

# A CYTOLOGICAL INVESTIGATION OF FLOWERING PLANTS FROM THE CANARY ISLANDS

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## SUMMARY

The chromosome numbers of 85 species of flowering plants from the Canary Islands were determined; 5 of the counts turned out to be new.

Notes on some species are given. Numbers deviating from previous counts proved to occur in *Polycarpaea divaricata* (Pit.) Poir. and *Koeleria phleoides* (Vill.) Pers. 49 counts are new for the Canary Islands and are listed in table 2.

## 1. INTRODUCTION

Since 1932 several investigators carried out cytological studies on the flora of the Canary Islands and Macaronesia in general. A good many counts were performed by LARSEN (1960, 1962, 1963), BORGEN (1969, 1970) and BRAMWELL et al. (1971, 1972). In order to understand the cytogeography of a species it is necessary to carry out extensive investigations throughout its whole area. Therefore, most of the investigated taxa listed in this paper were studied in connection with the European flora. Moreover, it becomes clear from literature studies that the chromosome number of many species of the Canary Islands had been determined only once before and in many cases from regions outside these islands. Therefore the present author decided to study a number of species cytologically in order to obtain a better insight into the distribution of the various cytotypes and problems of intraspecific cytological variation.

## 2. MATERIAL AND METHODS

Most seed samples were collected by the author on the island of Lanzarote (May 1972), the driest island with the poorest vegetation. Many seeds were also collected on Tenerife which has a luxuriant vegetation; the numbers 14186, 14187, 14190, 14193, 14198, 14203 were obtained by the generosity of the curator of the Jardín de Aclimatación de Orotava, Tenerife. The seeds were sown in the experimental greenhouse of the Botanical Garden of the State University, Utrecht. After germination the seedlings were reared in pots. Root tips were fixed in Karpechenko's fixative, embedded in paraffin-wax, sectioned at 15 micron, and stained according to Heidenhain's haematoxylin method.

Microscopical slides are preserved in the Biosystematics Department of the Institute of Systematic Botany, Utrecht. Voucher specimens are deposited in

both the collection of the Biosystematics Department and the herbarium of the State University, Utrecht.

### 3. RESULTS

The chromosome numbers are presented in *table 1*, together with the voucher number. The species are arranged alphabetically according to family and genus. The nomenclature is in accordance with that used in *Flora Europaea* as far as published. For literature references the reader is referred to compilation works, such as FEDOROV 1969 (F.) and MOORE 1973, *Regnum Vegetabile* 90 (RV. 90). Counts not listed in these works are recorded by the name of the author. New counts are marked with an asterisk.

New records for the Canaries are listed in *table 2*.

### 4. COMMENTS ON SOME SPECIES

#### Caryophyllaceae

*Mimuartia geniculata* (Poir.) Thell. – Lanzarote –  $2n = 18$

FAVARGER (1962) recorded the chromosome number  $n = 9$  for *Minuartia maroccana* Pau & Font Quer, which is identical with *Minuartia geniculata* (Poir.) Thell. var. *font-queri* Maire. The origin of this material is unknown. This new count supports the existence of a basic number 9 in the genus.

*Polycarpaea carnosa* Chr. Sm. – Tenerife –  $2n = 18$

LARSEN (1960, 1962) recorded  $2n = 18$  for both varieties of *Polycarpaea carnosa*: var. *spathulata* Svent. and var. *carnosa*. The material originated from the islands of Gomera and Tenerife, respectively.

*Polycarpaea divaricata* (Pit.) Poir. – Tenerife –  $2n = 18$

LARSEN (1960) recorded  $2n = c. 26$  for plants from Tenerife. The chromosome number  $2n = 18$  was found in plants from two localities on the island of Tenerife. Larsen mentioned the difficulty he had in cultivating the seedlings and the few root tips that were available. The plants cultivated in the Botanical Garden of Utrecht grew very well. The seeds were sown in February and the first flowers appeared in the first week of May. It is highly probable that Larsen found a triploid population at Buenavista. For that reason more populations should be investigated cytologically.

