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| --- |
| Logo AGES |
| Potato cyst nematodes |
|  |  |
| 14.03.2025 18:28 Uhr |

**Potato
cyst
nematodes**

**Globodera
rostochiensis,
G.
pallida**

Last
change:
23.10.2024

**Profile**

Potato
cyst
nematodes
are
the
most
economically
important
animal
pests
of
potatoes.
Infestation
with
potato
cyst
nematodes
results
in
poor
growth
and
stunted
plants.
*Globodera
rostochiensis*
and
*Globodera
pallida*
are
listed
as
[Union
quarantine
pests](https://www.pflanzenschutzdienst.at/geregelte-schaedlinge/)
and
are
thus
subject
to
legal
regulations
to
prevent
their
introduction
and
spread
into
or
within
the
member
states
of
the
EU.

**Appearance**

Potato
cyst
nematodes
are
microscopic
nematodes
that
live
in
the
soil
and
parasitize
the
roots.
The
larvae
of
the
second
larval
stage
are
colorless
and
transparent
and
about
0.5
mm
long.
They
possess
a
strong
oral
spine.
Cysts
average
0.5
to
0.8
mm
in
size
and
are
round.
Immature
cysts
are
white/yellowish
while
mature
cysts
are
brown
in
color.



Eier
und
Larven
der
Kartoffelzystennematoden



Zysten
der
Kartoffelzystennematoden

**Biology**

Potato
cyst
nematodes
are
two
species
of
nematodes
(Nematoda)
from
the
family
Heteroderidae:
yellow
potato
cyst
nematode*(Globodera
rostochiensis*)
and
white
potato
cyst
nematode*(Globodera
pallida*).
Each
species
in
turn
produces
different
pathotypes
or
virulence
groups.

The
developmental
cycle
of
potato
cyst
nematodes
occurs
through
the
egg
stage,
the
worm-like
larval
stages
(L1-L4),
to
the
sexually
mature
animals
in
about
eight
weeks.

The
larvae
survive
protected
in
cysts
in
the
soil.
Only
when
they
are
attracted
by
certain
substances
in
the
root
exudates
of
the
potato
root
do
they
leave
(2nd
larval
stage)
the
cyst
or
hatch
(from
about
March).
Then
they
penetrate
the
root
and
affect
root
growth
by
their
sucking
activity.
Through
several
molts,
they
develop
into
females
and
males
through
the
third
and
fourth
larval
stages.
The
females
swell
into
spherical
structures
and
burst
out
of
the
root
tissue
with
their
posterior
body
section.
The
motile,
worm-like
males
migrate
out
of
the
root
and
fertilize
the
females.
The
eggs
produced
by
the
females
(up
to
300
or
more)
remain
inside
the
body,
after
which
the
female
dies.
The
outer
skin
transforms
into
a
solid
brown
shell
(cyst)
and
falls
off
the
root.
These
cysts
survive
viable
in
the
soil
for
years
(up
to
20
years).
There
is
one
generation
per
year.

**Damage
symptoms**



Zysten
an
den
Wurzeln

A
first
symptom
of
a
more
severe
nematode
infestation
is
poor
emergence
of
the
potatoes.
Infested
plants
are
retarded
in
growth,
yellowing
and
stunting.
The
damage
usually
occurs
in
nests
in
the
field
or
in
the
direction
of
cultivation.

In
cases
of
minor
or
late
infestation,
above-ground
symptoms
are
often
not
pronounced.
About
ten
weeks
after
potatoes
are
laid,
very
small,
spherical
cysts
on
the
roots
may
be
visible
to
the
naked
eye.

**Host
plants**

Potatoes*(Solanum
tuberosum*)
are
the
most
important
host
plants
of
potato
cyst
nematodes.
However,
tomatoes,
eggplant
and
other
members
of
the
Solanum
genus
from
the
Solanaceae
family
can
also
be
used
as
hosts.

**Distribution**

The
potato
cyst
nematodes
originated
in
South
America
and
probably
reached
Europe
with
potatoes
in
the
mid-19th
century.
From
Europe,
they
spread
to
other
areas
with
the
seed
potatoes.
Today,
there
is
a
worldwide
distribution,
from
the
temperate
climate
zone
to
sea
level
and
in
the
tropics
in
the
higher
regions,
practically
everywhere
where
potatoes
are
grown.

