Animal and Plant Health Agency

Certification scheme fruit plants

Explanatory guide to strawberries (*Fragaria*)

October 2025

Contents

1. Introduction

This document is a guide to strawberry certification taken from The Plant Health (Amendment etc.) (EU Exit) Regulations 2020 and The Plant Health (Phytosanitary Conditions) (Amendment) (EU Exit) Regulations 2020

2. Applications

The scheme is open to any grower in England and Wales who can meet the general conditions for entry and comply with the specific conditions of entry. Applications for entry of material to be submitted through the approved administrator, currently APHA. Please request an application form from FPCS.admin@apha.gov.uk

Growers will need to apply to APHA and be registered to issue Plant Passports.

3. Labelling / sealing / supplier and variety registration

Refer to separate documents covering labelling, sealing, supplier and variety registration.

4. Grades and stock eligibility

GRADE	PARENT STOCK
Pre-basic	Candidate pre-basic mother plants
Basic 1	Pre- basic
Basic 2	Pre-basic, Basic 1
Basic 3	Pre-basic, Basic 1, Basic 2
Basic 4	Pre-basic, Basic 1, Basic 2, Basic 3
Basic 5	Pre-basic, Basic 1, Basic 2, Basic 3, Basic 4
Certified	Pre-basic, Basic 1, Basic 2, Basic 3, Basic 4, Basic 5

5. Freedom from quarantine diseases

Crops must not be grown on land known to be infected with the following soil-borne diseases: Rhizomania, Strawberry red core or Verticillium wilt disease of hops or which is under notice for Potato Wart disease or Potato Cyst Nematode.

Growers who become aware of or suspect the presence of any quarantine disease must notify the Plant Health Inspector immediately.

6. Soil sampling requirements

Application for soil sampling should be made through the approved administrator.

Basic 1, Basic 2, Basic 3, and Basic 4

Soil sampling of the proposed field is required for freedom from the soil living virus vector nematodes prior to planting.

Longidorus attenuatus

Longidorus elongatus

Longidorus macrosoma

Xiphinema diversicaudatum

Fields found to be infested cannot be used for planting unless one of the following requirements has been complied with:

a) Field treated with an approved soil fumigant

b) A soil bait test has been carried out for the relevant viruses. If the result is negative for virus the site can be utilised.

An alternative to soil sampling is crop rotation where no nematode host crop has been grown at the intended planting site for the last 5 years. For *Fragaria* the relevant host crops are: Grapevine, *Fragaria spp*., *Ribes spp., Rubus spp.*, cherries, plums, apricot, peach, almond and Japanese plum and their rootstocks, poplar, walnut and olive trees, hops and elder/elderberry.

Basic 5 and Certified Soil sampling is not required.

7. Isolation distances for field grown material

Stocks entered must be isolated by at least the distance shown in the following table. (metres)

	Basic 1	Basic 2	Basic 3	Basic 4	Basic 5	Certified	Approved-Health ♯	CAC	Fruiting
Basic 1	3	3	3	3	3	50	400	1000	1000
Basic 2	3	3	3	3	3	50	400	1000	1000
Basic 3	3	3	3	3	3	50	400	1000	1000
Basic 4	3	3	3	3	3	50	400	500	500
Basic 5	3	3	3	3	3	3	400	500	500
Certified	50	50	50	50	3	3	10	500	500
Approved-Health ♯	400	400	400	400	400	10	3	200	200
CAC	1000	1000	1000	500	500	500	200	1	200
Fruiting	1000	1000	1000	500	500	500	200	200	0

8. Spacing

For glasshouse production separation must be sufficient to ensure varieties of the same grade do not mix. Field isolation distances apply between different grades; exceptionally approval to reduce isolation distances may be granted from PHSI requiring additional precautions and standard operating procedures.

9. Aphid proof gauze house production and isolations

Specific conditions apply to the construction of an aphid proof structure for certification. Contact PHSI for full details. All material grown in the structure must be entered for certification.

The propagator must, with consultation with PHSI, have a Standard Operating Procedure in place detailing the operation of the gauze house.

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Isolation for plants outside the gauze house (metres)

		Basic grade 1 to 5	Certified	Approved Health ♯	CAC / Fruiting
Plants grown inside gauze house	Pre-basic	100	100	250	250
	Basic grade 1 to 4	3	10	50	100
	Basic 5 or Certified	3	3	10	50

10. Control of diseases

Fungicide treatments that could mask symptoms of fungal diseases are not to be encouraged.