*Silene longicaulis* Pour. – Lanzarote –  $2n = 24$

This species had not been previously investigated. The same chromosome number was found in most species of *Silene*.

#### Compositae

*Hedynois rhagadioloides* (L.) Willd. – Lanzarote –  $2n = 11, 12$

FERNANDES & QUEIRÓS (1972) recorded for material from Portugal the chromosome numbers  $2n = 8, 11, 13,$  and  $15$ . They also found mixed populations with

Table 1.

Species	Voucher	Origin	2n	References
<b>Amaranthaceae</b>				
<i>Achyranthes aspera</i> L.	14141	Tenerife, Puerto de la Cruz	84	F. 2n = 14, 42, 84; RV. 90: n = 21
<b>Campanulaceae</b>				
<i>Wahlenbergia lobeliioides</i> DC.	14054 14143	Lanzarote, Yaiza Tenerife, Puerto de la Cruz	18 18	F. 2n = 18
<b>Caryophyllaceae</b>				
<i>Minuartia geniculata</i> (Poirlet) Thell.	14072	Lanzarote, Famara Mountain, 300 m	18	F. n = 9
<i>Petrorhagia prolifera</i> (L.) Ball & Heyw.	14121	Lanzarote, Haria	60	F. 2n = 30, 60; RV. 90: 2n = 30
<i>Polycarpaea carnosa</i> Chr. Sm.	14186	Tenerife, Teno	18	F. 2n = 18
<i>Polycarpaea divaricata</i> (Ait.) Poirlet	14126 14187	Tenerife, Mercedes Forest, 500 m Tenerife, Teno	18 18	F. 2n = c. 26
* <i>Silene longicaulis</i> Pour.	14097	Lanzarote, Teguiise	24	
<i>Spergularia fimbriata</i> Boiss. & Reut.	14034 14162	Lanzarote, Playa Famara Tenerife, Puerto de la Cruz	18 18	F. 2n = 18
<b>Cistaceae</b>				
<i>Helianthemum canariense</i> Pers.	14029	Lanzarote, Playa Famara	20	RV. 90: 2n = 20
<b>Compositae</b>				
<i>Anacyclus radiatus</i> Lois.	14095	Lanzarote, Teguiise	18	F. 2n = 18; DELAY & PETIT 1971: n = 9
<i>Andryala cheiranthifolia</i> L'Hér.	14033	Lanzarote, Playa Famara	18	RV. 90: 2n = 18
<i>Bidens pilosa</i> L.	14131	Tenerife, Mercedes	c. 76	F. 2n = 24, 48, 72, c. 76; RV. 90: n = 12, 23, 24, 2n = 46, 72
<i>Calendula arvensis</i> L.	14118 14144	Lanzarote, Haria Tenerife, Puerto de la Cruz	44	F. 2n = 36, 44; RV. 90: 2n = 44;
<i>Carduus tenuiflorus</i> Curt.	14138	Tenerife, Puerto de la Cruz	54	DAHLGREN et al. 1971: 2n = 44
<i>Centaurea melitensis</i> L.	14147	Tenerife, Puerto de la Cruz	24	F. 2n = c. 54; RV. 90: 2n = 54
<i>Chrysanthemum coronarium</i> L.	14094	Lanzarote, Teguiise	18	F. 2n = 22, 24, 36; RV. 90: 2n = 24; DAHLGREN et al. 1971: 2n = 24
<i>Galactites tomentosa</i> Moench	14129	Tenerife, Mercedes	22	F. 2n = 18, 36; RV. 90: 2n = 18; BRAMWELL et al. 1971: n = 9
<i>Galinsoga ciliata</i> (Rafin.) Blake	14132	Tenerife, Puerto de la Cruz	32	F. 2n = 22; RV. 90: 2n = 22
<i>Hedypnois rhagadioloides</i> (L.) Willd.	14091	Lanzarote, Teguiise	11, 12	F. 2n = 12, 12 + 1B; RV. 90: 2n = 11, 12, 8, 10; STRID 1971: 2n = 12; FERNANDES & QUEIRÓS 1972: 2n = 8, 11, 13, 15

