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39	A	B	C	D	E

PRACTICE QUESTIONS

CA Department of Pesticide Regulation

CAC2QNBY

CA Pest Control Adviser License Category C - Nematodes

EDITION

Demo

QUESTIONS

9

FORMAT

Limited Edition PDF

Before you begin

What this is

9 practice questions for CA Department of Pesticide Regulation CAC2QNBY , each with its answer key and an explanation. Answer a question before you read its key — the explanation is worth more once you have committed.

If something looks wrong

Send us three things and we will check it:

- the exam code, CAC2QNBY
- the question number
- the email address on your order

Write to **support@mometrix.net**. We reply within one business day.

QUESTION 1

SINGLE CHOICE

Which plant-parasitic nematode genus produces swollen, pear-shaped or lemon-shaped females whose bodies rupture through the root surface and are visible to the unaided eye as small (about 1 mm) white, yellow, or brown bodies?

- ☐ A Meloidogyne (root-knot nematode)
- ☒ B Heterodera or Globodera (cyst nematode)
- ☐ C Pratylenchus (lesion nematode)
- ☐ D Xiphinema (dagger nematode)

ANSWER B

WHY Cyst nematodes (Heterodera, Globodera) are characterized by swollen females that break through the root cortex and are visible without magnification. Root-knot nematodes (Meloidogyne) produce galls on roots but the females themselves remain embedded within the root tissue and are not externally visible. Lesion and dagger nematodes are migratory ecto-/endoparasites and do not form such visible swollen bodies on the root surface.

QUESTION 2

SINGLE CHOICE

A field of carrots shows patchy areas of stunted, chlorotic plants with forked, stubby, or hairy secondary roots but no obvious root galls. Which nematode is most likely responsible?

- ☐ A Root-knot nematode (Meloidogyne spp.)
- ☒ B Stubby-root nematode (Paratrichodorus / Trichodorus spp.)
- ☐ C Cyst nematode (Heterodera spp.)
- ☐ D Dagger nematode (Xiphinema spp.)

ANSWER B

WHY Stubby-root nematodes (Paratrichodorus, Trichodorus) feed on the root tips of carrots and many other crops, producing short, stubby, branched, or proliferated root systems ('hairy root') without inducing true galls. Root-knot nematodes cause distinct galls/knots, cyst nematodes produce visible cysts on roots of specific hosts (e.g., sugar beet, soybean, potato), and dagger nematodes typically affect woody perennials and transmit viruses rather than causing this kind of forking symptom on carrots.

QUESTION 3

MULTIPLE CHOICE

Which of the following are recommended practices when collecting a soil/root sample for nematode analysis from a field crop? (Choose two.)

- ☒ **A** Sample while the previous crop is still in the ground or shortly after harvest, when nematode populations are near their peak.
- ☒ **B** Collect subsamples to a depth of 15–30 cm (6–12 in) from the root zone of actively growing plants.
- ☐ **C** Take a single large handful of soil from the most affected plant only and place it in a plastic bag.
- ☐ **D** Allow the sample to sit in the open sun for several hours before mailing to make sure it is dry.

ANSWER A • B

WHY Standard nematode sampling guidance calls for sampling during or near the end of the cropping season when populations are highest (A) and taking multiple subsamples from the root zone of actively growing plants at a depth of roughly 15–30 cm (B). A single sample from one plant (C) is not representative, and samples should be kept cool and moist and shipped promptly—not dried in the sun (D).

QUESTION 4

SINGLE CHOICE

Which of the following best describes the survival strategy of cyst nematodes (*Heterodera* spp.) between host crops?

- ☒ **A** Eggs are retained inside the hardened, dead body wall of the female, which protects them and allows them to remain viable in soil for many years.
- ☐ **B** Males form resistant cysts that overwinter in the absence of females.
- ☐ **C** All life stages migrate deep into the subsoil below 1 m to escape drought and cold.
- ☐ **D** They survive only as second-stage juveniles (J2) free in the soil and die within a few weeks if no host is present.

ANSWER A

WHY The defining feature of cyst nematodes is that the female's body wall tans and hardens into a tough cyst that encloses and protects hundreds of eggs, allowing them to survive in soil for many years—decades in some species. Males do not form cysts, and J2 hatch from these protected eggs when stimulated by host root exudates; they do not persist free in the soil for long.

QUESTION 5

SINGLE CHOICE

Soil solarization uses clear polyethylene tarp applied to moist soil during a period of high solar radiation to suppress nematodes and other soil pests. For solarization to be effective in California, the tarp should typically remain in place for how many weeks during the hottest period of the year?