11. Roguing

Limited roguing is permissible after inspection with prior approval of the APHA Plant Health Inspector. Records must be kept and made available of the stocks rogued, the reason for roguing and numbers of plants removed.

12. Gapping up

Gapping up is permissible providing that the material used is eligible and prior approval from APHA Plant Health has been obtained. Growers must keep records and make them available if requested to do so.

13. Number of inspections

Pre-basic, Basic 1, Basic 2, Basic 3, Basic 4, Basic 5 and Certified will receive two inspections during the growing season.

First inspection: Normally June / July

Second inspection: Normally August / September

14. Tip production – additional requirements

Two inspections are required for the mother plants and one of the progeny. Following the removal the tips must be maintained in discrete, identifiable batches.

The height of the mother plants from the ground must not jeopardise the health and safety of inspectors.

There is no minimum spacing distance between stocks, but runners should be kept separate from neighbouring stocks to facilitate inspection and avoid mixing of varieties.

For field tray plant production, the mother plants must have two inspections and the tips removed from the field should be inspected just before sale after rooting or before movement to cold store.

15. Validity of certificates

Harvested runners from certified crops may be described as certified at the appropriate grade. Runners kept in cold store may be described as certified until 31 July in the year after certification. Runners not kept in cold store or subsequently potted up may be described as certified until 31 May in the year after certification.

16. Summary of pest and disease tolerances, sampling and testing

Testing

Pre-basic

Each pre-basic mother plant shall be sampled and tested one year after acceptance as a **pre- basic** mother plant and then each year for pests and diseases in Annex II and in the case of doubts concerning pests listed in Annex I Part B

Basic and Certified

Sampling and testing shall be carried out in the case of doubts concerning the presence of pests listed in Part B of Annex I and Annex II.

Inspection

Pre-Basic, Basic and Certified plant material shall be visually inspected and found free from pests and diseases listed in Annex II. Freedom can be met by removal of infected plants and / or by biological, physical or chemical treatments if applicable.

Basic and Certified plant material infested by pests and diseases listed in Annex I and II shall not exceed the tolerance levels indicated. Sampling and testing will be required if in doubt to the presence and identity of those pests and diseases.

Tolerances can be met by removal and destruction of infected plants and / or by biological, physical or chemical treatments if applicable.

Annex I		**Pre-Basic**	**Basic 1-5**	**Certified**
Insects and mites				
Chaetosiphon fragaefoliae	Strawberry aphid	0	0.5	1.0
Phytonemus pallida	Tarsonemid mite	0.1	0.1	0.1
Nematodes				
Ditylenchus dipsaci	Stem and bulb eelworm	0	0.5	1.0
Meloidogyne hapla	Root rot nematode	0	0.5	1.0
Pratylenchus vulnus	Walnut meadow nematode	0	1.0	1.0

Fungi				
Rhizoctonia fragariae	Strawberry black root rot	0	0	1.0
Podosphaera aphanis	Strawberry powdery mildew	0	0.5	1.0
Verticillium albo-atrum	Wilt	0	0.2	2.0
Verticillium dahlia	Wilt	0	0.2	2.0
Bacteria				
Candidatus Phlomobacter fragariae	Marginal chlorosis of strawberry	0	0	1.0
Phytoplasma diseases				
*Candidatus P*hytoplasma *asteris*	Aster yellow phytoplasma	0	0.2	1.0
Candidatus Phytoplasma *trifolii*	Strawberry multiplier disease	0	0.1	0.5
Candidatus Phytoplasma *solani*	Stolbur as Strawberry lethal decline	0	0.2	1.0
Clover phyllody Phytoplasma	Strawberry green petal phytoplasma	0	0	1.0
Phytoplasma Phytoplasma *fragariae*	Yellows diseased strawberry phytoplasma	0	0	1.0
Candidatus Phytoplasma *pruni*	X-Disease	0	0.2	1

Annex II		**Pre-Basic**	**Basic 1-5**	**Certified**
Nematodes				
Aphelenchoides blastophthorus		0	0	0
Aphelenchoides besseyi	Rice white-tip nematode	0	0.05	0.5
Aphelenchoides fragariae	Strawberry crimp nematode	0	0	1.0