Species	Voucher	Origin	2n	References
* <i>Helichrysum gossypinum</i> Webb	14082	Lanzarote, Famara Mountain, 300 m	28	F. 2n = 18; RV. 90: n = 9, 2n = 18
<i>Launaea nudicaulis</i> (L.) Hook. f.	14021	Lanzarote, Playa Famara	18	
* <i>Odontospermum intermedium</i> (Webb) Sch. Bip.	14027	Lanzarote, Playa Famara	14	
<i>Phagnalon rupestre</i> DC.	14058	Lanzarote, Famara Mountain, 250 m	18	F. 2n = 18; RV. 90: 2n = 18; DAHLGREN et al. 1971: 2n = 18; NILSSON & LASSEN 1971: 2n = 18
	14101	Lanzarote, Valle de Rincón		
<i>Reichardia ligulata</i> (Vent.) Aschers.	14075	Lanzarote, Famara Mountain, 350 m	16	RV. 90: n = 8
var. <i>integrifolia</i> (Sch. Bip.) Bolle	14023	Lanzarote, Playa Famara	16	F. 2n = 16; RV. 90: 2n = 16; DAHLGREN et al. 1971: 2n = 16
<i>Reichardia tingitana</i> (L.) Roth			34	F. 2n = 34; RV. 90: 2n = 34; DAHLGREN et al. 1971: 2n = 34; KRAMER et al. 1972: 2n = 34
<i>Silybum marianum</i> (L.) Gaertn.	14100	Lanzarote, Valle de Rincón	34	RV. 90: 2n = 18; ROUX & BOULOS 1972: n = 9
<i>Sonchus oleraceus</i> Willd.	14164	Tenerife, Puerto de la Cruz	18	
Convolvulaceae				
<i>Convolvulus siculus</i> L.	14070	Lanzarote, Famara Mountain, 250 m	22	F. 2n = 22; DAHLGREN et al. 1971: 2n = 22
Cruciferae				
<i>Cakile maritima</i> (L.) Scop.	14106	Lanzarote, Playa Famara	18	F. 2n = 18; RV. 90: n = 9, 2n = 18; DELAY & PETIT 1971: n = 9; STRID 1971: 2n = 18
<i>Erucastrum canariense</i> Webb & Berth.	14079	Lanzarote, Playa Famara	18	F. 2n = 18
<i>Lobularia lybica</i> Webb & Berth.	14032	Lanzarote, Playa Famara	22	RV. 90: 2n = 22; DELAY & PETIT 1971: n = 11
<i>Matthiola fruticulosa</i> (L.) Maire	14056	Lanzarote, La Caleta	12	F. 2n = 12; RV. 90: 2n = 12
<i>Raphanus raphanistrum</i> L.	14123	Lanzarote, near Famara	18	F. 2n = 18; RV. 90: n = 9, 2n = 18; DAHLGREN et al. 1971: 2n = 18
<i>Sisymbrium irio</i> L.	14093	Lanzarote, Teguisse	14	F. 2n = 14, 21, 28, 42, 56; RV. 90: 2n = 28
Euphorbiaceae				
<i>Euphorbia paralias</i> L.	12962	Lanzarote, Playa Famara	16	F. 2n = 16; RV. 90: 2n = 16;
	13324	Lanzarote, Playa Famara	16	DELAY & PETIT 1971: n = 8
<i>Mercurialis annua</i> L.	14063	Lanzarote, Famara	32	F. 2n = 12, 14, 16, 32, 48, 64, 96, 80, 112; DAHLGREN et al. 1971: 2n = 48
Frankeniaceae				
* <i>Frankenia laevis</i> L.	14042	Lanzarote, Playa Famara	20	

