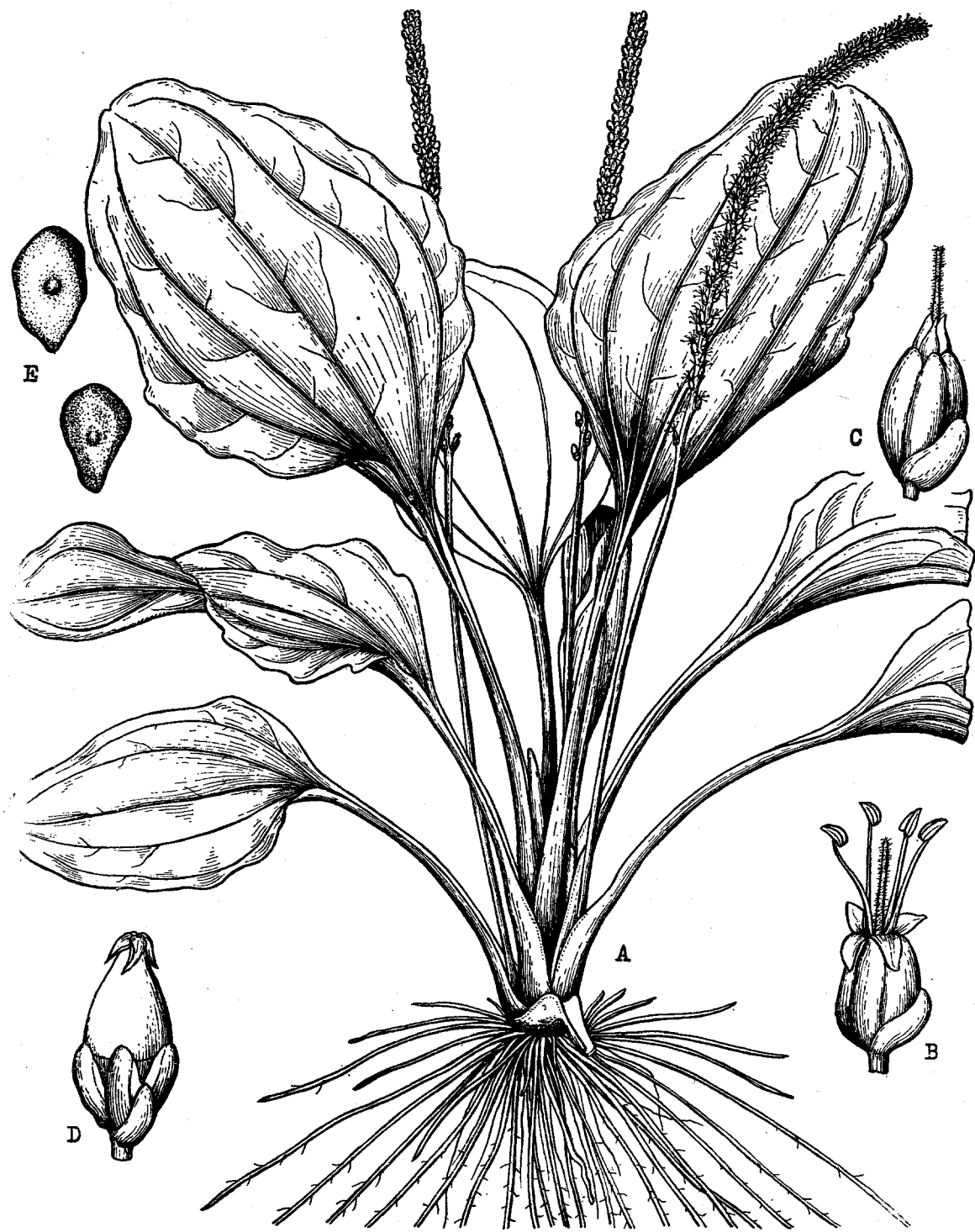


Fig. 58 *Plantago major* L. var. *kimurae* Yamamoto

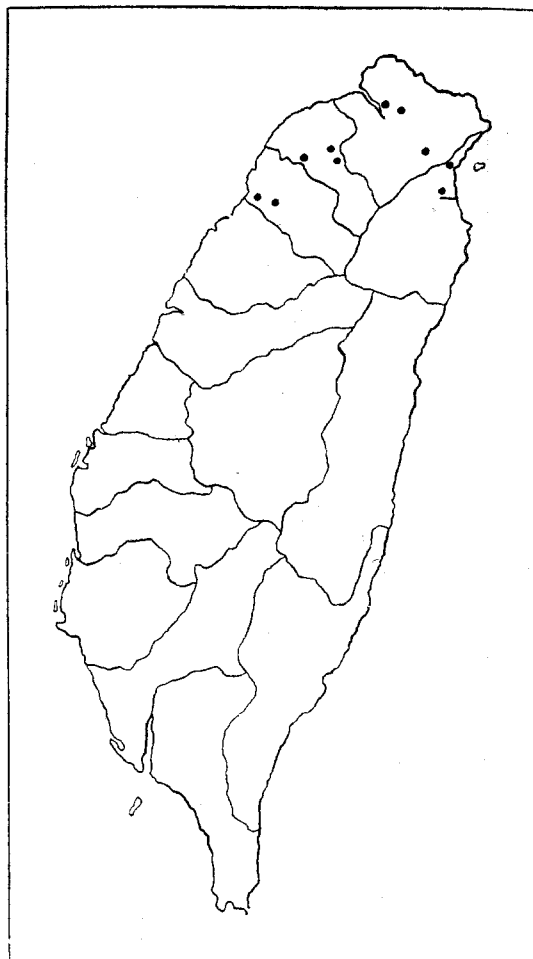


Fig. 59

*Polygonum caespitosum* Bl.

*Polygonaceae*

- A. Whole plant ( $\frac{1}{2}$ )
- B. A part of spike (X5)
- C. Flower (X10)
- D. Perianth (X10)
- E. Seed (X10)



Annual herbs, stems branched and ascending, leaves ovate to ovate-oblong, sometimes broadly lanceolate, 3-6 cm. long, 1.5-2 cm. wide, acuminate at the apex, bright green, upper surface glabrous, under surface sparsely tomentose, petiole short, sheaths with hairs at the margin, both hairs and sheath the same in length, flowers in axillary spike, loosely arranged, light red in color, 3-angled, shining, dark brown.

**Habitat:** On the paddy field of northern Taiwan.



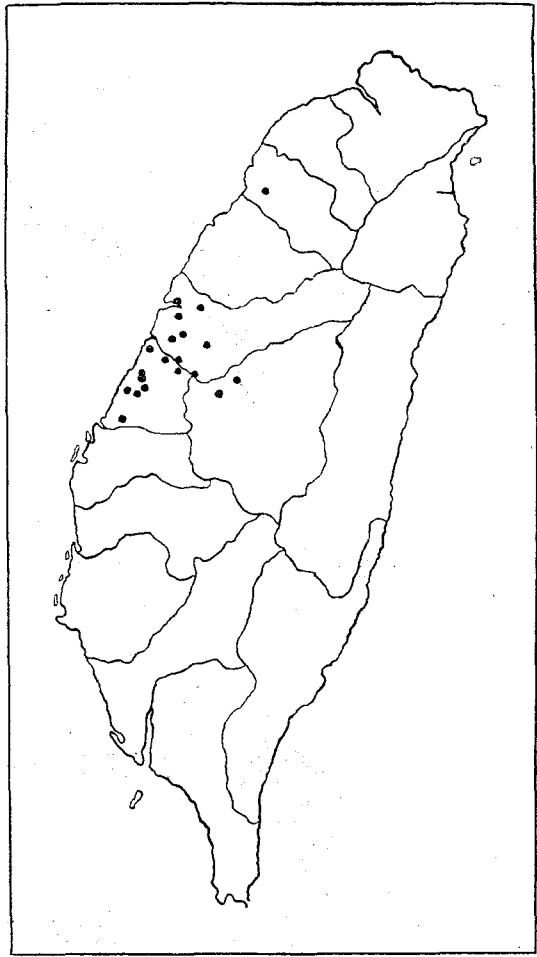
Fig. 59 *Polygonum caespitosum* Bl.

**Fig. 60**

*Polygonum hydropiper* Linn.

*Polygonaceae*

- A. Fruiting branchlet ( $\frac{1}{4}$ )
- B. A part of Spike (X5)
- C. Fruit (X10)
- D. Seed (X10)



Annual herbs, stems erect, about 40-80 cm. high, usually simple or branched, glabrous, sometimes creeping, leaves lanceolate to narrowly ovate, 3-12 cm. long, acuminate or obtuse at the apex, acute at the base, under surface covered with conspicuous glandular spots, petiolate glabrous, sheathes tubular, membranous, glabrous, 1-15 mm. long, apex of margin ciliate, flowers several, inside the sheath, spikes slender, 5-10 cm. long, bractlet margins hispid, perianth glandular-punctate, yellowish-green, achene 3-angled, black.

