

DISEASES OF SUNFLOWER AND THEIR ECONOMIC IMPORTANCE IN IRAN.

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Abstract

For many years sunflower was cultivated in Iran only for eating as nuts, and its cultivation as a source for oil started from 1971, when different selected varieties imported. By gradual increasing of its cultivation different diseases, on root, stem, leaves, flower, head and seeds of sunflower increased, and among them most destructive diseases were:

Downy mildew, white rot, Root and stem base rot, Damping off, Brown spot, sunflower rust, Fusarium wilt, Verticillium wilt, Powdery mildew, Black rot, Grey mold, Flower and head damages. Also some bacterial and virus diseases were observed, but with less importance, many researches were done to distinguish the mentioned diseases, in laboratory, greenhouse and experimental fields to control and reduce their damages, by chemicals and breeding resistant varieties.

Introduction

From 1965, when cultivation of sunflower started, within the years for different reasons the acreage of sunflower was changing. The amount of sunflower cultivation in Iran at the years, 1981-1982 in comparison with Asia and worldwide cultivation is indicated on table (1).

Sunflower cultivation in Iran- Asia - and worldwide in 1981 - 1982, in hectares		
	1981	1982
Iran *	24355	27250
Asia **	1178000	1852000
Worldwide**	11661000	13243000
*source: Iranian oil seeds culture & development		
**source: F A O, year book		

table(1)

The above amount of sunflower cultivation in Iran (table 1), at the time being secures about 5-7% of consumption in country, so for whole needs of country increasing of sunflower cultivation is unavoidable.

Between the prevailing diseases the most damaging and destructive diseases are: Downy mildew, Damping off, Head damages, Rust, Brown spot, Grey mold, which are mostly located in north and north-west of Iran. The normal losses of crop by diseases is about 10% each year, but in some years and suitable conditions the loss of crop only by downy mildew goes more than 50%.

Materials and Methods

To control the diseases of sunflower many efforts has been done, containing field tests and greenhouse and laboratory researches, in laboratory the methods used for isolation of fungi are:

- a) Culture method- the media used were, (CMA), (PDA), (MA), (CP), (WA), and so on.
- b) Isolation method- In this method the materials were sterilized with 0,1% mercuric chloride for 0.5-1 min, rinsed with distilled water, cut open and placed on media, for isolating of seed borne fungi the method of Blutter was used.
- c) Inoculation method- In suitable conditions for fungi each isolated fungus were inoculated on healthy plants in greenhouse, in three different ways, (injection- direct contact- and sporulation). The isolated fungi by the mentioned methods were distinguished and are listed on table (2).

Existing diseases of sunflower in Iran		
No	Scientific name	English name
1	<i>Plasmopara helianthi</i> NOVOT	downy mildew
2	<i>Sclerotinia sclerotiorum</i> (Lib.) de by	white rot
3	<i>Sclerotium bataticola</i>	root&stem base rot
4	<i>Phytophthora drechsleri</i> Tuck.	damping off
5	<i>Pythium aphanidermatum</i> (Edson) Fitzp.	damping off
6	<i>Rhizoctonia solani</i> Kuehn	damping off
7	<i>Verticillium</i> sp.	verticillium wilt
8	<i>Fusarium acuminatum</i> Ell et Ev.	fusarium wilt
9	<i>Fusarium solani</i> (Mart.) Sacc.	fusarium wilt
10	<i>Alternaria tenuis</i> .acut.	brown spot
11	<i>Puccinia helianthi</i> . Schw.	sunflower rust
12	<i>Leveillula compositarum</i> . Golov.	powdymildew

No	Scientific name	English name
13	<i>Phoma oleracea</i>	black rot
14	<i>Botrytis cinerea</i> Pers.	grey mold
15	<i>Aspergillus, Rhizopus, Mucor, Erwinia</i>	flower&head damages
16	<i>Macrophomina phaseoli</i> (Maub.) Ash.	
17	<i>Sclerotium roffsii</i> (Sacc.) Curzi.	

table(2)

In these researches , beside the fungi were distinguished ,areas in which any type of fungus was more active and prevailing also were indicated, and are shown on attaching map of Iran - map(a).

On the map(a), distribution of different fungi in certain provinces of Iran are indicated by the list numbers of fungi according table(2).