Geraniaceae								
<i>Erodium cicutarium</i> Willd.	14067	Lanzarote, Famara Mountain, 200 m	20	F. 2n = 20, 40				
	14113	Lanzarote, Famara	40					
	14135	Tenerife, Puerto de la Cruz	40					
Gramineae								
<i>Avena barbata</i> Pott. ex Link	14049	Lanzarote, Playa Famara	14	F. 2n = 14, 28, 32; RV. 90: n = 14, 2n = 14, 28, 42; DAHLGREN et al. 1971: 2n = 14; KLIPPHUIS & WIEFFERING 1972: 2n = 28; STRID 1971: 2n = 28				
	14066	Lanzarote, Famara Mountain, 200 m						
<i>Briza maxima</i> L.	14127	Tenerife, Mercedes	14	F. 2n = 14; RV. 90: n = 7, 2n = 14; BRAMWELL et al. 1971: 2n = 14; DAHLGREN et al. 1971: 2n = 14				
<i>Bromus madritensis</i> L.	14038	Lanzarote, Playa Famara	28	F. 2n = 14, 28, 42; RV. 90: 2n = 28; DAHLGREN et al. 1971: 2n = 28				
	14069	Lanzarote, Famara Mountain, 200 m						
<i>Hordeum murinum</i> L.	14046	Lanzarote, Playa Famara	28	F. 2n = 14, 28, 42; RV. 90: 2n = 28				
	14087	Lanzarote, Famara	14					
	14154	Tenerife, Icod	28	F. 2n = 26, 28				
<i>Koeleria phleoides</i> (Vill.) Pers.	14035	Lanzarote, Playa Famara	14	F. 2n = 14; RV. 90: 2n = 14; DAHLGREN et al., 1971: 2n = 14				
<i>Lamarckia aurea</i> (L.) Moench	14040	Lanzarote, Playa Famara	14	F. 2n = 14, 14 + 1-2B; RV. 90: 2n = 14; DAHLGREN et al. 1971: 2n = 14; DELAY & PETIT 1971: n = 7				
<i>Lolium rigidum</i> Gaud.	14105	Lanzarote, Playa Famara	14	F. 2n = 14, 14 + 1-2B; RV. 90: 2n = 14; DAHLGREN et al. 1971: 2n = 14; DELAY & PETIT 1971: n = 7				
<i>Pennisetum ciliare</i> (L.) Link	14041	Lanzarote, Playa Famara	36	F. 2n = 32, 36, 40, 43, 48, 54; RV. 90: 2n = 36				
<i>Tragus racemosus</i> (L.) All.	14039	Lanzarote, Playa Famara	40	F. 2n = 40				
Guttiferae								
<i>Hypericum inodorum</i> Mill.	14128	Tenerife, Mercedes Forest, 250 m	40	F. 2n = 16, 40; RV. 90: 2n = 40				
Labiatae								
<i>Lavandula pinnata</i> L. f.	14028	Lanzarote, Playa Famara	22	F. 2n = 22; RV. 90: 2n = 22				
<i>Micromeria ericifolia</i> (Roth) Bormm.	14064	Lanzarote, Famara Mountain, 250 m	30	F. 2n = 30				
<i>Stachys ocymastrum</i> (L.) Briq.	14160	Tenerife, Puerto de la Cruz	18	F. 2n = 18; RV. 90: 2n = 18; DAHLGREN et al. 1971: 2n = 18				
Linaceae								
<i>Linum strictum</i> L.	14102	Lanzarote, Valle de Rincón	18	F. 2n = 18; RV. 90: n = 9; DAHLGREN et al. 1971: 2n = 18; NILSSON & LASSEN 1971: 2n = 18; KLIPPHUIS & WIEFFERING 1972: 2n = 18				