**Habitat:** On the paddy field of central part of Taiwan.

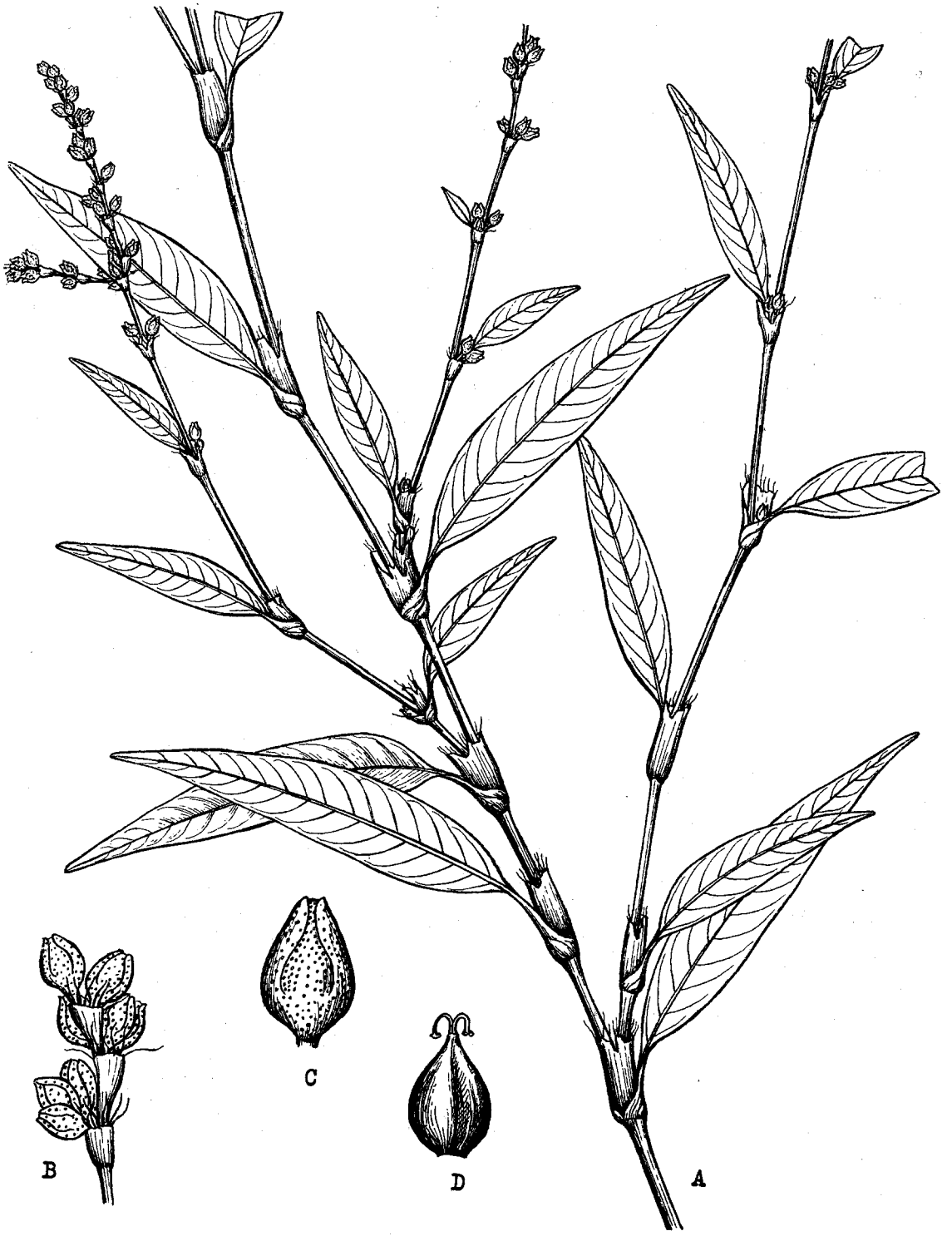


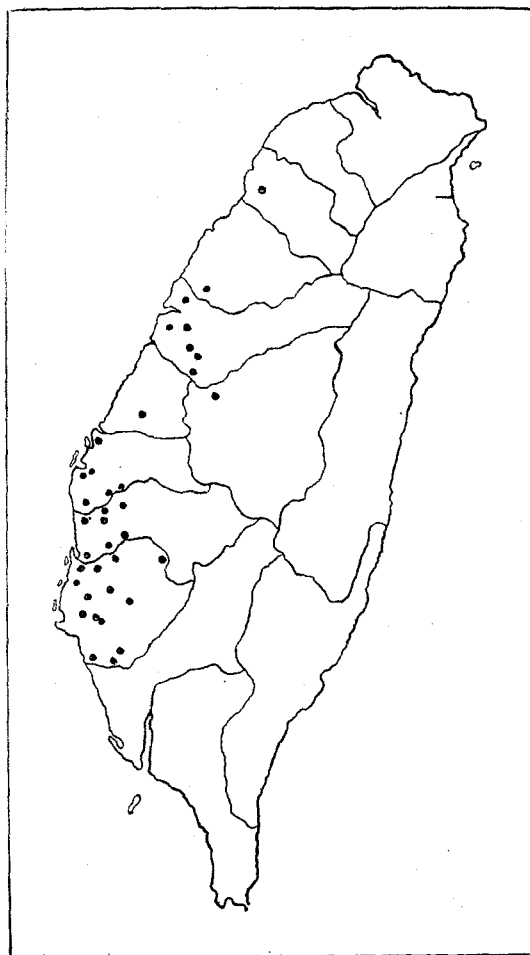
Fig. 60 *Polygonum hydropiper* Linn.

Fig. 61

*Polygonum lapathifolium* Linn.

*Polygonaceae*

- A. Whole plant with fruits ( $\frac{1}{4}$ )
- B. Flower (X10)
- C. Pistil (X15)
- D. Fruit (X10)



Annual herbs, stems 20-50 cm. high, slightly branched, cylindrical, reddish and covered with spots, leaves alternate, lanceolate to narrowly lanceolate, acute at the apex, 5-10 cm. long, 1-1.5 cm. wide, petiolate, margins and both surfaces clothed with silky hairs, sheath membranous, tubular, margin without hairs, spikes elliptical to short cylindrical, erect, flowers densely numerous, white or light red, perianth 4-5-lobed, longer than the achene, stamens 5-6, shorter than the perianth, achenes round, flattend.

**Habitat:** On the paddy fields of central part of Taiwan and the upland of Tainan district.



Fig. 61 *Polygonum lapathifolium* Linn.

Fig. 62

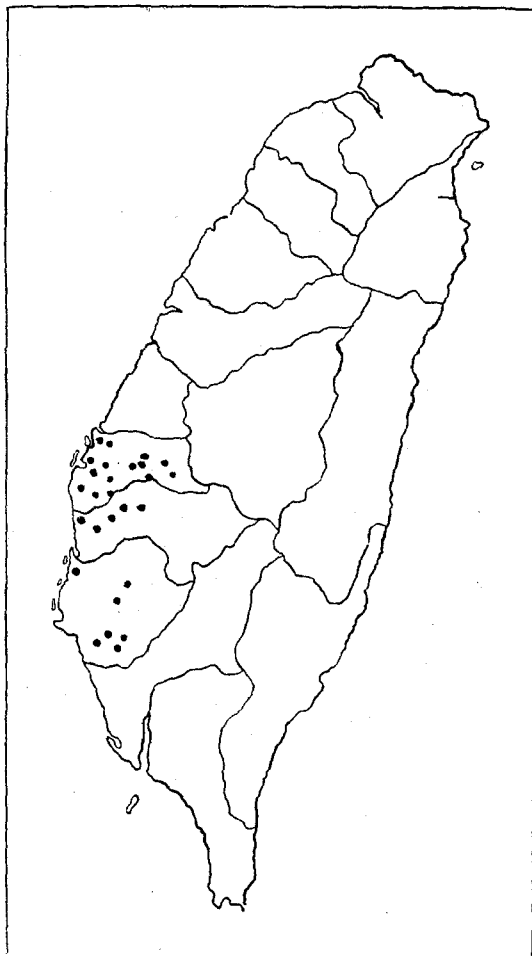
*Portulaca oleracea* Linn.

Portulacaceae

A. Whole plant with fruits ( $\frac{1}{4}$ )

B. Fruits (X6)

C. Seeds (X5)



Flashy annual herbs, about 10-20 cm. high, stems prostrate or spreading, cylindrical, smooth, reddish brown, leaves opposite or sometimes alternate, oblong-obovate, 1.5-2.5 cm. long, 5-15 mm. wide, rounded at the apex, cuneate at the base, petiolate, flowers yellow, sessile, terminal and axillary or 3-5 clustered at the leaf base, sepals 2, dorsal keeled, greenish, petals 5, obovate, emarginate, stamens 7-12, ovary half-inferior, stigma 5-clefted, capsules the upper part cap-like, transverse dehiscence when maturity, seeds numerous, round oblique black, about 0.5 mm. in diameter, with sparsely papilla.

**Habitat:** On the upland of Tainan district.

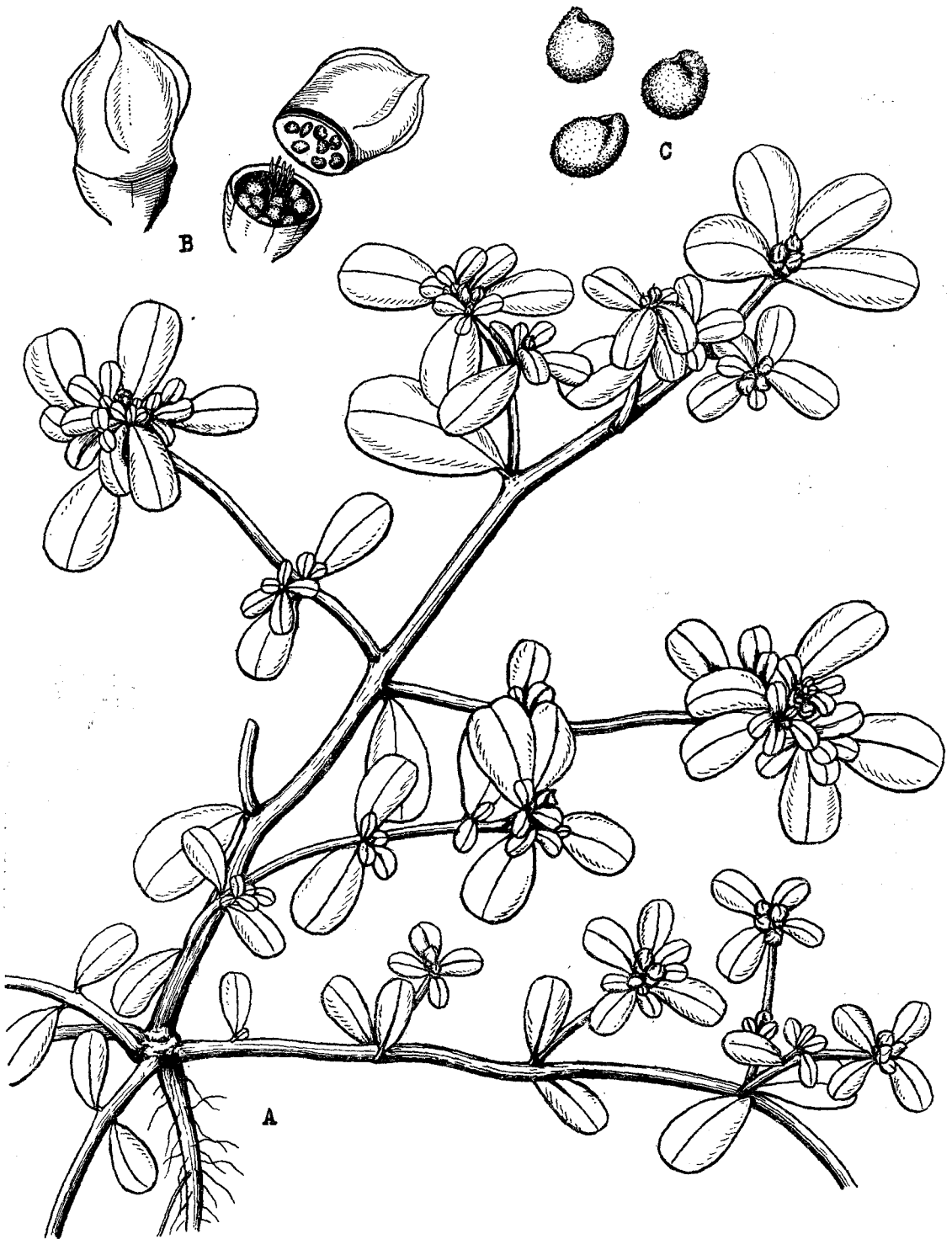


Fig. 62 *Portulaca oleracea* Linn.

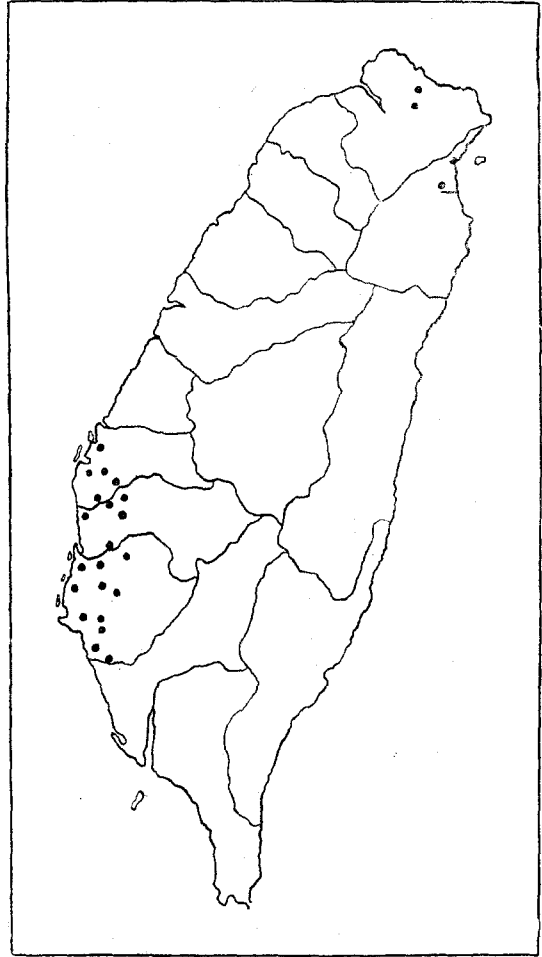


Fig. 63

*Pycnus polystachus* Beauv.

Cyperaceae

- A. Whole plant ( $\frac{1}{2}$ )
- B. Spikelet (X25)
- C. Glume (X20)
- D. Fruit (X20)



Annual herbs, about 10-50 cm. high, culms tufted, rootstock short without stolon, inflorescence capitate, solitary or forked, spikelets densely crowded, leaf-like bracts 3-5, longer than the inflorescence, spikelets linear in densely cluster, slightly erect and flat, glumes narrow ovate, obtuse at the apex, caryopsis half of glume, narrow obovate, flattened and both surface convex, brownish, without awn.

