

OXALIS LATIFOLIA HBK. IN INDO-MALAYSIA*

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ABSTRACT

A historical bibliographical account of new distributional areas and of introduction of *O. latifolia* HBK., a Mexican species into India and Malaysia is given based on records known in the literature and from the herbarium specimens. A map is also provided with the earliest possible reports of occurrence of this species from various places and regions. It was first reported in Java in 1866 and recorded by Kurz just after four years from India in 1870. The possibility of its introduction into SE Asia from Central America through Europe or directly from Mexico is discussed. It has been concluded that man has played an important role in its introduction which was through its bulbs alongwith seeds of some garden ornamentals.

INTRODUCTION

Since the time of early Aryan settlements, missionary botanists, European explorers especially the Portugese, Dutch, Spaniards, French and the British, there has been a constant stream of plant introduction to all parts of the country from many areas of the world, until today we find that a great number of foreign plants are acclimatized and naturalized on the Indian soil. The majority of these alien plants are transported from Mexico and Brazil and alongwith them came many kinds of weeds mixed up with the seeds of the imported wheat, rice, etc.

The presence of large number of species of the genus *Oxalis* L. of various morphological types are mainly concentrated in the temperate climates of South Africa and South America which is the original home and centre of origin of the genus (DENTON, 1973). *O. latifolia* HBK. was first reported by KUNTH (1821) in the indigenous flora of Mexico.

O. latifolia Kunth belongs to section *Inoxalis* and out of twelve tristylous species of this genus occurring in North America (DENTON, 1973), it is characterised by having 3 leaflets, usually non-septate hairs and 5-11 nerves per bulb scale. It was subsequently introduced to other regions through its bulb habit which was probably evolved in Central America.

Outside its original home this species has been cultivated for horticultural purposes in the European gardens and elsewhere (INGRAM, 1959). There is a sheet of a cultivated specimen of this plant collected by Meyer in (LE) from Petropol in 1847 and according to CALDER (1919) its first report of cultivation in Java (Malaysia) is mentioned in Java Horticultural list of 1866. It means that it must have been there certainly prior to this date brought either from some European gardens or directly from Central America incidently to Java. The first record of *O. latifolia* HBK. in Ceylon is in 1879 (ALSTON, 1931) and in India dates back to 1870 by KURZ who found it as a weed in Sibpur (Calcutta). It might have got introduced into the Indian Botanic Garden, Sibpur, Calcutta through Java. GUHA BAKSHI (1969) recorded the occurrence of this species from Murshidabad, West Bengal. The author found it growing in the garden beds of Netarhat, and in paddy-

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field area at Sabour, Bihar, India in 1965 and 1971, respectively. This plant is probably more wide-spread in India, but might have been overlooked by collectors for another very similar species *O. corymbosa* DC. which has also been reported to occur in various parts of India. The main distinguishing characters separating these two species are summarized in the following Table :

Table 1—Morphological comparison of *O. latifolia* HBK. and *O. corymbosa* DC.

	<i>O. latifolia</i>	<i>O. corymbosa</i>
1. Bulb scales	5 or 7-11 nerved.	3 nerved
2. Leaflets	Fish-tail shaped.	Broadly obovate.
3. Bracts	Bracts of umbellate inflorescence 2, opposite.	Bracts of cymose, contracted inflorescence many.
4. Sepals	With 2 pinkish-yellow glands at tip 1/3 to 1/2 as long as the corolla.	Glandular 1/4 to 2/5 as long as long as corolla 5 nerved.
5. Corolla lobes	Bluish-white or white or even blue or violet.	Red-purplish.
6. Seeds	1-2 times longer than wide.	..

It will be interesting phytogeographically to summarize the various localities for this species here from various parts of India and to plot a map (Fig. 1) on its earliest records available from the literature as well as from the herbarium specimens housed in various herbaria for the Indo-Malaysia region.

INDIA :

Jammu-Kashmir : Jammu, Government Guest House, Canal Road, *Koul* and *Karihaloo*, S. W. (JAMMU).

Punjab : Ludhiana : Government College. *Sharma* 379 : Patiala : Punjabi University, *Sharma* 925, 3784 (PUN).