Species	Voucher	Origin	2n	References
Malvaceae				
<i>Malva parviflora</i> Lam.	14090 14153	Lanzarote, Famara Tenerife, Icod	42 42	F. 2n = 40-42, 40-44, 42
Papaveraceae				
<i>Fumaria muralis</i> Sond.	14145	Tenerife, Puerto de la Cruz	48	F. 2n = 28, 48
<i>Fumaria parviflora</i> Lam.	14074	Lanzarote, Famara Mountain, 300 m	48	F. 2n = 28, 32
Papilionaceae				
<i>Lotus lancerottensis</i> Webb	14030	Lanzarote, Playa Famara	14	F. 2n = 14; RV. 90: 2n = 14
<i>Lotus sessilifolius</i> DC.	14198	Tenerife, Güímar	28	RV. 90: 2n = 14; BRAMWELL et al. 1972: n = 14
<i>Lotus trigonelloides</i> Webb & Berth.	14019	Lanzarote, Playa Famara	14	F. 2n = 14
<i>Medicago laciniata</i> (L.) Mill.	14026	Lanzarote, Playa Famara	16	F. 2n = 16; RV. 90: 2n = 16
<i>Melilotus sulcata</i> Desf.	14120	Lanzarote, Haria	16	F. 2n = 16, 32;
<i>Ononis laxiflora</i> Desf.	14084	Lanzarote, Famara	32	DAHLGREN et al. 1971: 2n = 16
<i>Psoralea bituminosa</i> L.	14114	Lanzarote, Famara	32	DELAY & PETIT 1971: n = 15
<i>Trifolium angustifolium</i> L.	14152 14156	Tenerife, Icod Tenerife, Icod	20 16	F. 2n = 20; RV. 90: 2n = 20 F. 2n = 14, 16; RV. 90: 2n = 16; GADELLA & KLIPPHUIS 1972: 2n = 16; STRID 1971: 2n = 16
<i>Trifolium arvense</i> L.	14155	Tenerife, Icod	14	F. 2n = 14, 16; RV. 90: 2n = 14; STRID 1971: 2n = 14
<i>Trifolium campestre</i> Schreb.	14140	Tenerife, Puerto de la Cruz	14	F. 2n = 14; RV. 90: n = 7, 2n = 14; DAHLGREN et al. 1971: 2n = 14
<i>Trifolium scabrum</i> L.	14157	Tenerife, Icod	16	F. 2n = 10, 16; RV. 90: 2n = 10; DAHLGREN et al. 1971: 2n = 10
<i>Vicia disperma</i> DC.	14148	Tenerife, Puerto de la Cruz	14	F. 2n = 14; RV. 90: 2n = 14
Plantaginaceae				
<i>Plantago aschersonii</i> Bolle	14052	Lanzarote, Playa Famara	20	RV. 90: 2n = 10, 20
<i>Plantago ovata</i> Forsk.	14089	Lanzarote, Famara	8	F. 2n = 8; RV. 90: n = 4, 2n = 8
Plumbaginaceae				
<i>Limonium puberulum</i> Webb & Berth.	14122	Lanzarote, near Cueva de los Verdes	14	F. 2n = 14
Polygonaceae				
<i>Rumex bucephalophorus</i> L.	14061	Lanzarote, Famara Mountain, 150 m	16	F. 2n = 16; DELAY & PETIT 1971: n = 8
* <i>Rumex vesicarius</i> L.	14031 14111	Lanzarote, Playa Famara Lanzarote, Famara	18 18	



Table 2. A list of new counts of plants from the Canaries.

