

CHAPTER I

INTRODUCTION

1.0 General

Linum usitatissimum L., linseed or flax has been one of the oldest plants brought under cultivation in a number of countries for centuries. The name flachs or flax of the Teutonic languages comes from the old German flahs. It is known by various names in different regions and in various languages, such as Pallawa, Aiwina in Finnish ; Hor, Harr in Danish ; Tone in Ancient Gothic ; Linseed in English ; Ooma, Atasi, Malika, Masina etc. in Sanskrit ; Alsi, Tisi, Chikna in Hindi ; Monisa, Tisi in Bengali ; Arisi, Madanaginjala in Telugu ; Aazhivirai in Tamil etc.

Historically, linseed plant has been the earliest fibre of vegetable origin, but its utilisation as an oilseed plant has been of a later origin. It yields the linen fibre of commerce which has been the first fibre utilised by mankind. From the data available, the Egyptian fabrics (59), locally called mummy-clothes, are probably over 4500 years old and are obtained from flax as reported by De Candolle (29) and Matthews (48).

The genus, Linum to which Linum usitatissimum L., the common linseed or flax plant belongs, embraces nearly 100 species. It belongs to the family Linaceae which has 14 genera and about 150 species distributed throughout the world (23,24,50). However, according to their utility these species can be classified into two categories, namely, fibre species and oil seed species.

When the crop is cultivated for oilseed, it is known as linseed, the plants of which are rather rough, dwarf and very much branched with a good yield of seed; when cultivated for fibre, on the other hand, it is known as flax, and has tall, smooth, unbranched stems with a poor yield of seed. Therefore, raising the linseed crop for a dual purpose is yet to be achieved.

1.1 History and Origin

Many research workers have attempted to trace the origin of the cultivated varieties of Linum usitatissimum. According to De Candolle (29), the first work on this subject appears to have been carried out in 1948 by Planchon. However, the common annual flax has not yet been discovered in a wild state with absolute certainty. He also examined several specimens of this plant from India and Planchon also saw others in the Herbarium at Kew.

De Candolle (29) observed that it was possible that flax, in one or other of these forms, might be growing wild in the area between the south of Persia and Crimea. He further said that "it is found pretty often on the barren hills in the south of Crimea, between Jalta and Nikita". It was also indicated that Linum angustifolium grows wild, specially on hills, throughout the region of which the Mediterranean forms the centre, and as far as England, the Alps and the Balkan mountains in Asia and from the south of Caucasus to Lebanon and Palestine.

It is acknowledged that the ancient Egyptians and Hebrews made use of linen stuffs, as microscopic examination disclosed, as bandages for the mummies. Therefore, the culture of flax is of ancient origin in Europe. According to Cook (23), the native



country of this plant is not definitely known, but it is supposed to have been originally introduced from Egypt, where it had been in use during the time of the Pharaohs, as referred to elsewhere. From the earlier records it is clear that one or two of the Linum species, particularly Linum angustifolium, were cultivated in some parts of Europe and Egypt from pre-historic times till the Aryan era, when the Aryans introduced the existing annual flax plants, Linum usitatissimum from the east. So it is natural to conclude that this plant must have been introduced first in the northern regions of the Indian sub-continent. This statement finds its support from De Candolle (29) who concludes that "the annual flax plant appears to have been introduced into Hindustan by the eastern Aryans after their separation from the European Aryans". Richharia (59) also holds the opinion that Indian linseed has a polyphyletic origin, as summarised in Fig. 1.1.

1.2 Crop Distribution

India is growing the linseed crop in almost all the states; but the bulk production is concentrated in the states of Bihar, Madhya Pradesh, Maharashtra, Punjab and Tripura. Statewise production and the area under cultivation (11) are indicated in Table F1.1 of Appendix F. On the basis of production and area occupied by five major oil seeds like groundnut, castor, sesamum, rapeseed and mustard, linseed accounts for 6.43 per cent of the total production and 12.73 per cent of the cropped area.

In modern times linseed plant is cultivated chiefly in Argentina, Canada, China, Estonia, France, Germany, Great Britain, India, Ireland, Japan, Lithuania, Morocco, Pakistan, Poland,