Delhi : Roshanara Gardens, *Maheshwari* 77 (DU).

Uttar Pradesh : N. W. Himalayas : Douglas Dale : 4000', *Gill* 259 (LWG), Nainital : Along roads *Jain* 13074 (LWG) ; Hanumangarh, *Kapoor* 70182 (LWG) ; Ramnagar, *Kapoor* 21684 (LWG) ; Haldwani, *Kapoor* 27735 (LWG) ; Mussouri : *Saxton* 949 (CAL) Meerut : Mal Road, *Rastogi, s.n.* (LWG), *Chowdhury, s. n.* (LWG). Muzaffarnagar : *Bharadwaja* 8532 (LWG). Lucknow : Litchi Plot, NBRI, *Kapoor* 24334 (LWG). Allaha-
abad : Botanic Garden, *Roy s. n.* (LWG).

Bihar : Patna, Science College, *Srivastava* 21134, 21494 (LWG) ; Netarhat Plateau, *Paul* 88863, 95555, 95554 (LWG).

Madhya Pradesh : Pachmarhi : Jatashanker, *Hiralal* 33092 (LWG) ; Saugor : *Panigrahi* 6245 (CAL) Chindwara : Taniya, *Panigrahi* 422 (CAL.).

West Bengal : Darjeeling : Kalimpong, *Srivastava* 62614, 68574 (LWG) Murshid-
abad, *Guha Bakshi* 363 (CAL.).