Species	2n	Previous counts	
		n	2n
<b>Amaranthaceae</b>			
<i>Achyranthes aspera</i> L.	84	21	14, 42, 84
<b>Caryophyllaceae</b>			
<i>Minuartia geniculata</i> (Poiret) Thell.	18	9	
<b>Compositae</b>			
<i>Anacyclus radiatus</i> Lois.	18	9	18
<i>Bidens pilosa</i> L.	c. 76	12, 23, 24	24, 46, 48, 72, c. 76
<i>Calendula arvensis</i> L.	44		36, 44
<i>Carduus tenuiflorus</i> Curt.	54		54, c. 54
<i>Centaurea melitensis</i> L.	24		22, 24, 36
<i>Galinsoga ciliata</i> (Rafin.) Blake	32		32
<i>Helichrysum gossypinum</i> Webb	28		
<i>Odontospermum intermedium</i> (Webb) Sch. Bip.	14		
<i>Silybum marianum</i> (L.) Gaertn.	34		34
<b>Convolvulaceae</b>			
<i>Convolvulus siculus</i> L.	22		22
<b>Cruciferae</b>			
<i>Cakile maritima</i> (L.) Scop.	18	9	18
<i>Matthiola fruticulosa</i> (L.) Maire	12		12
<i>Raphanus raphanistrum</i> L.	18	9	18
<i>Sisymbrium irio</i> L.	14		14, 21, 28, 42, 56
<b>Euphorbiaceae</b>			
<i>Euphorbia paralias</i> L.	16	8	16
<i>Mercurialis annua</i> L.	32		12, 14, 16, 32, 48, 64, 80, 96, 112
<b>Frankeniaceae</b>			
<i>Frankenia laevis</i> L.	20		
<b>Gramineae</b>			
<i>Avena barbata</i> Pott. ex Link	14, 28	14	14, 28, 32, 42
<i>Bromus madritensis</i> L.	28		14, 28, 42
<i>Hordeum murinum</i> L.	14, 28		14, 28, 42
<i>Koeleria phleoides</i> (Vill.) Pers.	14		26, 28
<i>Lamarckia aurea</i> (L.) Moench	14		14
<i>Lolium rigidum</i> Gaud.	14	7	14, 14 + 1 - 2B
<i>Pennisetum ciliare</i> (L.) Link	36		32, 36, 40, 43, 48, 54
<i>Tragus racemosus</i> (L.) All.	40		40
<b>Guttiferae</b>			
<i>Hypericum inodorum</i> Mill.	40		16, 40
<b>Linaceae</b>			
<i>Linum strictum</i> L.	18	9	18
<b>Malvaceae</b>			
<i>Malva parviflora</i> Lam.	42		40-42, 40-44, 42
<b>Papaveraceae</b>			
<i>Fumaria muralis</i> Sond.	48		28, 48
<i>Fumaria parviflora</i> Lam.	48		28, 32
<b>Papilionaceae</b>			
<i>Medicago laciniata</i> (L.) Mill.	16		16
<i>Melilotus sulcata</i> Desf.	16		16, 32
<i>Ononis laxiflora</i> Desf.	32	15	



<i>Trifolium arvense</i>	14		14, 16
<i>Trifolium campestre</i> Schreb.	14	7	14
<i>Vicia disperma</i> L.	14		14
Plantaginaceae			
<i>Plantago ovata</i> Forssk.	8	4	8
Polygonaceae			
<i>Rumex bucephalophorus</i> L.	16	8	16
<i>Rumex vesicarius</i> L.	18		
Primulaceae			
<i>Anagallis arvensis</i> L.	40	20	40
Rubiaceae			
<i>Galium tricorntum</i> Dandy	44		44
Scrophulariaceae			
<i>Cymbalaria muralis</i> (L.) Baumg.	14		14
Solanaceae			
<i>Hyoscyamus albus</i> L.	68		34, 36, 68
<i>Nicotiana glauca</i> Graham	24	12	24, 36, 48
<i>Nicotiana paniculata</i> L.	24	12	24
<i>Solanum nigrum</i> L.	72	12, 24	24, 36, 48, 72, 96, 144
Urticaceae			
<i>Parietaria diffusa</i> Mert. & Koch	26	13	26

$2n = 8, 11$  and  $13$ ;  $11$  and  $12$ ;  $11$  and  $13$ ;  $13, 14, 15, 16$ , and  $18$ . Furthermore they reported different chromosome numbers within one root in a population of  $2n = 11$  and an other one of  $2n = 13$ . In the material from Lanzarote  $2n = 11$  was the number most frequently counted. In one of our plants, too, there was clearly variation in the chromosome counts from the roots.

BORGEN (1970) reported  $2n = 10$  for plants also from Lanzarote. He also mentioned the occurrence of a satellite chromosome which did not appear in the present material.

*Helichrysum gossypinum* Webb – Lanzarote –  $2n = 28$

This endemic chamaephyte had not been counted before. FEDOROV (1969) reported for 7 other species the same somatic number.

