Phytosanitary regulations affecting *ex situ* seed collections

Case study CGN pepper and tomato collection

24-02-2021, Willem van Dooijeweert





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CGN



Medium size genebank

- Wageningen University and Research, The Netherlands
- 12 staff
- 23000 accessions
- 30 crops
- 50% agricultural crops, 50% horticultural crops
- Focus on vegetables
- Distribution around 5000 accessions/year





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Outline presentation

General phyto sanitary policy CGN

New EU plant health regulation

ToBRFV tomato and pepper





Why a Phyto sanitary policy at CGN?



CGN sends average 5000 accessions every year
 want to provide users with healthy seeds
 no spreading of diseases

Obligatory for some crops/diseases





Working mode for healthy seed production at CGN



Phyto sanitary policy at CGN for all crops

- Crops regenerated at CGN are visually checked by Dutch Plant Health authorities
 - Several times during growing season
 - Focus on seed born diseases
 - When seed born disease is found
 - Continuation in consultation with authorities



- Remove all
- Remove part and monitor
 - Rest is considered clean

Infected plants/accessions checked when disease unclear



Additional checks Q diseases at CGN

Potato: plants tested at Plant Health Service

- PCR (pospiviroid)
- test plants (5 viruses)

tomato, pepper: leaves sent to Plant Health Service
 ELISA (Pepino Mosaic Virus)
 PCR (pospiviroids)

Onion: Seeds sent to Plant Health Service
 counting nematodes (*Ditylenchus dipsaci*)



At companies

Companies are asked to monitor the crop

- We assume they have expertise
- Provide documents of tests or plant passport



Visit regeneration trials by CGN staff gives more information



Documentation

Results stored in CGN database "GENIS" Extract data for issuing Plant Passport or Certificate

Q-Test info														
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3807	23973 040501	37	58244	1 Base	2004			PD 2004	CGN 2004_37	CGN 2004_37	PD 2004			1
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3692	18430 922005	37	52687	1 Base	1995			PD 1995_37	CPRO 1995_37	CPRO 1995_37	PD 1995_37			
959	15414 922006	37	49651	0 Base	1985			IVT 1985_37	IVT 1985_37	IVT 1985_37				
1079	14496 922007	37	463839	1 Base	2011			IVT 1982_37	IVT 1982_37	IVT 1982_37				
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WE THINK WE HAVE A GOOD SYSTEM IN PLACE TO PROVIDE USERS WITH HEALTHY SEEDS

Invested lot of money for visual checks and for testing

Adapted documention system for registration

BUT

Regulations are changing over time



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New EU Plant Health Regulation		
(14-12-2019) for exchange within EU		279
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officiële controles)

name artikel 43, lid

(Voor de EER relevante tekst)

HET EUROPEES PARLEMENT EN DE RAAD VAN DE EUROPESE UNIE.

Outside EU, each country has its own phyto legislation Hd 4, ender b).

n inzake diergezondheid, dierenwelzijn, plantgezondheid en gewasbeschermingsmide ziging van de Verordeningen (EG) nr. 999/2001, (EG) nr. 396/2005, (EG) nr. 1069/2009, (EG) : 1151/2012, (EU) nr. 652/2014, (EU) 2016/429 en (EU) 2016/2031 van het Europees Parlement ningen (EG) nr. 1/2005 en (EG) nr. 1099/2009 van de Raad en de Richtlijnen 98/58/EG, 1999/74/ /119/EG en 2008/120/EG van de Raad, en tot intrekking van de Verordeningen (EG) nr. 854/2004

EU) 2016/2031 van het Europees Parlement en de Raad van 26 oktober 2016 betreffen elen tegen plaagorganismen bij planten, tot wijziging van de Verordeningen (EU) nr. 228/2013, (EU) nr. 1143/2014 van het Europees Parlement en de Raad en tot intrekking van de Richtlijnen EG, 93/85/EEG, 98/57/EG, 2000/29/EG, 2006/91/EG en 2007/33/EG van de Raad (ⁱ), en met

Gezien het voorstel van de Europese Commissie,

Offi	cial Journal	L 137
of the	European Union	
English edition	Legislation	Volume 62 23 May 2019

How do we keep up with continuous changing rules as a small gene bank with limited staff?



Different statuses affecting CGN crops

crops without regulation
 E.g. cucumber, eggplant, lettuce, spinach

Quarantine pests (Q)

- In potato, apple, wheat, mais
- New pest in tomato, pepper: ToBRFV



Regulated Non Quarantaine Pests (RNQP)

- Some pests went from Q to RNQP
 - Lot of money spent and now not necessary anymore



Exemption for small quantities

Used for research, education, testing, selection, breeding and exhibitions:



- can be sent without testing and plant passport
- Q:

• RNQP:

- also small quantities must be tested and send with plant passport!
 - Material could be sent to PEQ facility
 - Needs permit of Pl. Health service
 - Some crops have exemption for plant passport (mais, wheat)



Specific conditions of genebanks

Material stored for long time

- Not desirable to regenerate often to maintain integrity
- Material stored for long time <u>cannot</u> be infected by new emerging diseases

Material only available in small quantities

• Seeds needed for disease tests often not available

Regulation made for large commercial companies

• Departments with phyto sanitary and legal experts



Eu policy regarding ToBRFV

Disease probably emerged in 2014 in Israël

identified in April 2015 in Jordan, did not exist before

Material regenerated before 15 augustus 2020

PCR seed test needed

Material grown after 15 augustus 2020

- leaves of mother plants PCR test
- sample of regenerated seeds with PCR test

Seeds can be bulked for testing (1000 seeds)



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IMPLICATIONS FOR CGN PEPPER AND TOMATO COLLECTION







CGN pepper and tomato collection locked since March 2020

Number of accessions not available

• Pepper	- 1154
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• Tomato – 1337

Notification on CGN request page material is only available after testing

Missed requests per year because of ToBRFV

- Tomato: 450 accessions
- Pepper: 500 accessions



Options

Keep collections locked until clear/adapted policy

Test all material (funding)

- Not enough seeds
- Regeneration: loss of genetic variation

Test only material requested by users which have to pay

- Long time before seeds can be sent
- Only rich companies can pay fee



Testing all accessions

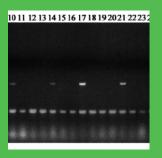
Labour

- Prepare seed samples of 2500 accessions
- Cannot be spent on other tasks



Costs

• PCR tests to be paid to agency > € 100000







EU phyto regulations for commercial seed exchange

Interpretation of rules difficult for genebanks because of limited staff

Genebanks deal with small quantities of seeds

- Not enough seeds for testing
- Regeneration



Summary

Genebanks often have old seed stocks
 Not possible to be infected by new pests
 No spreading of pests by distribution

CGN cannot adapt to quick changing regulations

- Locked collections
 - Not executing tasks to provide seeds for research and breeding

Money spent on disease tests

- Can become irrelevant
- More budget needed when new Q disease emerges

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Proposed changes

EU use common sense:

- Make exemption for small old seed lots in storage which cannot be infected by new pests
 - E.g. 5 years before occurence of new pest

Consider research institutes and breeding companies as end-users



Conclusions

- Drowning in regulations which can change over time
- Genebanks need workable exemptions to continue seed distribution for research and breeding



