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August 02, 2020

Re: **MICROBIOLOGICAL TEST OF SEEDS**

Official sample No.46881-2020/2
Certificate import no. 99030-2020

Sample Details:

Sample:	Pepper seeds Capsicum Annum	Lab ID:	4782
Variety:	TIRZA	Seeds origin:	PERU
Lot No.	2045795	Name of official Sampler:	Irena Nazarov
Weight of sample:	120gr	Seed owner:	Efal Chemicals
Weight of shipment:	-g	Date sampled: 22.07.2020	Date Received: 22.07.2020

Tested for:	Results:
<i>Pseudomonas corrugata</i> - 2 replicates of 5000 seeds each	Negative
<i>Clavibacter michiganensis subsp. michiganensis</i> - 2 replicates of 5000 seeds each	Negative
<i>Erwinia carotovora</i> - 2 replicates of 5000 seeds each	Negative
<i>Xanthomonas vesicatoria</i> - 2 replicates of 5000 seeds each	Negative
Tobamoviruses (TMV ToMV, PMMoV, ToBRFV) - 12 replicates of 250 seeds each, by bioassay method.	Negative
Tomato black ring nepovirus - 1 replicate of 250 seeds	Negative
Tomato ringspot nepovirus -1 replicate of 250 seeds	Negative
Pospiviroids (CEVd, CLVd, MPVd, PCFVd, PSTVd, TASVd, TCDVd and TPMVd) -6 replicates of 500 seeds each, by the PCR method.	Negative
<i>Phytophthora capsici</i> - 400 seeds	Negative

Tested for:	Results:		
	CSP	CT28	Menzel
Tomato Brown Rugose Fruit Virus (ToBRFV) - 12 replicates of 250 seeds each then unifying each 4 replicates to make 3 final replicates, by the PCR method.	Ct ₁ =33.10 Ct ₂ =29.20 Ct ₃ =27.80	Ct ₁ =35.90 Ct ₂ =36.50 Ct ₃ =36.80	Ct ₁ =34.10 Ct ₂ =31.50 Ct ₃ =30.40
Negative control	Ct=37.90	Ct=N/A	Ct=38.30
Positive control	Ct=29.50	Ct=30.10	Ct=29.90

Lab ID 4782:

The tests were performed according to:

S.O.P 54: "Testing Tomato and Pepper seeds for Pt, Pc, Xv, Cmm, Er".

S.O.P 56: "Detection of infectious Tobamoviruses in tomato and pepper plants and seeds"
(Tomato: TMV ToMV, ToBRFV) (Pepper: TMV ToMV, PMMoV, ToBRFV)

S.O.P 80: "Detection of Viroid from the Pospiviroid group including Potato Spindle Tuber Viroid (PSTVd) in plants and seeds by RT-PCR or qPCR method".

"REFERENCE PROTOCOL NAKTUINBOUW:Real-time RT-PCR (RT TaqMan PCR) for pospiviroids (CEVd, CLVd, MPVd, PCFVd, PSTVd, TASVd, TCDVd and TPMVd) on seeds of tomato (*Solanum lycopersicum*)" by Naktuinbouw, 2014

S.O.P 83: "Detection of Fungi in seeds for: *Pythium spp.*, *Phytophthora spp.*, *Fusarium spp.*, *Rhizoctonia spp.*, *Verticillium spp.*, *Lasiodiplodia spp.*, *Cylindrocladium spp.*, *Myrothecium spp.*, *Didymella spp.*, *Phoma spp.*, *Colletotrichum spp.*, *Alternaria spp.*, *Stemphylium* spp.*, *Pestalotia spp.*, *Rhizopus spp.*, *Penicillium spp.*, *Aspergillus spp.*, *Diplodia spp.*, *Helminthosporium spp.*, *Drechslera spp.*, *Bipolaris spp.*, *Septoria spp.*, *Cladosporium *spp.*, *Macrophomina sp.*, *Phacidiopycnis spp.*, *Neofabraea spp.*, *Urocystis cepulae*, *Sclerotium cepivorum*, *Sclerotinia spp.*, *Botryosphaeria spp.*, *Botrytis spp.*, *Ascochyta spp.*"

S.O.P 103: "Detection of viruses in Solanacea seeds".

S.O.P 126: "Detection of bacteria, viruses, viroids by the RT-PCR or qPCR method".

Comments:

1. Transportation: The sample was received in the laboratory without any means of protection from temperature changes.
2. Treatment: Untreated seeds.
3. ISRAC is not responsible for the testing results conducted by the laboratory and the laboratory's accreditation is not considered as an approval of ISRAC or different party related to the assessed.
4. This document must be referred to entirely and copying of any part of it to other documents is forbidden
5. The test performed is under accreditation to ISO/IEC 17025 standard.
6. The data in this certificate reflect results that are valid for analyzed samples only as received in the lab.

Final results are the PPIS representative responsibility.

End of certificate.

Sincerely yours,

Isaac Assouline,
Head, Microlab Laboratories (99) LTD.