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Sanitary status and certification of citrus in Egypt

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SUMMARY - Most of the known virus and virus-like diseases of citrus have been detected so far in Egypt. The incidence of tristeza and stubborn seems to be very high in some areas. Although a certification programme is currently being run by the Egyptian Ministry of Agriculture and the GTZ organization, further certification and eradication measures need to be taken urgently for a rapid sanitary improvement of the citrus propagative material.

Key words: citrus, viruses, virus-like, certification, Egypt

RESUME *– La plupart des maladies à virus et de type viral connues chez les agrumes ont été détectées jusqu'à présent en Egypte. L'incidence de la tristeza et du stubborn semble être très élevée dans certaines régions. Bien qu'un programme de certification soit actuellement appliqué par le Ministère de l'Agriculture Egyptien en collaboration avec la GTZ, des mesures de certification et d'éradication supplémentaires doivent être adoptées le plus tôt possible afin d'assurer l'amélioration sanitaire du matériel de multiplication des agrumes.*

Mots-clés: *agrumes, virus, virus similaires, certification, Egypte.*

Introduction

The citrus industry is very important for the Egyptian agriculture and economy in general.

Table I shows the main citrus species grown in Egypt with their respective areas and productivity.

Table I - Cultivated areas with different citrus species in Egypt in relation to productivity (Ministry of Agriculture of Egypt, 1996).

Cultivated species	Cultivated areas (Feddan*)	Productivity (Ton/Feddan)	Total production (Tons)
Orange	235,646	7.6	1,555,024
Lemon	36,060	7.6	317,567
Mandarin	74,973	5.95	411,134
Grapefruit	413	5.72	1978

*Feddan = 4200 5/6 square meter = 0.4 hectare

Viruses and other graft-transmissible infectious agents are known to affect the citrus industry worldwide (Whiteside *et al.*, 1988). These pathogens have more devastating effects on the life span of citrus orchards as well as on the quality and quantity of yield.

In Egypt, many virus and virus-like diseases such as psorosis complex, infectious variegation, gummy bark, tristeza, cachexia-xyloporosis, exocortis, and concave gum threaten the citrus industry.

As can be seen from Table I, the productivity (ton/feddan) for all citrus species in Egypt is rather low comparing to other European citrus growing countries. Perhaps the main reasons for the low productivity and short life span of orchards are the spread out of graft-transmissible infectious agents as well as the use of sour orange (*Citrus aurantium* L.) as a rootstock for the majority of citrus trees in Egypt. This renders most of citrus trees vulnerable to infection by tristeza disease *per se*, in addition to the absence of sanitation and certification programs.

Most of citrus orchards in the Delta areas (old valley) are infected with psorosis A (scaly bark). Further, concave gum syndrome has quite often been seen in old trees. Stubborn has recently been located on different lemon species (unpublished) in addition to its old presence on sweet orange (*C sinensis* (L) Osbeck), grapefruit (*C. paradisi*), and mandarin (*C. reticulata*) in the old valley areas.

Citrus exocortis viroid is present profusely on mandarin, lime (C. *aurantifolia* Christm. Swing), sour orange, sweet orange, and shaddock (*C. grandis* L.), (Abdel-Salam *et al.*, 1997). Recently cachexia has been detected on mandarin.

Gummy bark disease of sweet orange was found to affect Baladi sweet orange trees grafted on sour orange rootstocks (Nour El-din, 1956). Later it was found to affect several other sweet orange varieties including Valencia, Navel, Succari, Khalili White, and Egyptian blood. More than 50 % of the examined trees exhibited symptoms of this disease (Childs *et al.*, 1956).

Stubborn disease of citrus caused by the prokaryote *Spiroplasma citri* was first reported from Egypt by Nour El-din (1967) who described the symptoms of the disease and suggested that the causal agent was graft-transmissible. Later it was isolated and cultured by Abu-Zeid *et al.*, (1988). Table II reports stubborn incidence in several governorates in the old valley.

