

A magnifying glass with a black handle and a silver frame is positioned over a large, bright orange carrot. The background is a solid orange color with a row of pink dots along the top edge.

■ BASF
We create chemistry

nunhems[®]

Overview carrot diseases

Short description of the most important field and/or storage diseases

Contents

1	<i>Alternaria dauci</i>	13	<i>Botrytis cinerea</i>
2	<i>Cercospora carotae</i>	14	<i>Rhexocercosporidium carotae</i>
3	<i>Erysiphe heraclei</i>	15	<i>Mycocentrospora acerina</i>
4	<i>Xanthomonas hortorum</i> pv. <i>carotae</i>	16	<i>Alternaria radicina</i>
5	<i>Streptomyces scabies</i>	17	<i>Chalara elegans</i> / <i>Chalaropsis thielavioidis</i>
6	<i>Pectobacterium carotovorum</i> subsp. <i>carotovorum</i> (syn. <i>Erwinia carotovora</i>)	18	<i>Agriotis</i> spp.
7	<i>Pythium</i> spp.	19	<i>Psila rosae</i>
8	<i>Rhizoctonia solani</i>	20	Aster Yellows Phytoplasma
9	<i>Phytophthora</i> spp.	21	Carrot Red Leaf Virus
10	<i>Helicobasidium purpureum</i>	22	<i>Meloidogyne chitwoodi</i>
11	<i>Fusarium</i> spp.	23	<i>Meloidogyne hapla</i>
12	<i>Sclerotinia sclerotiorum</i>	24	<i>Meloidogyne incognita/javanica</i>
		25	Forking





Alternaria dauci

English: **Alternaria leaf blight**

Dutch: **Alternaria**

French: **Alternariose**

German: **Alternaria**

- Foliar disease; leaf blight
- Moderate climate and wet conditions; persistent rains
- Especially during summer season or late in crop cycle



Cercospora carotae

English: **Cercospora leaf spot**

Dutch: **Cercospora**

French: **Cercosporiose**

German: **Cercospora**

- Foliar disease; leaf spot
- Warm and humid conditions
- On young leaves during spring and early summer
- Pronounced chlorotic halos in sunlight





Erysiphe heraclei

English: **Powdery Mildew**

Dutch: **Echte Meeldauw**

French: **Oïdium**

German: **Echter Mehltau**

- Foliar disease
- High humidity is needed for initial infection
- Warm conditions are needed for further development of symptoms of powdery mildew
- White powdery leaf surface; older leaves



Xanthomonas hortorum pv. carotae

English: **Bacterial Leaf Blight**
Dutch: **Xanthomonas bacterievlekkenziekte**
French: **Proteobactérie Xanthomonas**
German: **Xanthomonas Blattwelke**

- Foliar disease
- Warm and humid conditions
- Rain dispersal
- Similar symptoms as *Alternaria dauci*, firey chlorotic margins





Streptomyces scabies

English: **Scab**
Dutch: **Schurft**
French: **Gale commune**
German: **Schorf**

- Bacterial disease of carrot
- Soil borne disease
- In dry and warm conditions
- Especially in soils with pH of 5.5 - 7.5



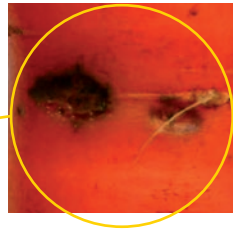
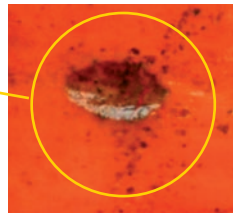
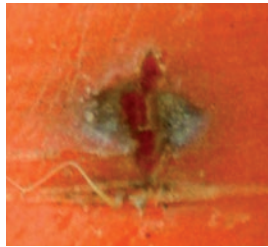
Pectobacterium carotovorum subsp. carotovorum

(syn. *Erwinia carotovora*)

English: **Soft rot**
Dutch: **Erwinia natrot**
French: **Bactérie du genre Erwinia**
German: **Erwinia Nassfäule**

- Bacterial disease
- Soil borne & storage disease
- Favored by anaerobic conditions & damage at harvest
- Especially with hot and wet conditions, be careful with irrigation during high temperatures!





Pythium spp.