*Odontospermum intermedium* Webb – Lanzarote –  $2n = 14$

This endemic chamaephyte was not studied cytologically before.

BORGEN (1970) recorded for the closely related species *Odontospermum stenophyllum* (Link) Sch. Bip. the number  $2n = 14$ . Other species have the same somatic number.

*Reichardia ligulata* (Vent.) Aschers. var. *integrifolia* (Sch. Bip.) Bolle – Lanzarote –  $2n = 16$

BORGEN (1969) recorded for *Reichardia ligulata* (Vent.) Aschers.  $n = 8$ , counted in material from Gran Canaria. Var. *integrifolia* with spatulate and mucronate leaves has the same chromosome number as other species of the genus.

### Cruciferae

*Erucastrum canariense* Webb & Berth. – Lanzarote –  $2n = 18$

LARSEN (1960, 1963) reported for the first time the divergent basic number 9 for this genus. He studied material from the islands of Tenerife, Gran Canaria, and Lanzarote. The basic numbers 8 and 15 were previously reported for species from outside the Canaries.

### Frankeniaceae

*Frankenia laevis* L. – Lanzarote –  $2n = 20$

This species had not been previously counted. The related species *Frankenia pulverulenta* L. has the same chromosome number,  $2n = 20$ . *Frankenia laevis* differs from *Frankenia pulverulenta* in the petiole bearing hairs up to 0.2 mm long and the calyx having recurved hairs up to 0.2 mm long in the lower part.

### Gramineae

*Koeleria phleoides* (Vill.) Pers. – Lanzarote –  $2n = 14$

The diploid chromosome number had not been recorded before. SINGH & GODWARD (1963) counted  $2n = 28$  in material from the Royal Botanic Gardens, Kew.

### Labiatae

*Micromeria ericifolia* (Roth) Bornm. – Lanzarote –  $2n = 30$

The same chromosome number for this endemic chamaephyte was previously reported by LARSEN (1960). All cytologically investigated species have the same diploid number 30.

This dwarf shrub did very well in culture. The nutlets were sown at the end of February and flowering started in the first week of July.

### Papaveraceae

*Fumaria parviflora* Lam. – Lanzarote –  $2n = 48$

RYBERG (1960) recorded in material from Algeria  $2n = 32$ . From these data it appears very likely that this is a species with a basic number of 8. An extensive cytological investigation seems desirable.

### Papilionaceae

*Ononis laxiflora* Desf. – Lanzarote –  $2n = 32$

DELAY & PETIT (1971) recorded for material from Morocco  $n = 15$ .

Cytological investigation of the genus *Ononis* proved to be very difficult because of the occurrence of satellite chromosomes. In the present species no satellites could be observed. The close relation between *Ononis laxiflora* Desf. and *Ononis pendula* Desf. ( $2n = 32$ ) is confirmed by the presence of the same chromosome number.

## Polygonaceae

*Rumex vesicarius* L. – Lanzarote –  $2n = 18$

This species had not been studied before.  $2n = 18$  was also determined for the closely related species *Rumex papilio* Coss. & Bal.

*Rumex vesicarius*, a North African and S. W. Asian species, has its most westerly stations in the Canaries. *Rumex papilio* is endemic in Morocco.

## Scrophulariaceae

*Kickxia commutata* (Bernh. ex Reichenb.) Fritsch. ssp. *graeca* (Bory & Schaub.)

R. Fernandes – Tenerife –  $2n = 18$

LARSEN (1960) previously recorded the same diploid number for material from Tenerife. The basic number 9 was determined for *Kickxia*, 6 for *Linaria*.

## Zygophyllaceae

*Zygophyllum fontanesii* Webb & Berth. – Lanzarote –  $2n = 16$

This species was transplanted from the West coast to the Botanical Garden, Utrecht. The plant proved very difficult in cultivation and does not grow well. Fortunately, however, root tips could be fixed in abundance. Previously BORGEN (1969) recorded the same number for material from Gran Canaria.

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