Table II - Incidence of stubborn disease of citrus in Navel orange at different governorates according to visual symptoms

Location	**No. of trees** Surveyed	Diseases	**Disease incidence*** %
Alexandria	90	58	64.40
El-Behera	120	80	66.66
El-Qualubia	60	49	81.61
El-Sharkia	60	32	53.33

*Data were recited after Abu-Zeid *et al.* (1988).

Knorr (1961) found 41 tristeza-infected trees in two farms in the Giza district (Giza governorate) and the Barrage district (Qualubia governorate). These trees were promptly eradicated. Eid *et al.* (1984b) detected, though, 3 trees of sweet orange and a tree of mandarin infected with CTV in the orchard of the Horticultural Research Institute, ARC, Giza. These trees were grafted on the sour orange rootstock. Symptoms of the honeycombing type of pitting below the bud union were clear. In another publication, Eid *et al.* (1984a) described two other types of stem pitting on Navel sweet orange trees grafted on sour orange rootstocks in the farm of the General Organization of Agrarian Reforms in Anshas (Sharkia governorate). In the first type, pegs and pits were observed only on the sour orange rootstock. Whereas, in the second type the symptoms were extended to the Naval scion. Out of 270 trees examined, 33 trees were infected. Comparative studies between these two types of CTV and the third one, described in the Barrage district by Eid *et al.* (1984b), revealed differences in the disease severity on Navel orange. All examined isolates proved positive to CTV-Ab of the California strain No. 512 when tested with ELISA.

From the above, it appears that the need for certification programs for the eradication of citrus viruses and virus-like agents has become a must in Egypt.

Currently, there is a certification program for citrus diseases being run by the Egyptian Ministry of Agriculture and the GTZ organization. Further, the National Academy of Science is pushing forward a grant for the certification and indexing of citrus trees in order to select virus-free budwoods. Though it would take years to have these programs achieve their goals. Further, such programs should be accompanied with certain laws and necessitate the use of virus-free budwoods obtained from certified orchards.

References

- Abdel-Salam, A.M., Abdou, Y.A., Abou-Zeid, A.A. and Mohga A. Abou-Elfotouh (1997). Studies on citrus exocortis viroid (CEV) in Egypt. 1997. In *4 th meeting of the Mediterranean Network on Certification of Citrus (MNCC)*, Beirut, Lebanon, Dec 1-4 1997.
- Abu-Zeid, A.A., Kishtah, A.A. and Khalil, E.M. (1988). Isolation and culturing of *Spiroplasma citri* associated with stubborn disease of citrus in Egypt. *J. Phytopath.* 20 (2), pp. 139-140.
- Childs, J.F.L., Nour El-din, F. and El-Hosseiny, N. (1956). Observations on Egyptian citrus diseases. *Citrus Industry* 37 (10), pp. 11-16.
- Eid, S.A., Abu-Zeid, A.A. and El-Kady, M.A.S. (1984a). Tristeza virus isolates observed recently in Egypt. In *Proc. 6 th Cong. Un. Phytopath. Mediterr.*, Cairo, Egypt.
- Eid, S.A., Abu-Zeid, A.A., and Nour-El-din, F. (1984b). Report on a recently discovered location of citrus tristeza virus in Egypt. Agric. Res. Rev. 62 (2), pp. 287-392.
- Knorr, L.C. (1961). Virus diseases affecting citrus. Report to the Government of the United Arab Republic.
- Nour El-din, F. (1956). Phloem discoloration of sweet orange. *Phytopath.* 46, pp. 238-239.
- Nour-ElDin, F. (1967). A tumor-enduing agent associated with citrus trees infected with safargali (stubborn) disease in UAR. *Phytopath.* 57, pp. 108-113.
- Whiteside, J.O. Garnsey, S.M. and Timmer, L.W. (1988). *Compendium of citrus diseases.* APS Press, USA, 80 pp.