Results and discussion

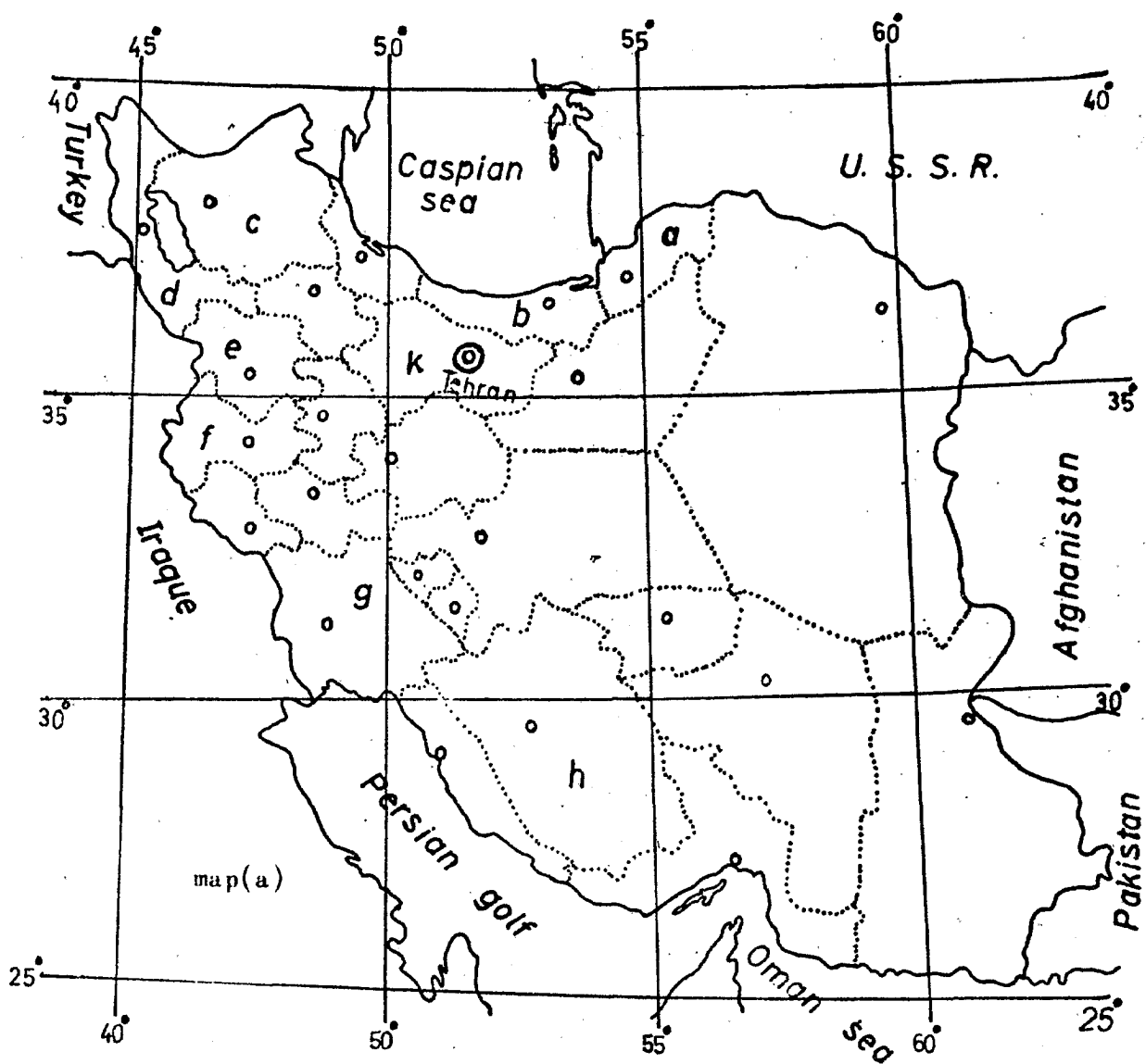
During the years of research ,in addition to distinguish the disease borne fungi, and their distribution on different provinces of country, different systemic chemicals were used for their control, but because at the time being chemical controls are not economic and enough successful, so, we think the best way to control the damages of some fungus diseases on sunflower are: to be careful to transfer seeds from infected areas, to have a good rotation using the best agrotechnical methods for cultivation, and above all is to prepare and use suitable resistant varieties, and to prepare resistant varieties many research works are carrying out now in Iran.

Acknowledgment

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Provinces:

a - Gorgan-

(1, 7, 10, 11, 15)

b - Mazandaran.

(1, 2, 3, 6, 8, 9, 10, 13, 14, 15)

c - Azarbaidjan, E.