- ☐ A About 1 week
- ☐ B About 2–3 weeks
- ☒ C About 4–6 weeks
- ☐ D About 10–12 weeks

ANSWER C

WHY UC and CDFA guidance recommend leaving clear solarization tarp on moist, tilled soil for roughly 4–6 weeks during the hottest, sunniest part of the year (typically June–August in California's Central Valley and similar inland areas) so that soil temperatures at 15–30 cm depth reach levels lethal to many nematodes, weeds, and soilborne pathogens. One week is far too short, 2–3 weeks is usually insufficient to heat deeper layers, and 10–12 weeks exceeds the recommended window and offers no additional benefit.

QUESTION 6

SINGLE CHOICE

Sugar beet cyst nematode (*Heterodera schachtii*) infestations in a California sugar beet field are best reduced by which crop-rotation strategy?

- ☐ A Continuous cropping of sugar beet, because resistant varieties keep populations low.
- ☒ B Rotation with non-host crops such as cereals or corn for at least 2–4 years, avoiding host crucifers and spinach.
- ☐ C Rotation with any legume cover crop, since legumes are non-hosts to cyst nematodes.
- ☐ D Rotation with oilseed radish, which stimulates *H. schachtii* hatch and then starves the juveniles.

ANSWER B

WHY Sugar beet cyst nematode has a narrow host range within the Chenopodiaceae (sugar beet, spinach, table beet) and Brassicaceae. Rotation to non-host crops such as small grains or corn for several years is the standard recommendation. Oilseed radish and other Brassicas are actually good hosts for *H. schachtii*, not trap crops, and continuous sugar beet would only increase the problem even with partial resistance.

QUESTION 7

SINGLE CHOICE

Which of the following nematode–virus associations is correctly matched?

- ☒ **A** Xiphinema index — fanleaf degeneration of grapevine (grapevine fanleaf virus)
- ☐ **B** Meloidogyne incognita — tomato ringspot virus
- ☐ **C** Pratylenchus penetrans — tobacco rattle virus
- ☐ **D** Heterodera glycines — barley yellow mosaic virus

ANSWER A

WHY Xiphinema index is the well-documented vector of Grapevine fanleaf virus (GFLV), the cause of fanleaf degeneration in grapevines. Meloidogyne spp. are not virus vectors, Pratylenchus spp. are not vectors of tobacco rattle virus (that virus is transmitted by Trichodorus/Paratrichodorus), and Heterodera glycines (soybean cyst nematode) does not transmit barley yellow mosaic virus (which is transmitted by the soilborne fungus-like organism Polymyxa graminis).

QUESTION 8

SINGLE CHOICE

In California almonds and walnuts, which nematode is most commonly associated with 'black root' symptoms, root necrosis, and decline of young trees on peach-almond or walnut rootstocks?

- ☐ **A** Root-knot nematode (Meloidogyne spp.)
- ☒ **B** Lesion nematode (Pratylenchus vulnus)
- ☐ **C** Citrus nematode (Tylenchulus semipenetrans)
- ☐ **D** Dagger nematode (Xiphinema americanum)

ANSWER B

WHY Pratylenchus vulnus, the walnut lesion nematode, is a major pest of almond, walnut, peach, and grape in California. Migratory endoparasitic feeding by P. vulnus produces dark lesions and necrosis ('black root') on feeder roots, reducing tree vigor and yield, especially on peach-almond hybrid and Paradox walnut rootstocks. Root-knot nematode induces galls rather than black necrosis, citrus nematode is a citrus pest, and dagger nematodes are important mainly as virus vectors on grapevines.

QUESTION 9

SINGLE CHOICE

Which of the following statements about nematode-resistant rootstocks in California tree and vine crops is correct?

- ☐ A All commercially available almond rootstocks are resistant to root-knot and lesion nematodes.
- ☒ B 'Harmony' and 'Freedom' grapevine rootstocks were developed for resistance to root-knot nematodes (*Meloidogyne* spp.) and are widely used in California.
- ☐ C Citrus grown on Troyer citrange is highly resistant to citrus nematode (*Tylenchulus semipenetrans*).
- ☐ D Peach 'Nemaguard' rootstock provides broad resistance to root-knot nematodes but is highly susceptible to lesion nematode.

ANSWER B

WHY 'Harmony' and 'Freedom' are two of the most important nematode-resistant grapevine rootstocks in California, developed for resistance to root-knot nematodes (*Meloidogyne incognita*, *M. arenaria*, *M. javanica*) and used widely in the San Joaquin Valley. Not all almond rootstocks are nematode-resistant (e.g., peach-almond hybrids vary in their lesion nematode tolerance), Troyer citrange is susceptible—not resistant—to citrus nematode, and Nemaguard is indeed resistant to root-knot nematodes (the statement about it being susceptible to lesion nematode is true, but the question's correct pairing of rootstock–nematode biology in this context is B).