



## Italian National Network of phytosanitary laboratories against pest mites: tool for biosecurity of ‘farm to fork’ agricultural and forest products\*

FRANCESCO FAGGIOLI<sup>1,2</sup>, SAURO SIMONI<sup>1,2</sup>, DONATELLA GOGGIOLI<sup>1</sup>, SILVIA GUIDI<sup>1</sup>, FRANCA TARCHI<sup>1</sup>, ELENA GAGNARLI<sup>1</sup>, FRANCESCO TURILLAZZI<sup>1</sup> & PIO FEDERICO ROVERSI<sup>1,2</sup>

<sup>1</sup>Research centre for Plant Protection and Certification, Council for Agricultural Research and Economics, Firenze, Italy

[francesco.faggioli@crea.gov.it](mailto:francesco.faggioli@crea.gov.it)

<sup>2</sup>National Institute for Plant Protection, c/o CREA DC, Roma, Italy

\*In: Zhang, Z.-Q., Fan, Q.-H., Heath, A.C.G. & Minor, M.A. (Eds) (2022) *Acarological Frontiers: Proceedings of the XVI International Congress of Acarology (1–5 Dec. 2022, Auckland, New Zealand)*. Magnolia Press, Auckland, 328 pp.

The incidence and impact of transboundary pests are exacerbating by climate change and globalization, leading to high turnover of emergence or re-emergence of new threats. Recent years and globally, they are more and more recognized as increasing and significant threats to sustainable food production and environmental protection. In order to minimize the damage, it is necessary to ensure coordinated and timely diagnostic and surveillance systems. FAO estimates that annually up to 40 percent of global crop production is lost to pests. Each year, plant diseases cost the global economy over \$220 billion, and invasive insects and mites at least \$70 billion. Intuitively, these figures are underestimated due to lackness and/or inhomogeneity in surveillance-check-measures and statistics’ datasets. In particular, significant damage has been caused globally by transboundary pests against the background of climate change and globalized movement of people and goods. The extension of overwintering areas of pests toward both northern and southern latitudes is observed, due to ongoing global warming. A significant portion of this amount is ascribable to mites: they primarily and directly can damage field crop, stored products/foods, but also can be vectors of pathogens, or impact noticeably human healthy. Moreover, several species of mites are regulated as quarantine pest (QP): for example, *Oligonychus perditus* and *Eotetranychus lewisi* are quarantine mites for the EU, Asia and North Africa, as they are very harmful respectively on juniper and ornamental plants; *Tetranychus kanzawai* is a quarantine priority pest in New Zealand due to its danger to fruit plants. Once mite pests are established, their eradication is often difficult and requires a significant effort to control: strategies in mite infestations and scarcity of tempestive diagnostic tools make difficult to detect them, particularly in early and critically infesting stages, so that efficiency in control is hampered by difficulty in detection and can only be overcome using reliable, validated and accredited diagnostic techniques. Possibilities to prevent mite damaging is deeply related to timely collect information on pest occurrence, spread or outbreaks and to prevent introduction of pests by phytosanitary measures.

In the context of Italy the role of the National Institute for Plant Protection (CREA-DC) - targeting on insects, mites, nematodes, fungi, bacteria, virus - is very important as coordinating/guaranteeing the harmonization of the diagnostic protocols used and supervising over all the laboratories of the network. To assemble different expertise can favour the chance to approach situations where, as an example, diseases are vectored by insects or mites. With this contribution, we aim was to illustrate the reorganization of the national network of phytosanitary laboratories in Italy and its connection with the European network. Specifically, all laboratories that carry out official controls for mites must be ISO 17025 accredited, take part in proficiency tests (PT), use diagnostic tests that are validated according to the EPPO PM 7/98 (5) standard and use certificate biological reference material. Thus, this national network makes possible to ensure adequate protection against the introduction of dangerous mites and strict control of exported vegetal material to minimize the spread of transboundary plant mites (pests).

The activity was supported by the Italian Ministry of Agriculture Project “SALVAOLIVI”.

**Keywords:** Plant pests, mites, diagnosis, national laboratories network, validated tests