**Habitat:** On the paddy field of northern Taiwan and upland of Tainan district.



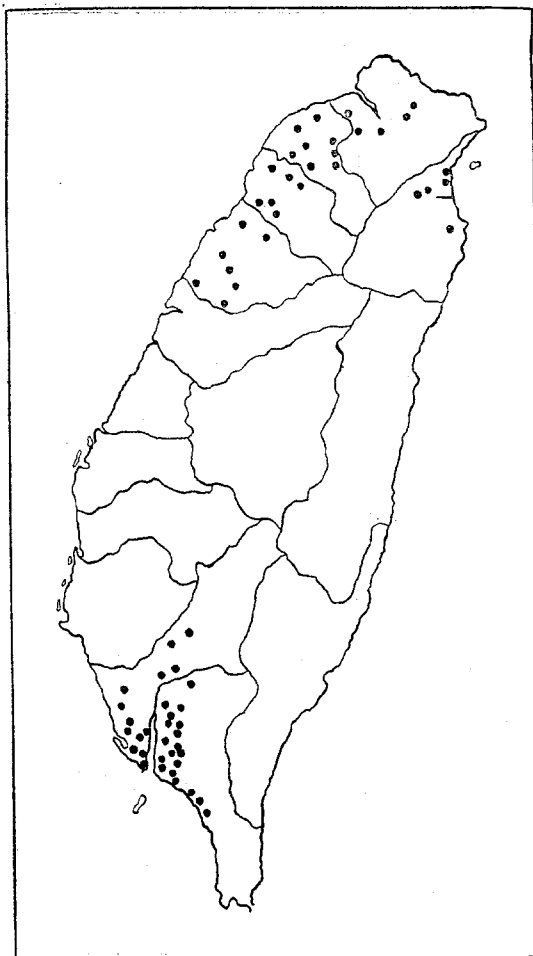
Fig. 63 *Pycurus polystachus* Beauv.

Fig. 64

*Rotala indica* (Willd.) Koehne.

*Lythraceae*

- A. Whole plant ( $\frac{1}{2}$ )
- B. Flowering branchlet (X3)
- C. Leaf (X7)
- D. Flower (X8)
- E. Fruit (X15)
- F. Seed (X20)



Annual herbs, glabrous, stems prostrate, many-branched, branchlets erect or ascending, about 15 cm. high, leaves opposite, obovate-oblong or obovate, 5-10 cm. long, 3-5 mm. wide, rounded or obtuse and mucronate at the apex, gradually narrow at the base, sessile, hyaline at the margin, flowers solitary, sessile, bracteole 2, linear, as long as the calyx, calyx-tubular, 4-lobed, lobes triangular, acute at the apex, petals minute, stamens 4, style slender, stigma capitate, capsule oblong, not exserted, seeds cylindrical.

**Habitat:** On the paddy fields of western parts of Taiwan, except in Taichung district.

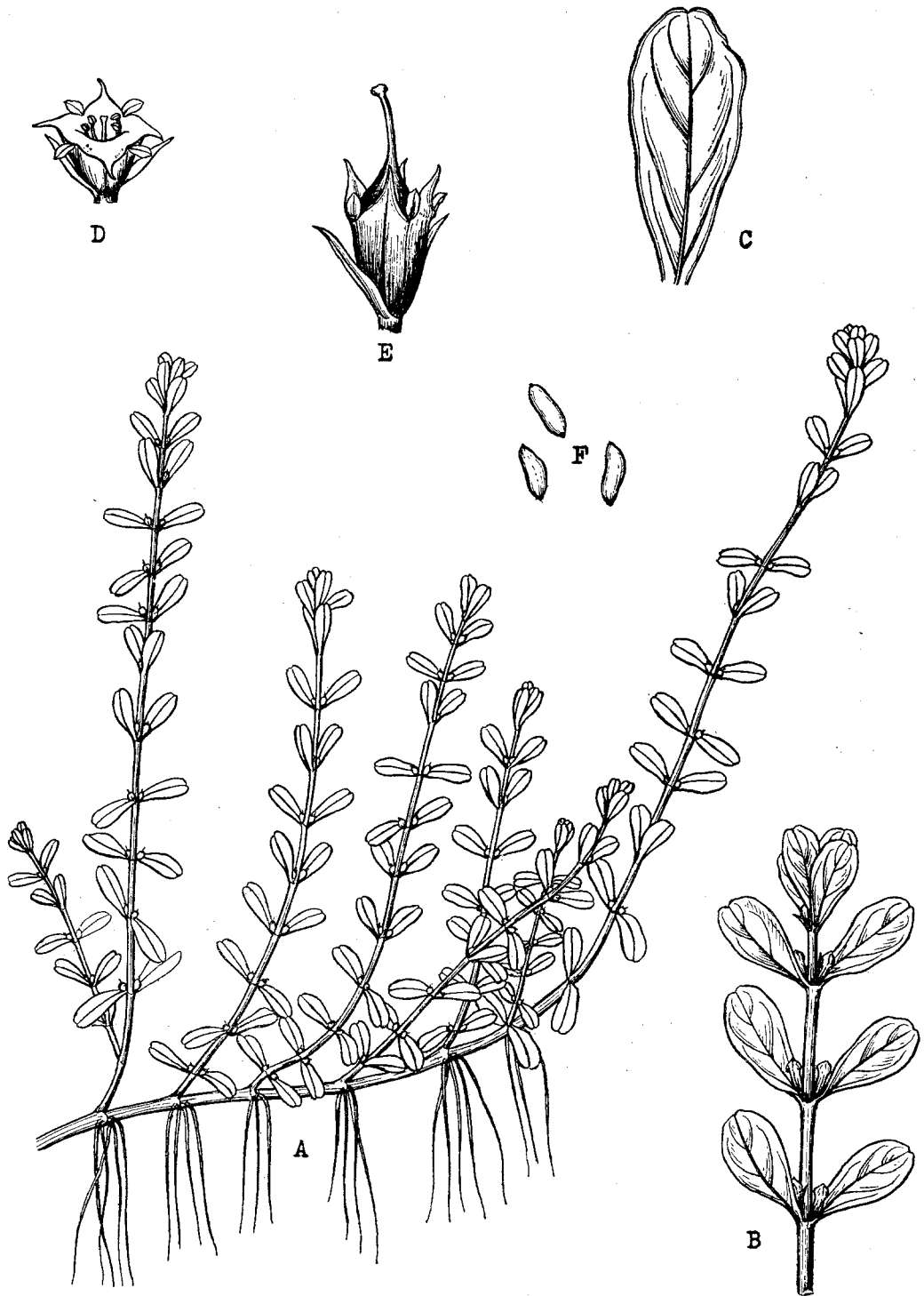


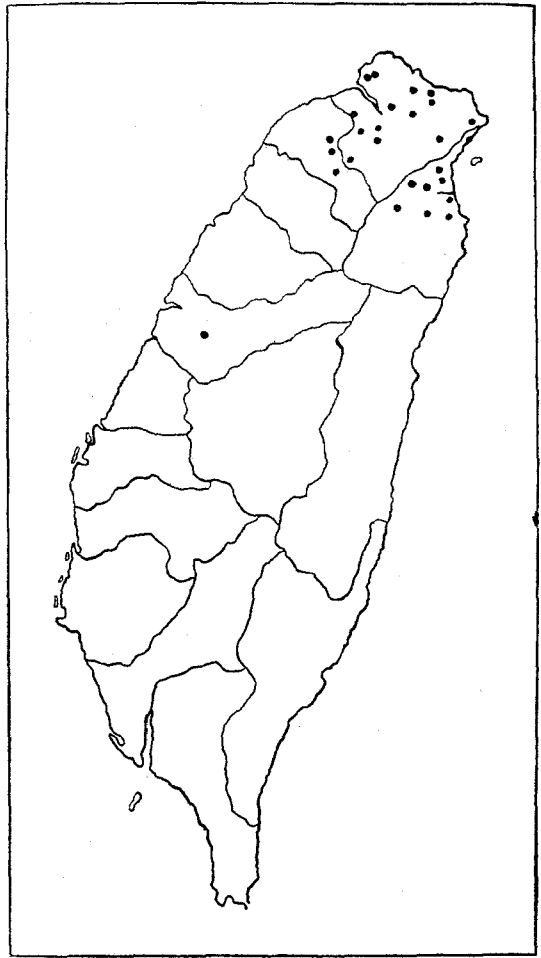
Fig. 64 *Rotala indica* (Willd.) Koehne.

Fig. 65

*Rotala rotundifolia* Koehne.

*Lythraceae*

- A. Whole plant ( $\frac{1}{2}$ )
- B. Under surface of leaf (X2)
- C. Flower (X4)
- D. Flower without petal (X5)



Perennial herbs, glabrous, rhizome slender, prostrate, stems erect or ascending, 10-20 cm. high, leaves opposite membranous, elliptic or obovate-elliptic, 5-8 mm. long, rounded at the apex, sessile, spike erect, 3-6 cm. long, usually with leaflets at the axils, flowers small, solitary in axillary, scarcely sessile, bractlet lanceolate, calyx-tube obconical, 4-lobed, triangular, acute at apex and shorter than the calyx-tube, petal 4, obovate, larger than the calyx-lobed, reddish-purple, stamens not exerted above the calyx-lobed, capsule 4-dehiscent in maturity.

**Habitat:** On the paddy field in central and northern Taiwan.

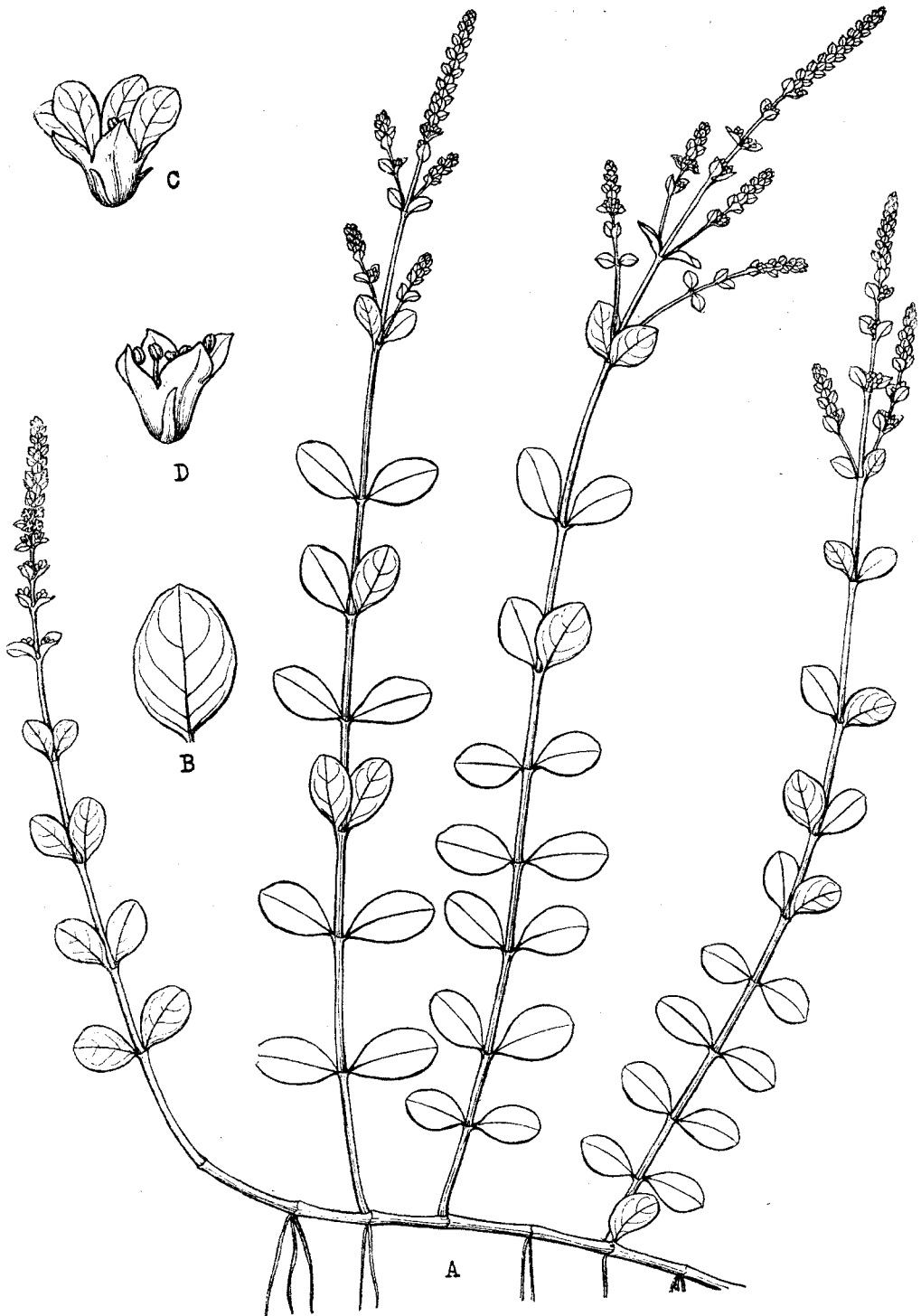


Fig. 65 *Rotala rotundifolia* Koehne.