**Propagation
and
transmission**

*Globodera
rostochiensis*
and
*G.
pallida*
are
spread
by
passive
transport.
Soil
from
contaminated
fields
containing
cysts
or
infested
potatoes
and
soil
adhering
to
processing
equipment
(e.g.,
on
farm
machinery)
contribute
to
spread.
Consideration
should
also
be
given
to
the
transport
of
cysts
by
wind
and
water
from
unremediated
areas,
as
well
as
spread
by
common
harvesting
machinery,
etc.

**Economic
importance**

Potato
cyst
nematodes
are
widespread
worldwide
and
can
cause
yield
losses
of
30%-80%.

**Prevention
and
control**

Potato
cyst
nematodes
are
difficult
to
control
due
to
their
resistant
cysts.
Remediation
of
infested
areas
is
only
possible
in
the
long
term.
Successful
sanitation
requires
collaborative
action
and
measures
in
the
affected
growing
areas.

**Preventive
measures**

* Use
only
officially
approved
planting
material
that
has
been
checked
for
freedom
from
infestation
by
nematodes
in
accordance
with
phytosanitary
regulations.
* Timely
detection
of
infestation
by
soil
testing
for
potato
cyst
nematodes
one
year
before
planned
cultivation
(mandatory
for
seed
potato
cultivation).
* Farm
hygiene:
in
case
of
nematode
infestation
on
the
farm,
cleaning
of
cultivation
equipment,
footwear
and
vehicles
is
of
great
importance
to
prevent
spreading
of
the
cysts
with
soil
to
further
areas.
Waste
soil
from
sorting
should
never
be
spread
on
arable
land
or
on
the
manure
heap
(risk
of
nematode
spread
with
manure
spreading).
* Crop
rotation:
Potato
cyst
nematodes
are
typical
crop
rotation
pests,
therefore
a
wide
crop
rotation
reduces
the
risk
of
infestation
or
the
infestation
density
of
the
nematodes
(e.g.
potatoes
at
most
every
four
years
on
the
same
area).
The
most
effective
control
is
consistent
suspension
of
potato
cultivation
for
a
period
of
15
-
20
years.
* Weed
control:
potatoes
growing
through
the
soil
provide
ideal
propagation
opportunities
for
potato
cyst
nematodes;
after
harvest,
potatoes
left
lying
on
the
ground
should
be
removed
or
brought
to
the
surface
to
freeze
out.
* Weed
control:
various
wild
plants
of
the
nightshade
family
contribute
as
host
plants
to
further
propagation
of
potato
cyst
nematodes.

**Cultivation
of
nematode-resistant
potato
varieties**

* Selective
cultivation
of
nematode-resistant
potato
varieties
prevents
severe
infestation
increase
and
nematode
density
can
be
reduced
up
to
88%
after
one
year
of
cultivation
and
up
to
99%
after
three
years
of
cultivation.
* Nematode-infested
areas
can
be
rehabilitated
in
the
long
term
with
the
cultivation
of
nematode-resistant
varieties
in
consumer
crops.
* According
to
the
EU
Directive
and
the
regulations
of
the
German
states,
only
consumption
potatoes
with
corresponding
nematode
resistance
may
be
grown
on
nematode-infested
areas.
* The
pathotype
present
in
the
field
can
be
determined
by
means
of
a
pathotype
test
(biotest).
(Pathotypes
or
virulence
groups:
Ro1,
Ro2/3,
Ro4,
Ro5,
Pa1,
Pa2/3).
* Nematode-resistant
varieties
can
also
be
used
preventively
on
nematode-free
fields.
Crop
rotation
should
continue
to
be
followed
to
avoid
selecting
resistance
breakers.

**Phytosanitary
status**

Yellow
potato
cyst
nematode*(Globodera
rostochiensis*)
and
white
potato
cyst
nematode*(Globodera
pallida*)
are
listed
as
[Union
quarantine
pests](https://www.pflanzenschutzdienst.at/geregelte-schaedlinge/)
and
are
thus
subject
to
legal
regulations
to
prevent
their
introduction
and
spread
into
or
within
the
member
states
of
the
EU.

**Specialized
information**

**Sampling
-
potato
cyst
nematodes**

For
control
of
potato
cyst
nematodes,
official
sampling
or
sampling,
under
official
supervision
by
trained
personnel,
of
the
soil
of
the
growing
area
according
to
sampling
plan
is
necessary.

**Services**

[Plant
health
services
and
nematode
testing](en/plant/plant-health/plant-health-information)