English: **Cavity spot**

Dutch: **Cavity spot**

French: **La maladie de la tache/**

Cavity spot

German: **Wasserfleckenkrankheit**

- Pythium spp. (*P.violae*, *P.sulcatum*, *P.coloratum*; etc)
- Field and storage disease
- Especially at bad soil structure and long wet periods

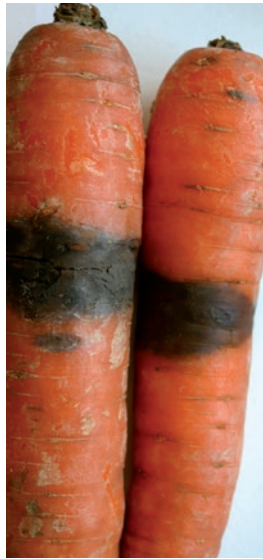


Rhizoctonia solani

English: **Crown rot of carrot**
Dutch: **Rhizoctonia wortelrot**
French: **Rhizoctone brun**
German: **Kraterfäule**

- Field and storage disease
- Black irregular sunken lesions; mainly on lenticels
- Forms extensive mycelium in storage





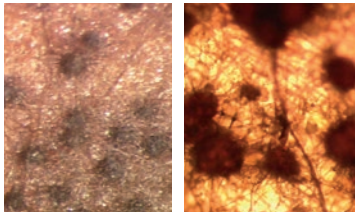
Phytophthora spp.

English: **Phytophthora root rot**
Dutch: **Ringrot**
French: **La maladie de la bague**
German: **Ringfäule**

- Various Phytophthora species
- Field and storage disease
- Easily spread by water
- Especially at bad soil structure and long wet periods



Close up: infection spots

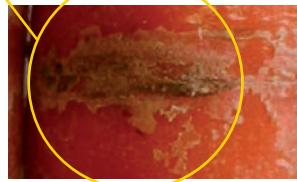


Helicobasidium purpureum

English: **Violet root rot**
Dutch: **Violet wortel rot**
French: **Le rhizoctone violet**
German: **Violetter Wurzeltöter**

- Field disease
- Slow disease development
- Crop rotation is effective





Fusarium spp.

English: **Fusarium dry rot**

Dutch: **Fusarium**

French: **Fusariose**

German: **Fusarium**

- Fusarium spp. (F.solani, F.avenaceum; etc)
- Field and storage disease
- Primary and secondary disease
- Provoked by plant stress and extensive soil wetness



Sclerotinia sclerotiorum

English: **Cottony rot**
Dutch: **Rattenkeutelziekte**
French: **Pourriture blanche/
Sclérotinose**
German: **Weißfäule/Pelzfäule**

- Field and storage disease
- Humid conditions, dense canopy and dead leaves provoke sclerotinia development
- Avoid damage or wounding of harvested roots
- Forms white fungal mat with black sclerotia





Botrytis cinerea

English: **Gray Mold**
Dutch: **Grauwe schimmel**
French: **Botrytis**
German: **Grauschimmel**

- Storage disease
- Forms black, irregularly shaped sclerotia
- Affected tissue has velvety grey appearance



Rhexocercosporidium carotae

English: **Acrothecium rot**

Dutch: **Acrothecium**

French: -

German: -

- Storage disease
- Develops at low temperatures during storage (from -3°C and up)
- Brown lesions with dark edge

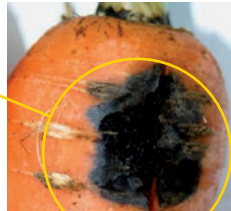




Mycocentrospora acerina

English: **Licorice rot**
Dutch: **Mycocentrospora**
French: **La tache noire de racine**
German: **Schwarze Flecken**

- Storage disease
- Early symptoms similar to *Pythium* spp. and *Rhexocercosporidium carotae*
- Provoked by damaging during harvest
- Develops under cool room conditions



Alternaria radicina

English: **Black rot**

Dutch: -

French: -

German: **Wurzel Alternaria**

- Field and storage disease
- Temperate, humid conditions
- Irregular black spots
- Foliar disease of minor importance





Chalara elegans/ Chalaropsis thielavioidis (refer to Index)

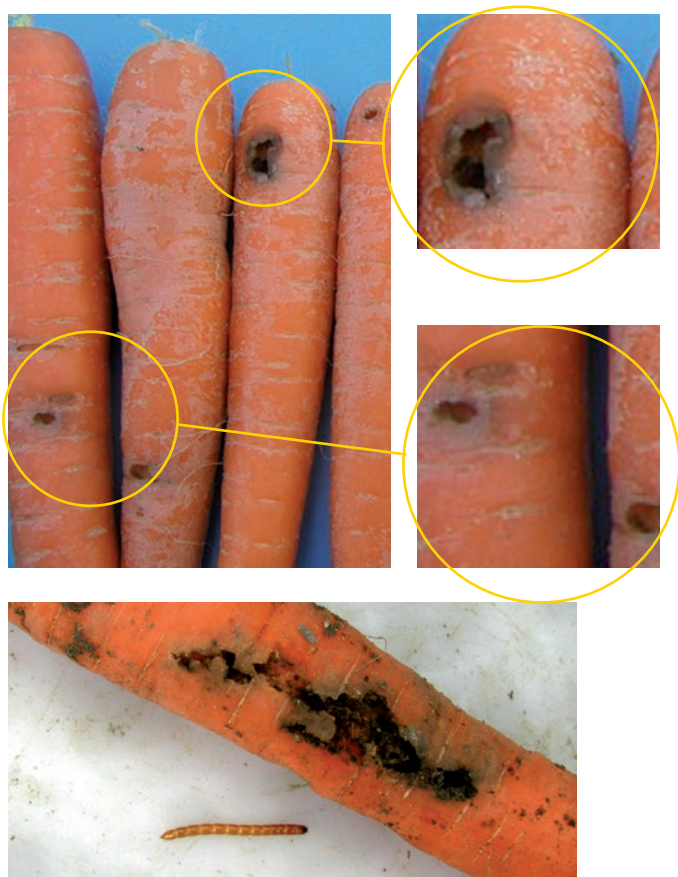
English: **Chalara rot / Black root rot**