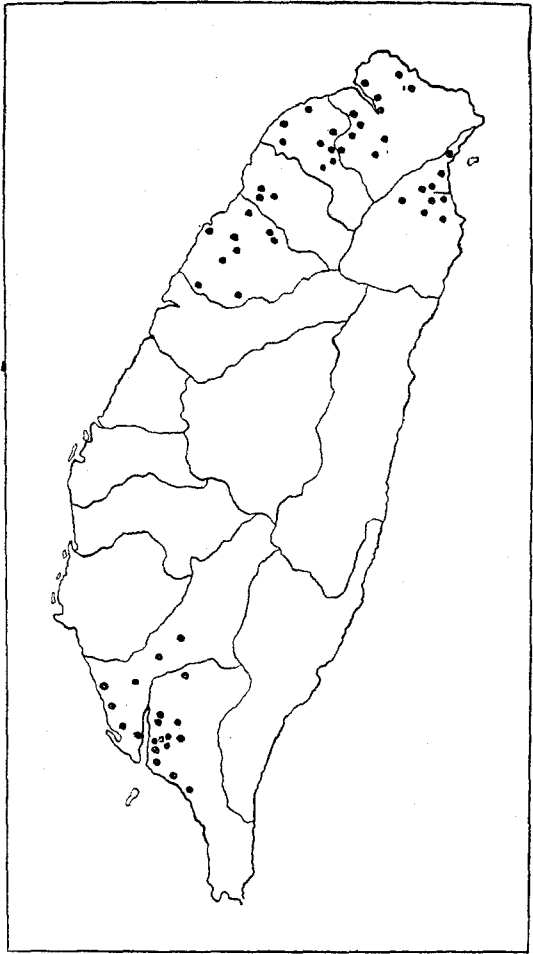
Fig. 66

*Sagittaria trifolia* Linn.

Syn: *Sagittaria sagittifolia* Lour.

Alismataceae

- A. Whole plant ( $\frac{1}{2}$ )
- B. Sepal (X5)
- C. Stamen (X10)
- D. Fruit (X3)
- E. Seed (X25)



Perennial herbs, rhizome short and fibrous roots, clustered, leaves tufted with long petiole, sagittate, 3-7-nerved, lateral parts of leaf-blade usually longer than ultimate one, acute in the end, flowers in raceme, branched at the base, each 3 flowers whorled, on the node of peduncles, pistillate flowers grow on the lower part, staminate flowers on the top one, bracts lanceolate, united at the base, sepals of pistillate flowers ovate, reflexed, persistent, petal about twice as the length of the sepal, white, achene broadly lanceolate on both sides with broad wings, obtriangular in outline.

**Habitat:** On the paddy fields of western Taiwan except Taichung district.

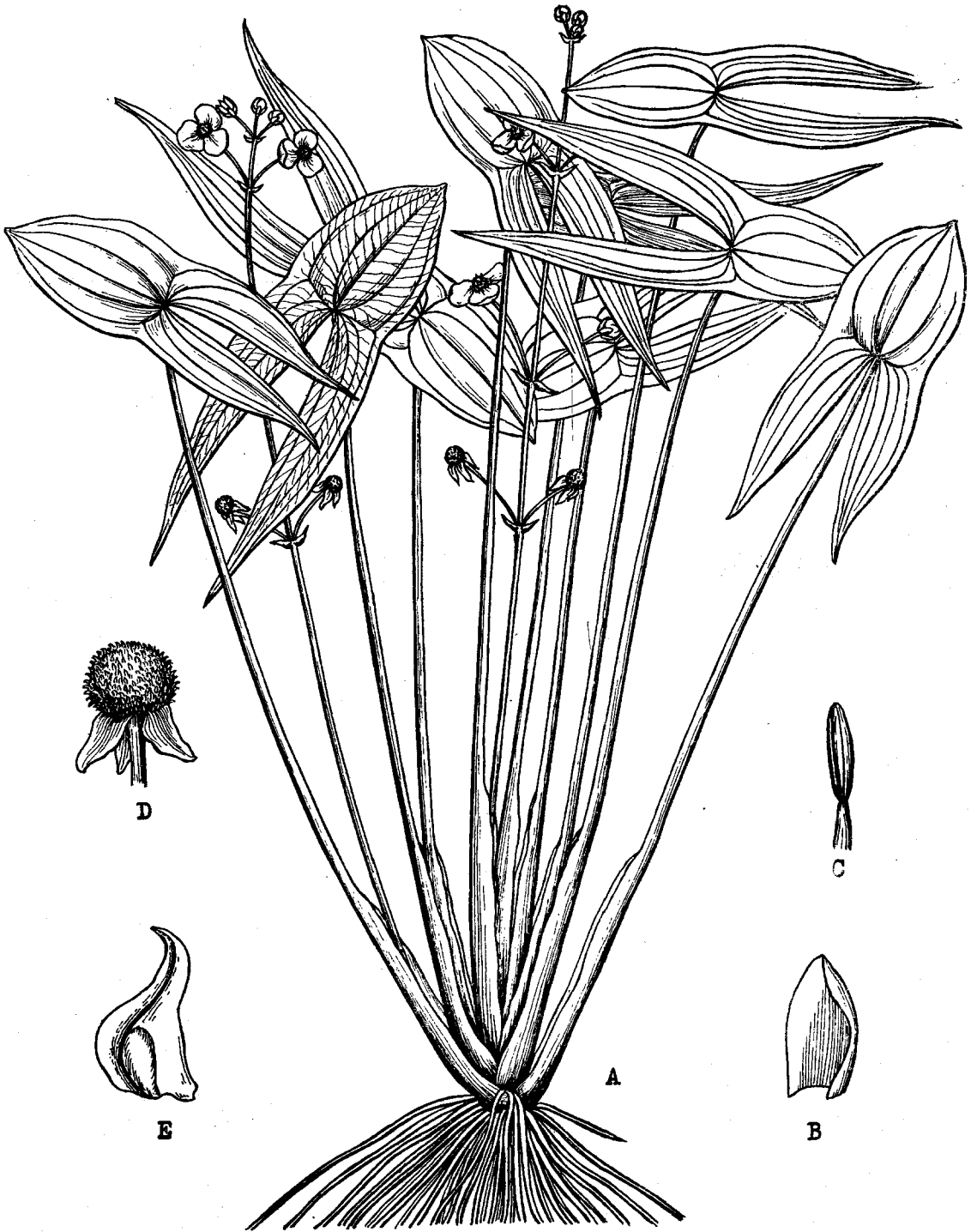


Fig. 66 *Sagittaria trifolia* Linn.

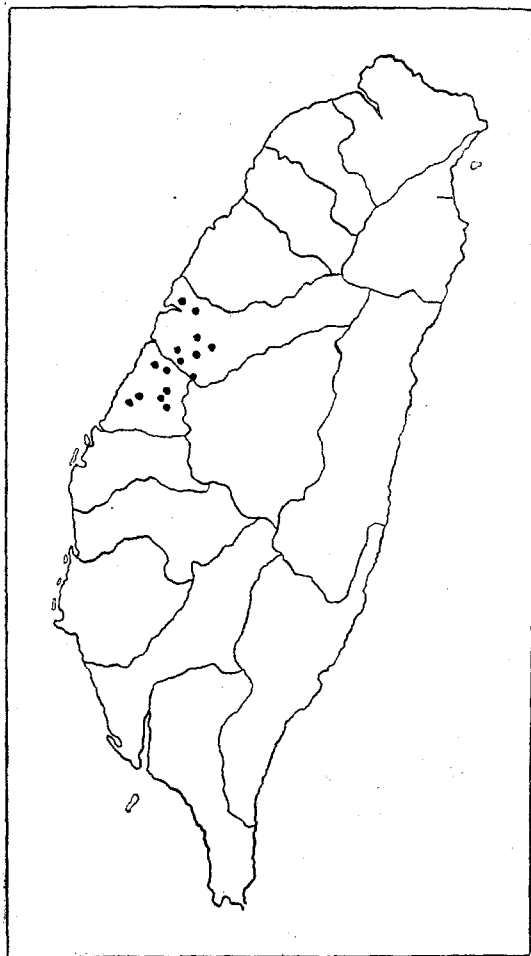


Fig. 67

*Scripus juncooides* Roxb.

Cyperaceae

- A. Whole plant ( $\frac{1}{2}$ )
- B. Head (X3)
- C. Glume (X10)
- D. Fruit (X10)



Annual herbs, bladeless, culms very slender, cylindrical, about 40-50 cm. high, with inconspicuous angle, sheath tubular, attached on the base of culms, apex oblique-truncate, flowers clustered composed of 2-3 spikelets attached laterally, inflorescence capitate, rarely solitary, sessile, bract only one on culm, 5-15 cm. long, upper surface with grooved, spikelets ovate or narrow ovate, 8-15 mm. long, 5-6 mm. wide, greenish brown, glume ovoid, imbricate, rounded at the apex, reclinate, 3-4 mm. long, achene broad obovate, blackish brown color, shining, plano-convex or flat 3-angled, 2 mm. long, with transverse wrinkles, style 2-3 clefts, bristles 5-6 scabrous, shorter than the achene.

**Habitat:** On the paddy field of central Taiwan.



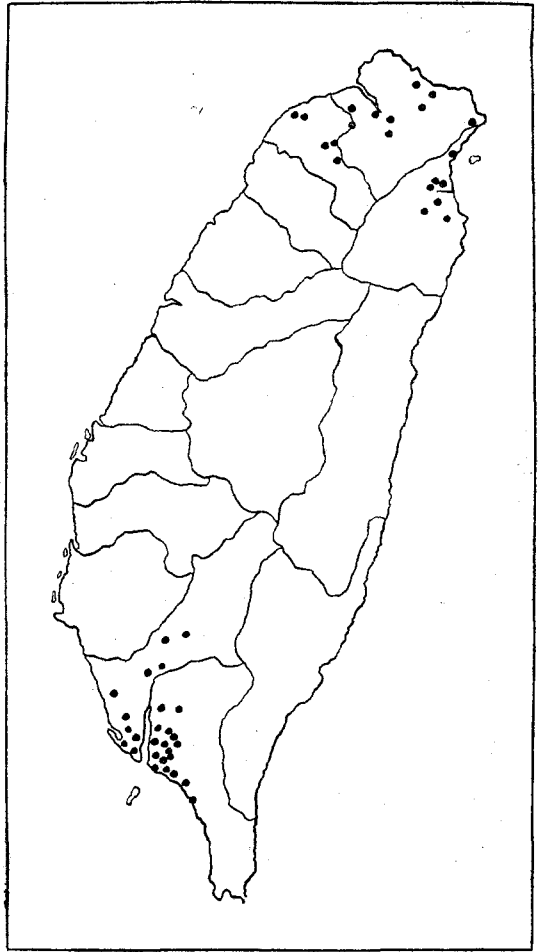
Fig. 67 *Scirpus juncoides* Roxb.

Fig. 68

*Scripus wallichii* Nees.

Cyperaceae

- A. Whole plant ( $\frac{1}{2}$ )
- B. Head (X2)
- C. Glume (X8)
- D. Fruit (X10)



Perennial herbs, without blade, culms clustered, slender, cylindrical, obtuse 4-5 angled about 10-40 cm. high, sheath tubular, grow on the base, oblique truncate at the apex, sometimes mucronate, 2-5 flowers attached laterally, globose, composed of 2-5 spikelets, leaf-like bract only one on top of culm, erect 5-13 cm. long, spikelets narrowly ovate, 3-17 mm. long, 3-3.5 mm. wide, sessile, light green, glume elliptical obtuse at the apex, awned 3.5-4 mm. long, imbricate, achenes broad obovate, about 2 mm. long, plano-convex, transverse wrinkled, stigma 2, bristles 4, scabrous, longer than the achene.