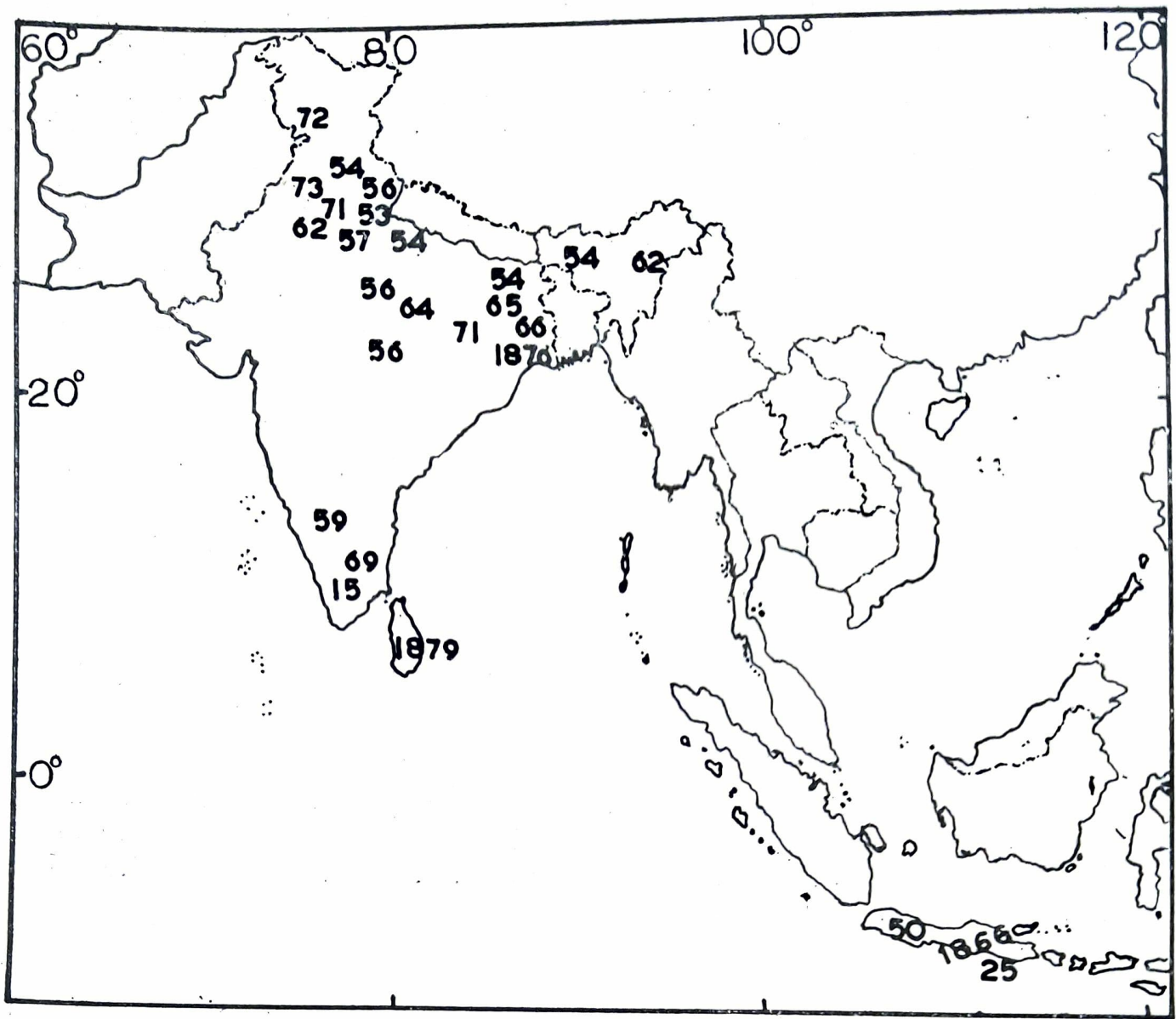


Fig. 1. Map showing the years of first collection of *Oxalis latifolia* HBK in the Indo-Malaysia region, for example, in Ceylon in 1879; in Calcutta 1876; in Palni (19) 15, in Kodaikanal 69; in Nilgiri 59; in Jorhat 62; in Darjeeling 54, in Patna 65; in Netrahat 71; in Pachmarhi 56; in Jammu 72; in eastern Java (Pasuman) 25; in western Java (Preanger mts.) 50, etc.

Assam : Jorhat : *Srivastava* 79928 (LWG). Shillong : *Burkill* 215 (CAL).

Madras : Coonoor District : Nilgiri, *Kapoor* 64753 (LWG).

Tamil Nadu : Kodaikanal : *Matthew* 2546, 105, 814, 1553, 2425, 2549 ; *Fyson* 277; *Bourne* 1553 (HCPM).

SRI LANKA :

Peradeniya : Not common, introduced in the Botanic Garden (Alston, 1931).

MALAYSIA :

Java : Preanger mts., W. Java ; Gedeh, Lembang and Tjinjirnuan. Also garden Tjipanas, 1060 m. Eastern Java : Hongkojaya near Pasuruan, 1200 m. (Veldkamp, 1971).

At elevations below 1067 m this species is met with frequently near the moist beds of cultivated fields and of garden beds. At higher altitudes above 1067 m it reaches the forest edges in waste grounds. The general height of the plant and colour of the flowers

also varies with respect to altitude. The flower colour is usually violet at lower and it is somewhat pinkish at higher altitudes (MATTHEW, 1969). It is most interesting that this weed can extend its area over very large distances, from Central America to Europe (Western) and SE Asia (Petropol) in few decades. Judging from the old records of its occurrence in most cases in garden beds, it can easily be presumed that the most effective means by which it migrated is through the bulbs which are easy to germinate and can tolerate any soil condition and climate provided there is less competitive value especially in habitats like moist beds of cultivated fields, gardens, fallow fields, etc. Bulbs might have migrated to Europe from Central America along with seeds of some garden ornamentals and have reached India in 1870 through Malaysia (Java) during the various activities of different gardens to introduce as many as alien ornamental plants. It can safely be concluded that man himself played a very important role in the dissemination and introduction of this weed.

As regards the variability within the species DENTON (1973) observed that all the three forms short styled, mid-styled and long styled flowers are found and there are innumerable cases of hybridization noted between *O. latifolia* and *O. alpina*, *O. corymbosa*, *O. discolor*, *O. divergens*, *O. drummondii*, *O. gregaria*, *O. jacquiniana* and *O. tetraphylla*. CHATTERJEE AND SHARMA (1970) reported two chromosome counts of *O. latifolia*. One population from E. Himalayas revealed $2n=46$. They have found genotypic variabilities between the tropical and temperate populations to be associated with chromosomal differences and structural alterations of chromosomes. The identity of these plants is yet to be checked.

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