Dutch: **Supermarktschimmel**

French: -

German: -

- Not visible in field or during storage
- Disease develops after carrot washing when stored above 6°C



Agriotes spp.

English: **Wireworm**
Dutch: **Ritnaalden**
French: **Taupins**
German: **Drahtwurm**

- Various Agriotes species
- Field pest
- Larvae of click beetles are the damaging stage
- Larvae survive in soil for several years





Picture courtesy: "De Groene Vlieg"



Psila rosae

English: **Carrot fly**
Dutch: **Wortelvlieg**
French: **Mouche de la carotte**
German: **Möhrenfliege**

- Field pest
- Temperate growing regions
- Two to three generations per season
- Monitoring by sticky trap system



Aster Yellows Phytoplasma

English: **Aster Yellows Phytoplasma**

Dutch: -

French: **Jaunisse de l'Aster**

German: -

- Witches broom; adventitious secondary roots
- Systemic phytoplasma; symptoms on foliage and root
- Transmitted by leafhoppers
- Wide plant host range





Carrot Red Leaf Virus

English: **Carrot Red Leaf Virus (CRLV)**

Dutch: **Roodbladigheidsvirus**

French: **Virus de la carotte rouge
des feuilles**

German: **Rotblattvirus**

- Foliar disease
- Often present together with Carrot Mottle Virus, resulting into “Carrot Motley Dwarf”
- Transmitted by the willow-carrot aphid (*Cavariella aegopodii*)



Meloidogyne chitwoodi

English: **Columbia Root-Knot nematode**

Dutch: **Maiswortelknobbelaaltje**

French: **Nématode à galle des racines**

German: **Maiswurzelgallennematode**

- Soil borne root problem
- Temperate growing regions
- Root galling near the lenticells
- Mainly in sandy soils





Meloidogyne hapla

English: **Northern Root-Knot nematode**

Dutch: **Noordelijk Wortelknobbelaaltje**

French: **Nématode à galle des racines**

German: **Nördlicher Wurzelgallennematode**

- Soil borne root problem
- Temperate growing regions
- Tap root forking and stunting and typical spin like galls on the side roots
- Mainly in sandy soils, wide host range



Meloidogyne incognita/javanica

English: **Southern Root-Knot nematode**
Dutch: **Zuidelijk Wortelknobbelaaltje**
French: **Nématode à galle des racines**
German: **Südlicher Wurzelgallennematode**

- Soil borne root problem
- (Sub) tropical growing regions
- Galling, knobby roots
- Both species have indistinguishable symptoms
- Mainly in sandy soils, wide host range





Forking

English: **Forking**

Dutch: **Vertakking**

French: **Racines fourchues**

German: **Beinigkeit**

- Field problem
- Biotic causes: *Pythium sulcatum*, several other soil borne fungi, nematodes, etc.
- Abiotic causes: poor soil structure or obstructions (rocks, compaction), wind, herbicides, etc.



□ - BASF
We create chemistry

Nunhems Netherlands BV

P.O. Box 4005 | 6080 AA Haelen | The Netherlands

Tel. +31 (0)475-599222 | Fax +31 (0)475-595104

E-mail: nunhems.customerservice.nl@vegetableseeds.basf.com

www.nunhems.com

Advice for cultivation practice

Information provided by Nunhems Netherlands BV in any form whatsoever is without guarantee. Descriptions, recommendations, and illustrations in brochures and leaflets and on the website are based as closely as possible on experiences in tests and in practice. However, Nunhems Netherlands BV does not accept any liability whatsoever on the basis of such information for different results in the cultivated product. The buyer itself must determine whether the goods and information are suitable for the intended growth and/or can be used in the local conditions.

Product illustrations

All varieties shown were grown under favorable conditions. Identical results are not guaranteed nor implied for all growing conditions.

© Nunhems BV, 2019. All rights, including property rights, are reserved by Nunhems BV or its affiliates on any matter presented or depicted herein.