**Habitat:** On the paddy field of western Taiwan except of Taichung district.

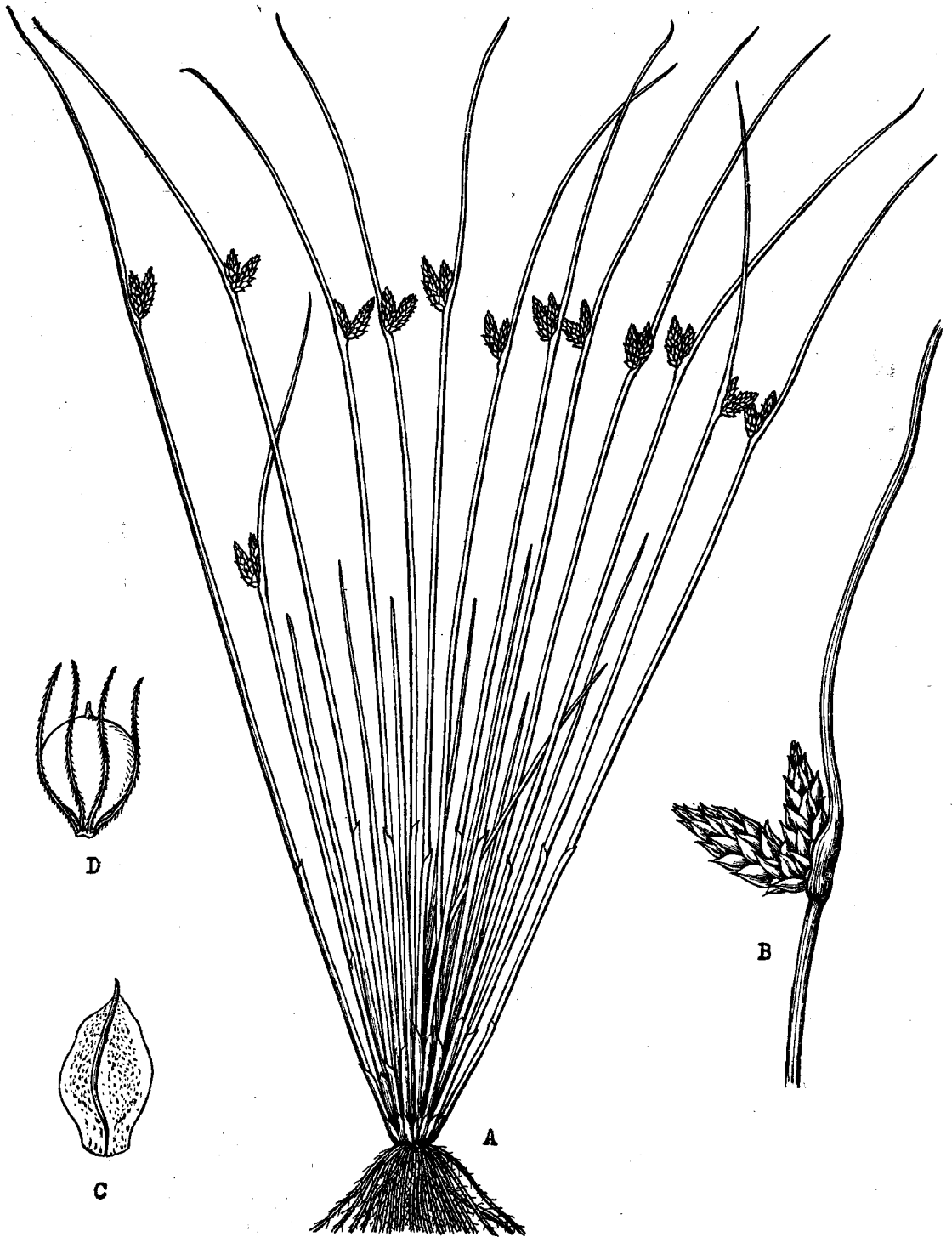


Fig. 68 *Scirpus wallichii* Nees.

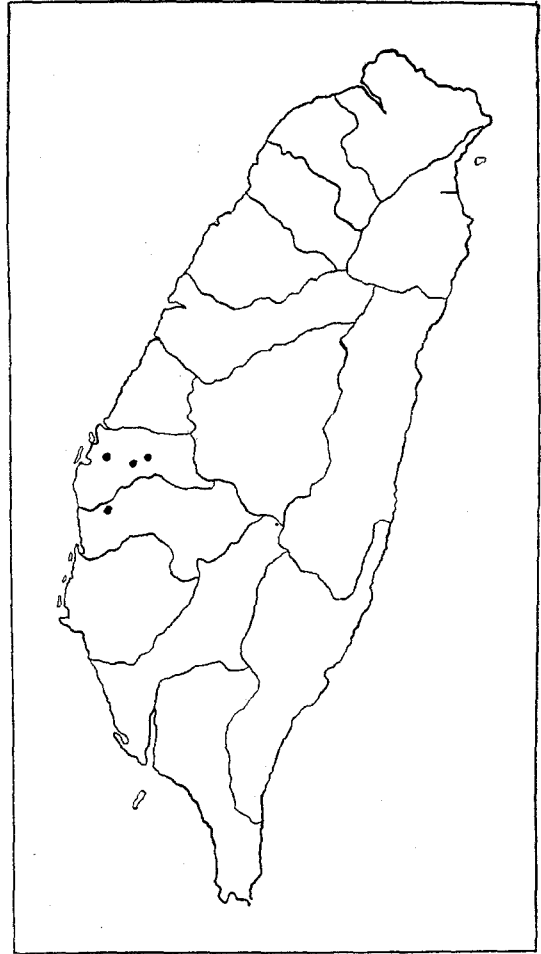
Fig. 69

*Setaria geniculata* (Lam.) P. Beauv.

Small-grained Dog-Tail Grass; Knot-root  
Bristle Grass.

*Gramineae*

- A. Whole plant ( $\frac{1}{4}$ )
- B. Sheath (X4)
- C. Spikelet with awn (X8)
- D. Spikelets (X10)
- E. First glume (X10)
- F. Second glume (X10)
- G. Sterile lemma (X10)
- H. Fertile floret (X13)
- I. Fertile lemma (X13)
- J. Fertile palea (X13)



Perennial herbs, culms erect or geniculate, about 30-100 cm. high, leaves linear 10-20 cm. long, 3-5 mm. wide, more or less thin hairs on the lower surfaces, sheath smooth, panicles erect, dense, 3 to 8 cm long, yellow or purplish-brown, spikelets usually 2.5-3 mm. long, light green, first glume  $\frac{1}{2}$  as long as spikelets, acute, 3-veined,  $\frac{3}{8}$  as long as spikelets, sterile lemma as long as spikelet, sterile palea membranous, and as long as sterile lemma, fertile lemma and fertile palea distinctly transverse rugose.

**Habitat:** On the upland of Tainan district.



Fig. 69 *Setaria geniculata* (Lam.) P. Beauv.

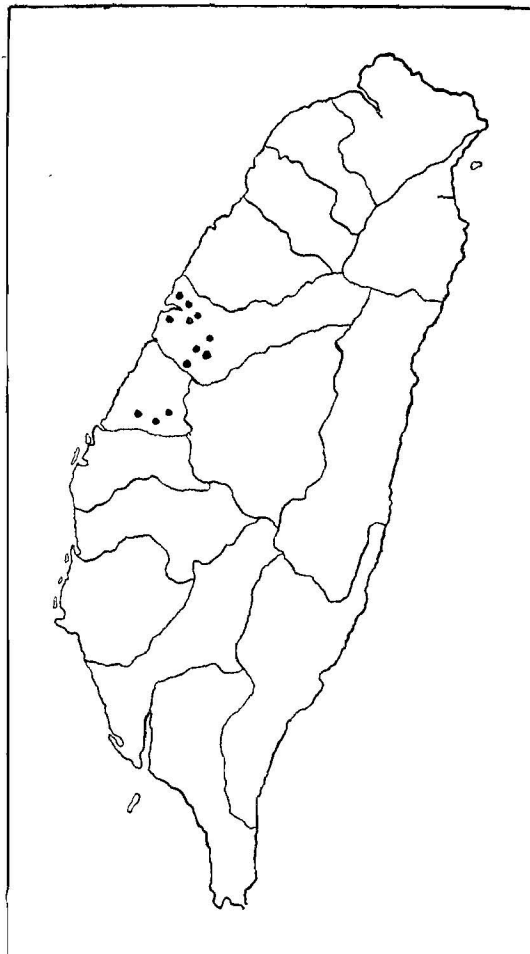
Fig. 70

*Setaria viridis* Beauv.

Green Bristle grass, Dog-Tail Grass

*Gramineae*

- A. Whole plant with fruits ( $\frac{2}{3}$ )
- B. Sheath (X5)
- C. Spikelet (X15)
- D. First glume (X15)
- E. Second glume (X15)
- F. Sterile lemma (X15)
- G. Floret (X15)
- H. Fertile lemma (X15)
- I. Fertile Palea (X15)



Annual herbs, culms glabrous, usually erect or geniculate at the base, 20-80 cm. high, sheath ciliate on margins, ligule densely ciliate, blades flat, linear or broadly linear, glabrous, 5-20 cm. long, 2-18 mm. wide, flowers in panicle densely branched, cylindrical, yellowish, mostly 3-6 cm. long or more, main axis of inflorescence pubescent, spikelets with spreading bristles, scabrous and fugacious, spikelets ovate, 2-2.5 mm. long, obtuse at the apex, first glume 3-veined, about  $\frac{1}{3}$  as long as the spikelets, second glume 5-veined obtuse, equal to the length of spikelet, sterile lemma 5-veined, elliptical, obtuse, obscurely rugose, fertile lemma enclosing a small narrow palea, anthers blackish-brown.

**Habitat:** On the paddy fields of central Taiwan.

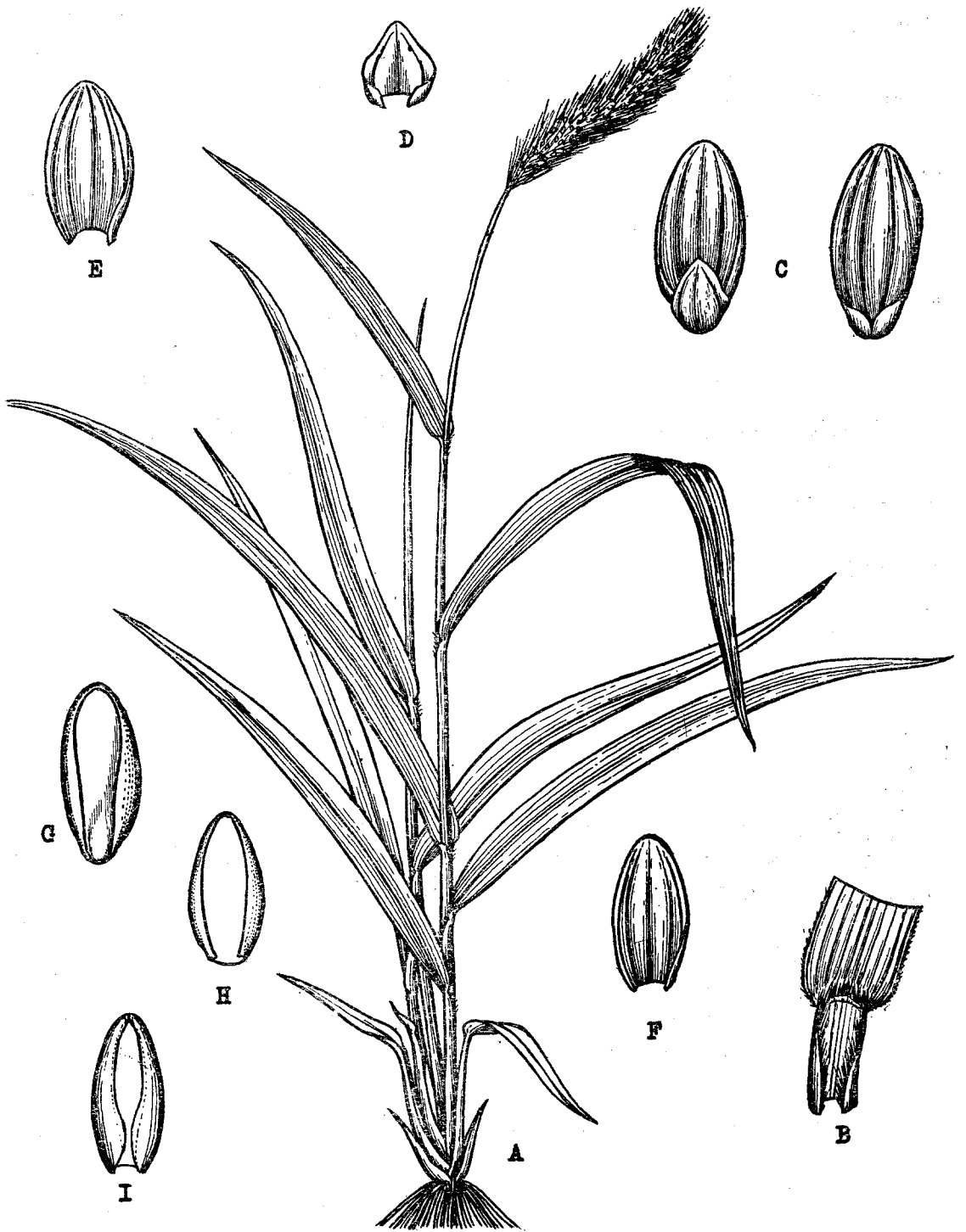


Fig. 70 *Setaria viridis* Beauv.