(1, 2, 3, 8, 9, 10, 11, 12, 14, 15)

d - Azarbaidjan, W.

(1, 2, 3, 8, 9, 10, 11, 12, 15)

e - Kurdistan

(1, 2, 10, 14, 15)

f - Bakhtaran

(1, 10, 14, 15)

g - Khuzistan

(10)

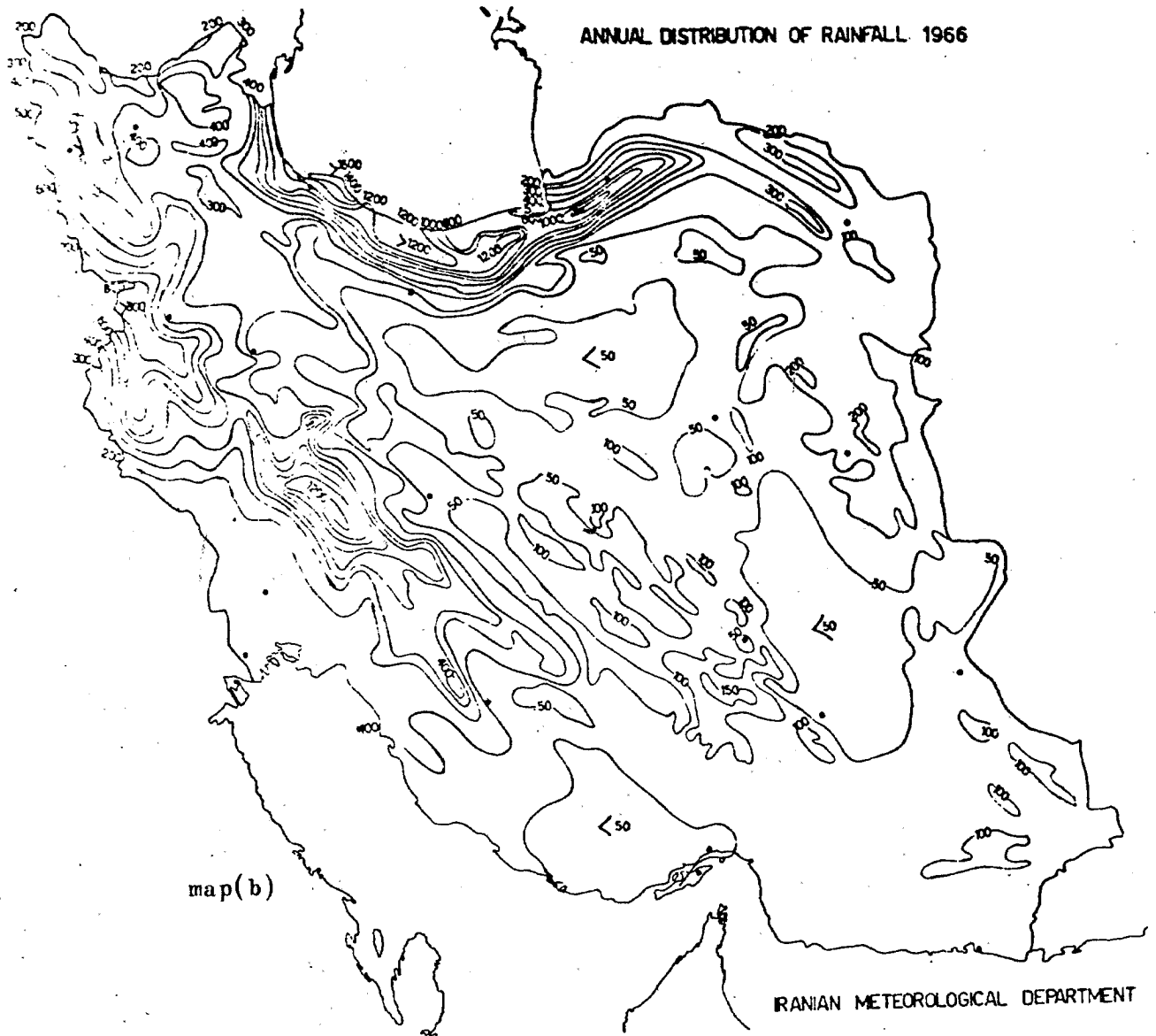
h - Fars

(4, 5, 10)

k - Tehran

(1, 4, 5, 9, 10, 12, 15)

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map (b)

IRANIAN METEOROLOGICAL DEPARTMENT