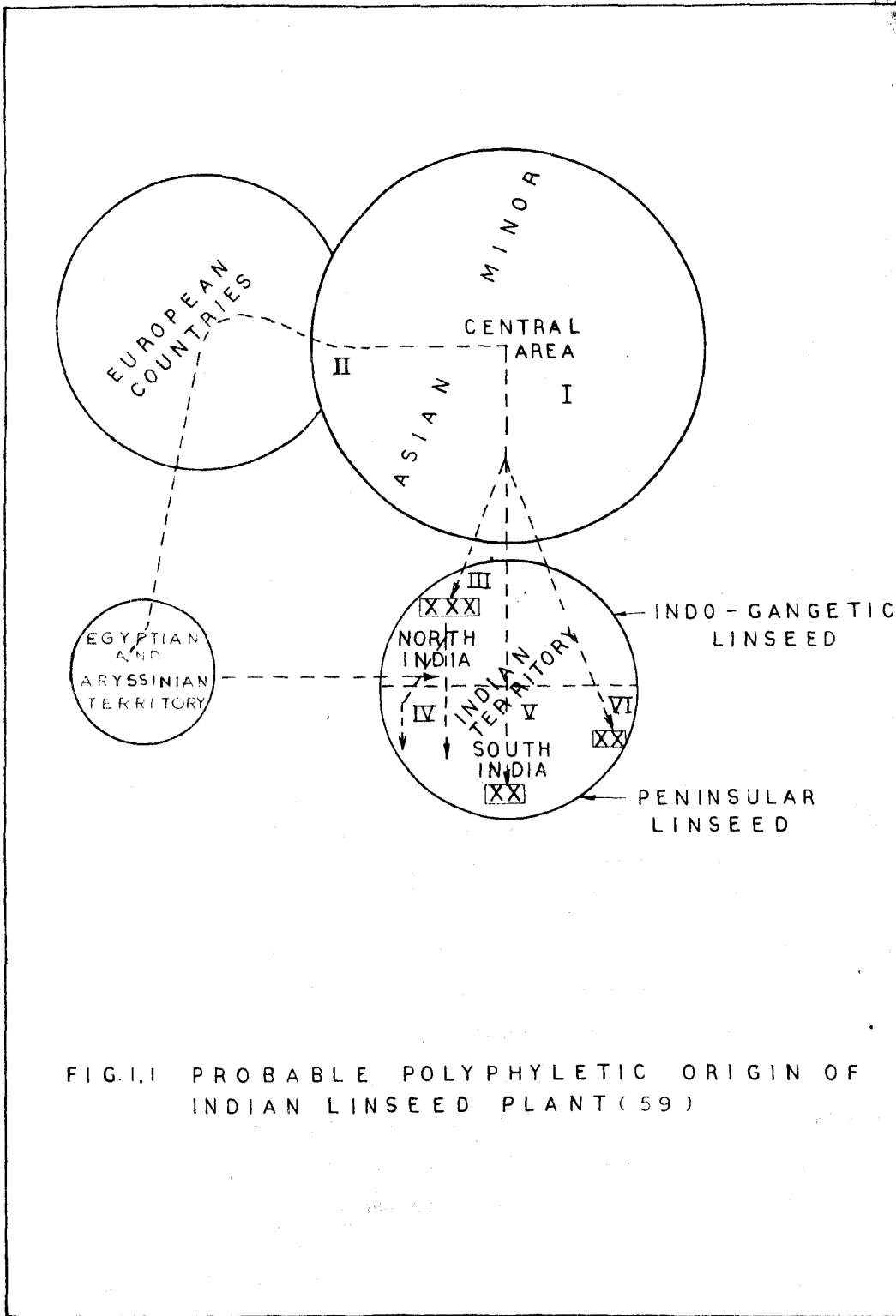


FIG. I. PROBABLE POLYPHYLETIC ORIGIN OF INDIAN LINSEED PLANT (59)

Scotland, South Africa, Soviet Union, U.S.A., Uruguay and a few other European countries. The production and area of first seven major linseed producing countries (59) are given in Table F1.2 of Appendix F. It reveals that although India stands first in respect of area under this crop, it has been relegated to the fourth place in production, the first three being Argentina, the U.S.A. and Canada.

1.3 Usability of Linseed Crop

All parts of the linseed plant are utilised in commerce for various products either directly or after processing. Its seed forms an important product of commerce, yielding a drying oil (32 - 36% oil content) used for manufacturing paints and varnishes, oilcloth, linoleum and other similar products; the residue i.e., oil cake is used as cattle feed and also as manure; the capsular parts, i.e., chaff and husk, are used as dry fodder for animals. Beside these, in some parts of the country, refined linseed oil is used as edible oil.

The plant straw, leftover after threshing, is capable of yielding high quality fibre which will provide a basic raw material for the establishment of various industries requiring cellulose material such as textile, cordage, artificial silk, plastics and nitro-cellulose products. They can be converted into strong twines, canvas, "daries", coatings, shirtings and even linen cloth. The woody matter combined with short fibres left after fibre extraction, is capable of being converted into useful pulp for paper manufacture including parchment paper and cigarette paper. Such straw can also be used as raw material to manufacture straw boards of all grades and to manufacture cork and match sticks. Figure 1.2 gives an