Fig. 71

*Solanum nigrum* Linn.

*Solanaceae*

A. Root and base of stem ( $\frac{1}{2}$ )

B. Branchlet ( $\frac{1}{2}$ )

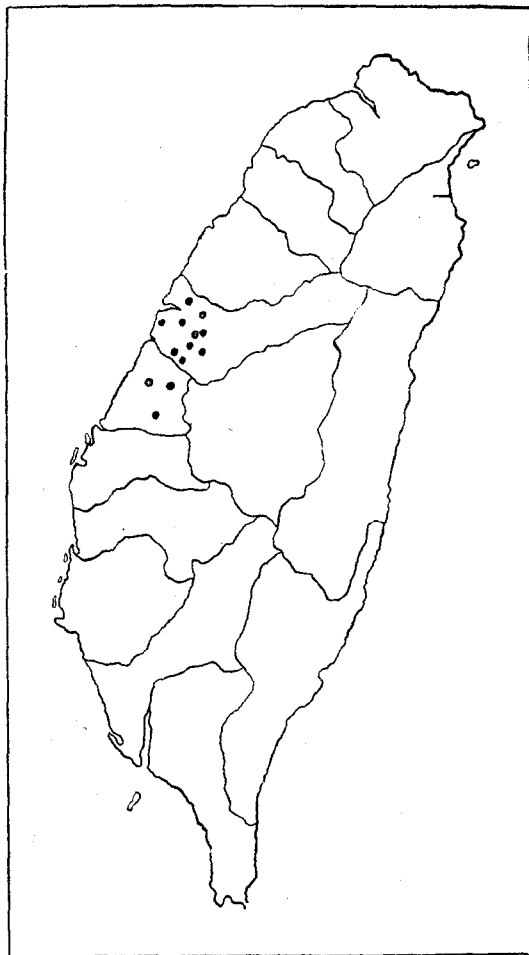
C. Flower (X5)

D. Corolla and Stamens (X10)

E. Stamen (X20)

F. Pistil (X10)

G. Fruit (X10)



Annual herbs, about 30-60 cm. high, stems branched, slightly angled, leaves alternate, ovate or broad-ovate, 4-8 cm. long, entire or undulate with irregularly dentate, acut or obtuse at the apex, orbicular or broad-cuneate at the base, decurrent on the petiole forming wing, flowers umbellately disposed, peduncles 1-3 cm. long, corolla white, pedicels 7-12 mm. long, calyx 5-lobed, the lobes triangular or ovate-oblong, stamens 5, anthers narrowly oblong, the upper part laterally dehiscent, berry globose glabrous, black in maturity, about 6-7 mm. in diameter, persistent calyx, minute usually at the base.

**Habitat:** On the paddy fields and winter catch cropping field of central Taiwan.



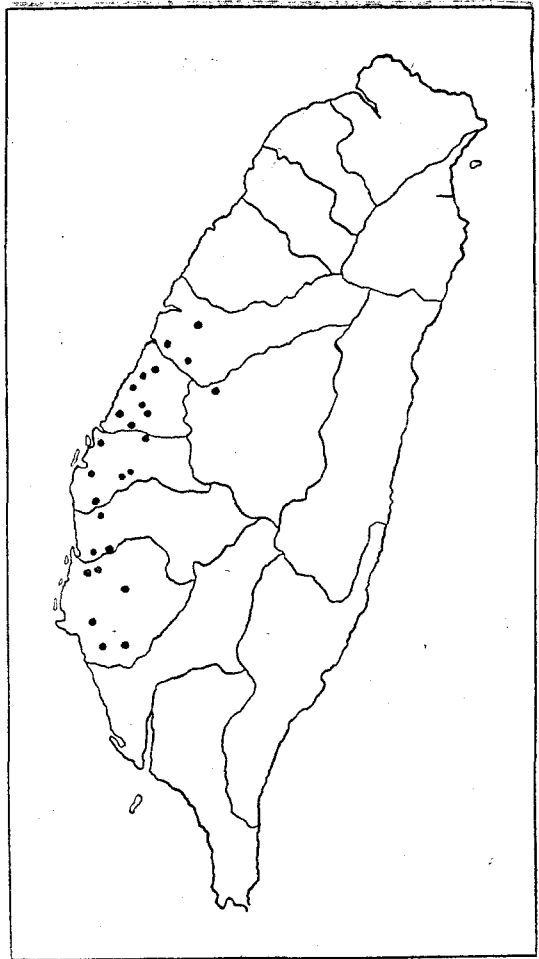
Fig. 71 *Solanum nigrum* Linn.

Fig. 72

*Soliva anthemifolia* R. Br.

Compositae

- A. Whole plant ( $\frac{1}{2}$ )
- B. Leaf to show lower surface (X2)
- C. Head (X5)
- D. Outer bract of involucre (X6)
- E. Inner bract of involucre (X8)
- F. Outer bisexual flower (X15)
- G. Pistillate flower (X15)
- H. Fruit (X3)
- I. Seed (X10)



Small perennial herbs, 10-25 cm. high, leaves bipinnate or tripinnate, segments a narrow linear, margin entire or sometime cleft 3 times, under surface pubescent, heads sessile, tufted at the short stem, globose, 6-13 mm. long in diameter, the bract of involucre lanceolate or oblong, surface pubescent, achenes rounded with wrinkled wings, later extending to form a long awn, awn longer than the achene.

**Habitat:** On the upland of the central and southern Taiwan.

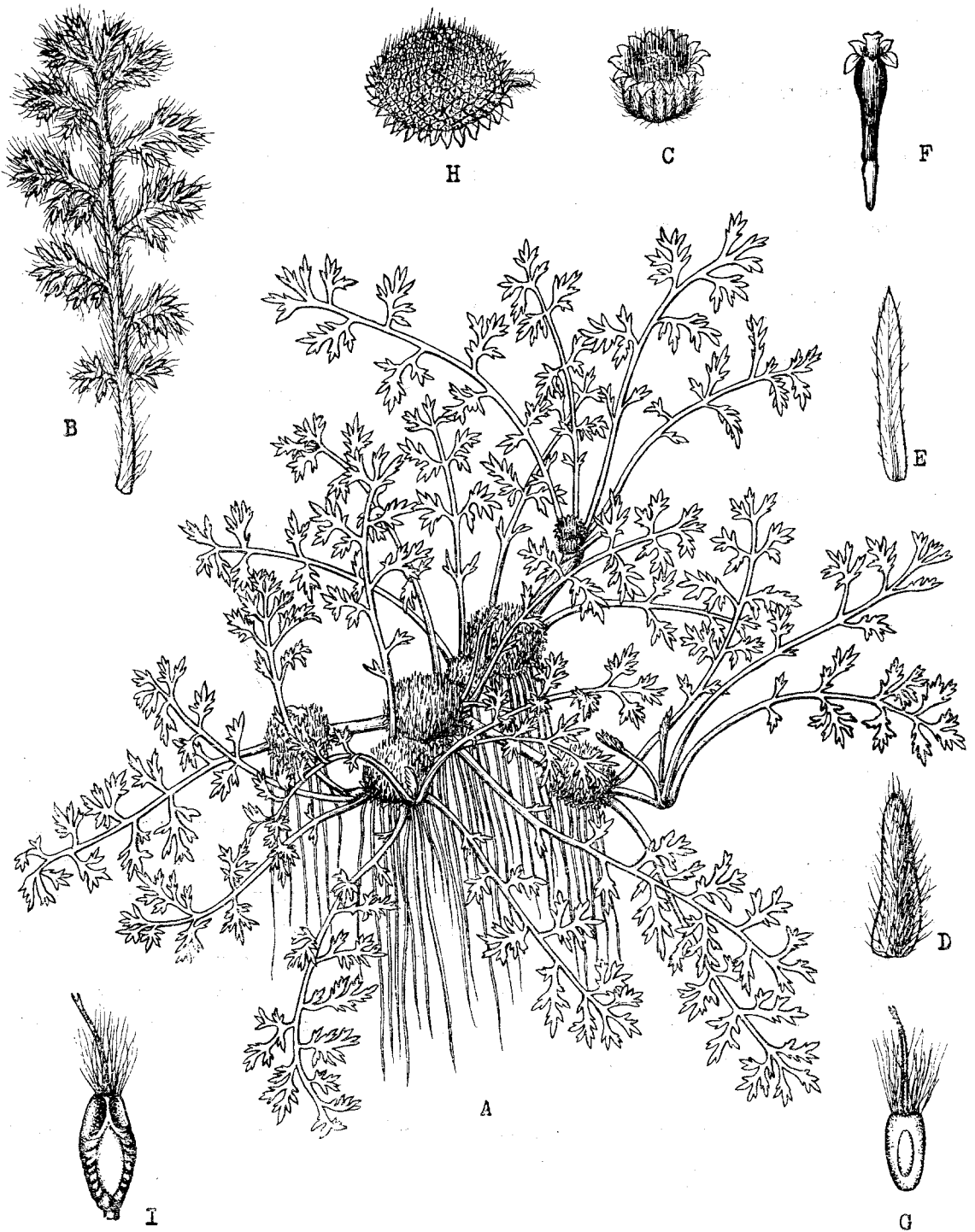


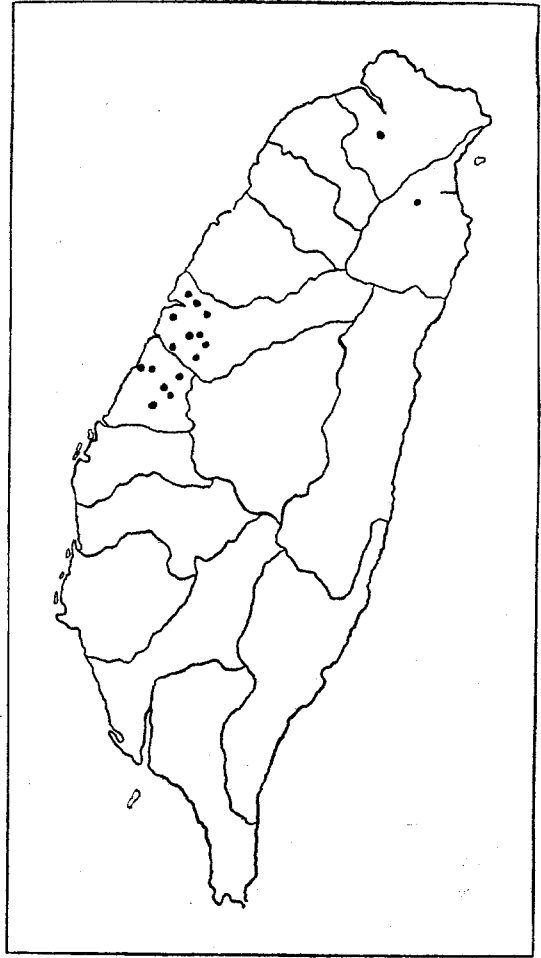
Fig. 72 *Soliva anthemifolia* R. Br.

Fig. 73

*Stellaria aquatica* (Linn.) Scop.

*Caryophyllaceae*

- A. Base of stems and roots ( $\frac{1}{2}$ )
- B. Fruiting branchlet ( $\frac{1}{2}$ )
- C. Flower (X7)
- D. Sepal (X15)
- E. Petal (X15)
- F. Pistil (X15)
- G. Stamen (X10)
- H. Fruit (X5)
- I. Seed (X15)



Biennial or perennial herbs, lower part of stems somewhat prostrate, the upper one erect, 20-60 cm. high, young branches with glandular hairs, leaves ovate or broad ovate, 2-5 cm. long, acuminate at the apex, round or shallow cordate at the base, upper parts of leaf sessile, lower one with long petiole, flowers solitary in axillary, usually forming cymes on the upper part of stem, pedicels reflexed downward after blooming, calyx narrowly ovate, with short glandular, petal as long as calyx, usually deeply 2-clefted, achene 5-lobed and divided into 2, seeds papillate.

**Habitat.** On the upland of central and northern parts and winter catch cropping field of central Taiwan.

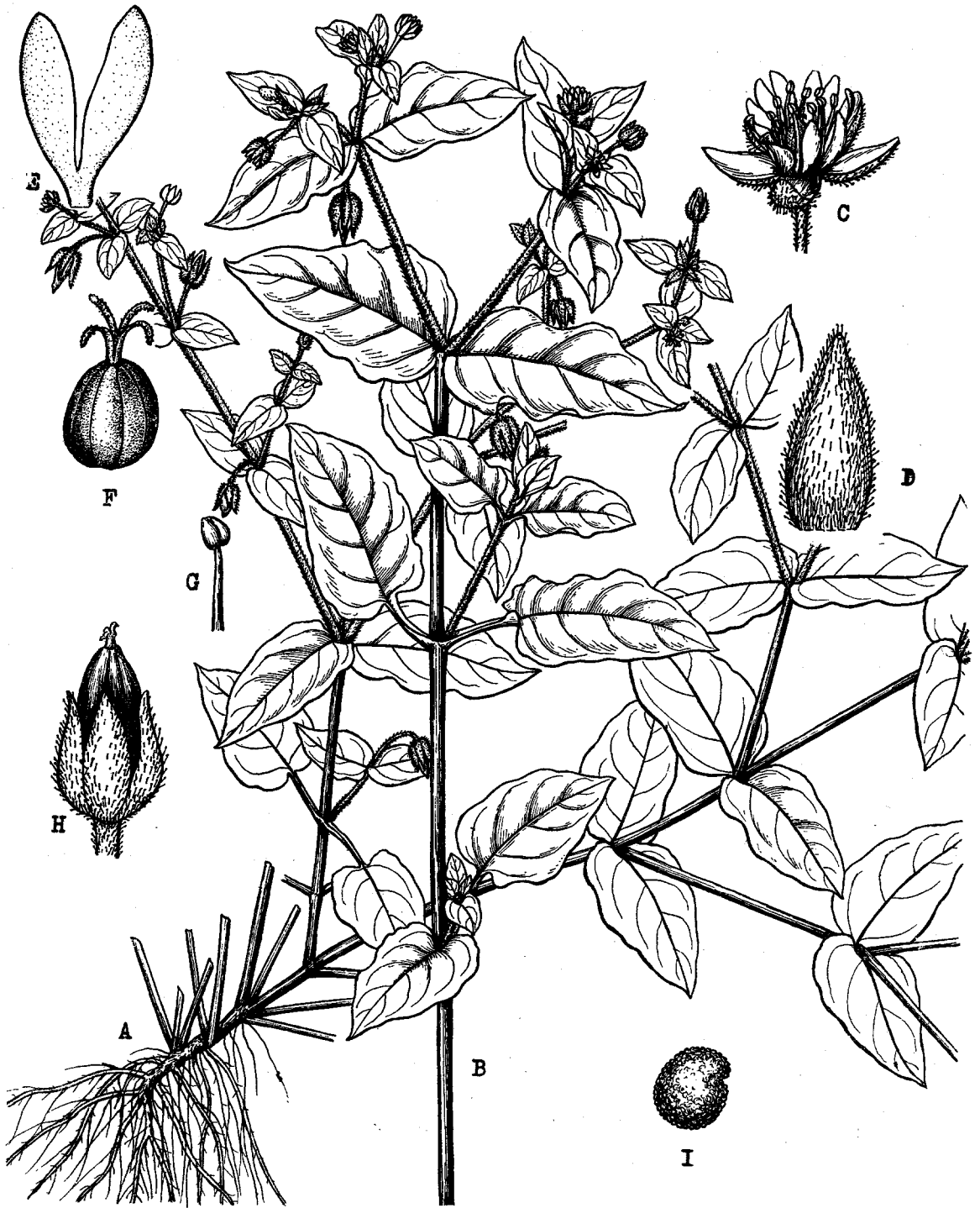


Fig. 173 *Stellaria aquatica* (Linn.) Scop.

Fig. 74

*Thuraea involuta* (G. Forst.) R. Br.

Coastal sasa-leaved Grass

*Gramineae*

A. Whole plant ( $\frac{1}{4}$ )

B. Sheath (X3)

C. Spikelet (X7)

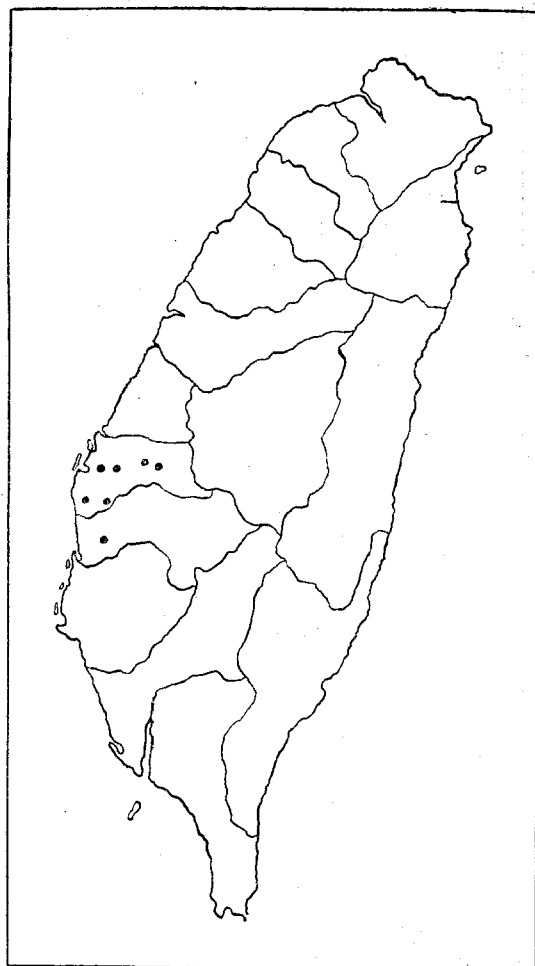
D. Second glume (X8)

E. First glume (X8)

F. Floret (X8)

G. Lemma (X8)

H. Palea (X8)



Perennial herbs, culms long creeping, the upright flowering branches 5-20 cm. high, sheaths ciliate on the margins, ligule a row of hairs, 0.5-1 mm. long, blades lanceolate, 2-5 cm. long, 3-6 mm. wide, flowers in terminal racemes, spikelets puberulent at the apex, and surrounded by the sheath, the staminate spikelets about 4 mm. long, first glume smaller, hyaline, second glume as long as the spikelet, florets similar, perfect spikelets larger, glume and fertile lemma similar to those of the staminate spikelets, fertile lemma smooth and thin except for a few hairs at the apex.

**Habitat:** On the upland of Tainan district of Taiwan.

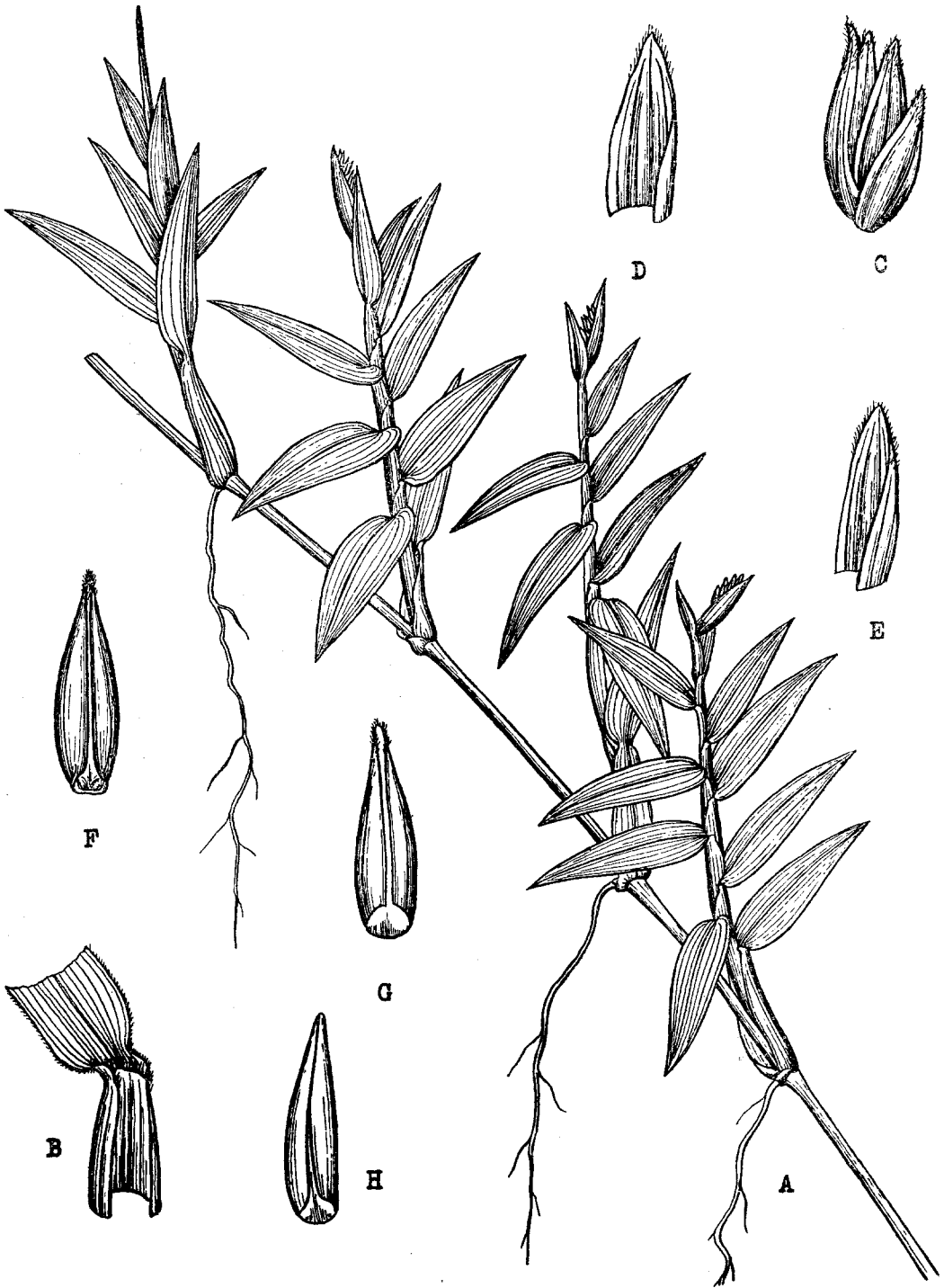


Fig. 74 *Thureaea involuta* (G. Forst.) R. Br.

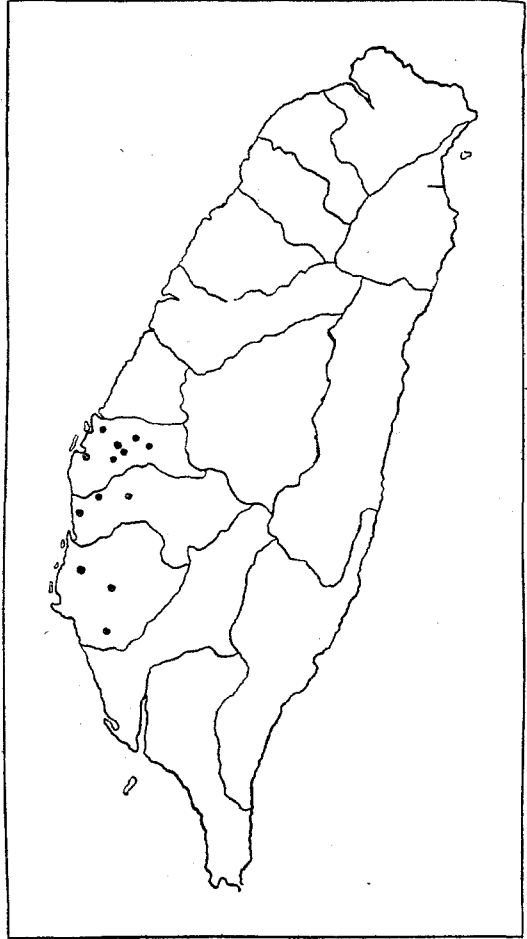


Fig. 75

*Wedelia chinensis* (Osbeck.) Merr.  
Syn.: *Wedelia calendulacea* Less.

*Compositae*

- A. Whole plant ( $\frac{1}{4}$ )
- B. Outer bract of involucre (X4)
- C. Inner bract of involucre (X5)
- D. Inner bract of involucre (X5)
- E. Ligulate corolla (X5)
- F. Inner bract of bisexual flower (X4)



Perennial herbs, stems slender, prostrate, rooting at each nodes, clothed with appressed hair, floral branches ascending, leaves sessile or short petioled, oblong or lanceolate, mucronate at the apex, acute at the base, margins loosely serrate 2-7, cm. long, 3-veined, both surface covered with adpressed puberulent, capitulum in axillary, solitary on the top of branchlet, peduncule 6-12 cm. long, involucre semi-globose, bracts arranged in 2 rows, outer bracts oblong, upper surface clothed with appressed hairs, the upper half-part of the outer bract also clothed with appressed hairs, ligule corolla yellow, 9-11 mm. long, entire or 2-serrate at the apex, tubular flowers bisexual, on the central parts, achene obovate, without pappus, 5-teethed.

**Habitat:** On the upland of Tainan district of Taiwan.

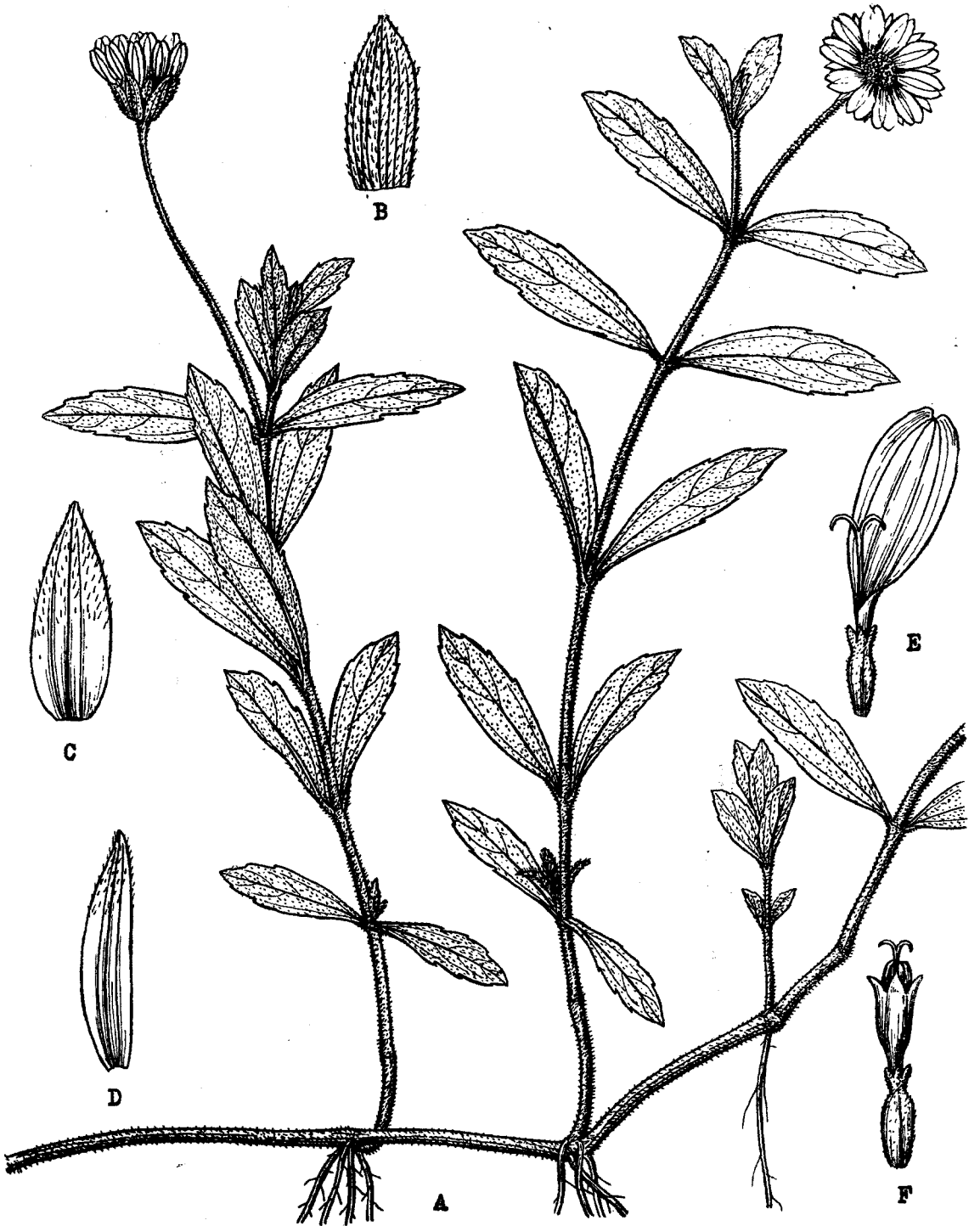


Fig. 75 *Wedelia chinensis* (Osbeck.) Merr.

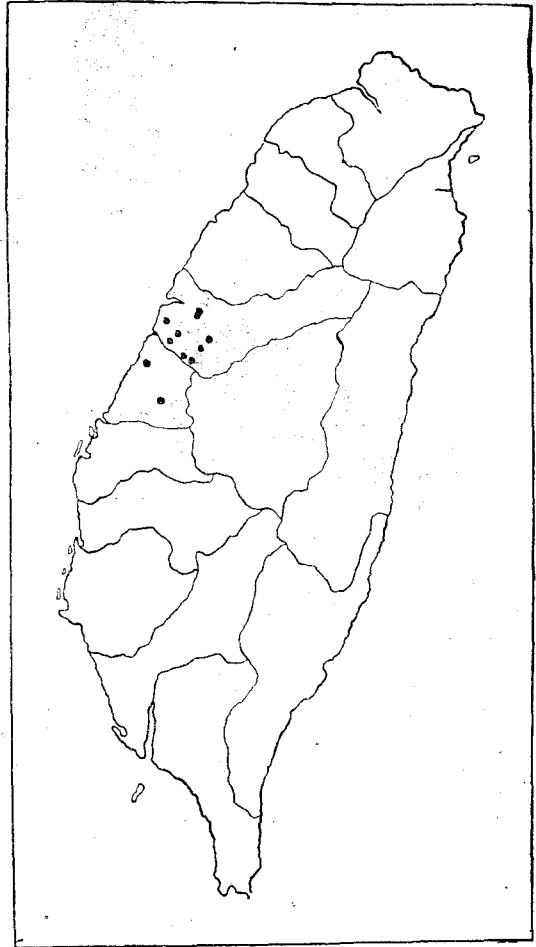
Fig. 76

*Youngia japonica* (Linn.) DC.

Syn.: *Crepis japonica* (Linn.) Benth.

*Compositae*

- A. Whole plant ( $\frac{1}{4}$ )
- B. Head (X2)
- C. Outer bract of involucre (X10)
- D. Inner bract of involucre (X10)
- E. Flower (X5)
- F. Young fruit (X4)
- G. Seed (X10)



Annual herbs, plants scattered with thin pubescent, stems usually branched at the base, or the upper part of stems erect, radical leaf tufted, oblanceolate, obtuse at the apex, attenuate at the base, deeply pinnate divided, ultimate lobe larger, triangular-ovate, margins irregularly serrate, head many flowered, corymb-panicle on terminal, corolla yellow ligulate, involucre 5-6 mm. long, the inner bracts of involucre about 8, the outer one, conspicuous minute, achenes scabrous, brown, about 1.8 mm. long, gradually narrowed at upper parts with small ribs, pappus white, about 3 mm. long.

**Habitat:** On the winter paddy fields of Taichung district of Taiwan.

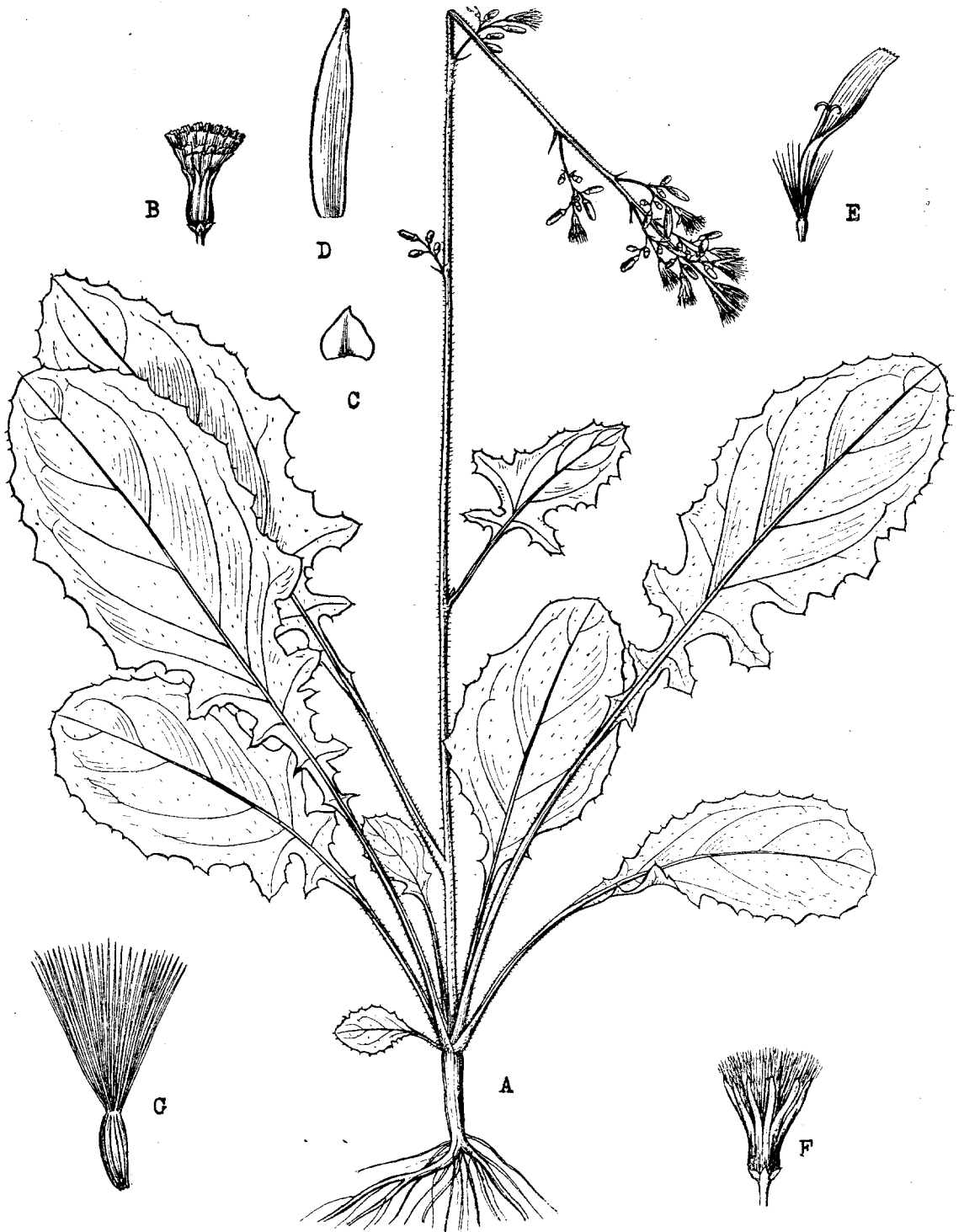


Fig. 76 *Youngia japonica* (Linn.) DC.

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