Aphelenchoides ritzemabosi	Chrysanthemum foliar eelworm	0	0	0
Fungi				
Phytophthora cactorum	Crown rot	0	0	0
Colletotrichum acutatum	Strawberry blackspot	0	0	0
Viruses and phytoplasma diseases				
Sadwavirus fragariae	Strawberry mottle virus	0	0.2	1.0
Nepovirus arabis	Arabis mosaic virus	0	0.1	0.5
Nepovirus rubi	Raspberry ringspot virus	0	0.2	1.0
Cytorhabdovirus fragariarugosus	Strawberry crinkle virus	0	0	1.0
Stralarivirus fragariae	Strawberry latent ringspot virus	0	0	1.0
Potexvirus frangariae	Strawberry mild yellow edge virus	0	0	1.0
Caulimovirus venafragriae	Strawberry vein banding virus	0	0.2	1
Nepovirus nigranuli	Tomato black ring virus	0		

17. Record keeping (critical points plan)

The supplier must maintain relevant information to monitor the key points in the production process of all stocks entered for certification.

These include:

- Location and number of plants
- Timing of their cultivations
- Propagation operations

- Packaging, storage and transportation operations.

The information should remain available for at least three years and made available to PHSI upon request.

18. Requirements for pre-basic material

18.1 Eligible material

Any new or established variety that has Plant Variety Rights, or is on a National Varieties Register held by APHA. The progeny of pre-basic stock is eligible as parent material to produce basic grade certified plants.

18.2 Growing conditions

Candidate pre-basic mother plants must be kept under insect proof conditions and physically isolated from pre-basic mother plants until all tests have been successfully completed.

Pre-basic plants must have been maintained in a suitably designed insect-proof gauze house containing only strawberry pre-basic material. See section 9.

Strict precautions should be taken to prevent the introduction of any pests and diseases listed in Annex II.

All mother plants must be grown singly in sterilised growing medium and in individually labelled pots. Runners should be propagated upwards with the rooting media above the mother plants to minimise possible contamination by red core or crown rot.

18.3 Pests and diseases

At least once in the previous year the mother plant must have been individually tested and found free from the pests and diseases listed in section 19.1 and 19.2, as appropriate, using the indicator plants or test methods described.

No plants are to be entered into the pre-basic stock house unless tested and found free of all the pests and diseases listed in section 19.1 and 19.2, as appropriate.

Any plants found to be infected or exhibiting suspicious symptoms should be removed immediately.

For *Xanthomonas fragariae* only, testing only needs to be undertaken on candidate plants, as long as subsequent direct line generations are maintained at pre-basic level.

18.4 Documentation

The Person Responsible for the production of the plants must provide documentary evidence to show that the material has been produced under the conditions described

above and that all the necessary tests were carried out and no evidence of infection was found.

This evidence must be provided to the purchaser of the pre-basic material before it can be used as parent material to produce basic grade.

18.5 Trueness to type verification

Pre-basic material will be subject to official inspection for trueness to type verification.

19. Required methods of testing for diseases for pre-basic *Fragaria*

19.1 Material originating in the UK

Abbreviations for strawberry indicators:	**Abbreviations for strawberry indicators:**	**Abbreviations for strawberry indicators:**
Aphid – borne viruses: Strawberry crinkle rhabdovirus Strawberry mild yellow edge Strawberry mottle	Leaf graft onto Indicator UC4	UC5
Strawberry vein banding caulimovirus	Leaf graft onto indicator UC6	*F. virginiana* UC12
Nematode – borne viruses: Arabis mosaic nepovirus Raspberry ringspot nepovirus Strawberry latent ringspot nepovirus Tomato black ring nepovirus	Sap inoculation onto *Chenopodium quinoa*	None available. Serology may be used to identify any symptoms seen on indicator plants

Leafhopper – borne agents: Strawberry green petal phytoplasma	Examine for diagnostic symptoms on flowering mother plants	
Fungus diseases: Red core (*Phytophthora fragariae*) Crown rot (*Phytophthora cactorum*) Strawberry blackspot (*Colletotrichum acutatum*)	Root tip bait test with Alpine strawberry or F. vesca clone VSI or used in combination with PCR testing of bait plants and water. Petiole float test or PCR direct on crowns and petioles. Incubation of petiole bases preferably after treatment with paraquat	Plating on selective media Alternatives as in EPPO diagnostic protocol PM 7/25(1)
Leaf nematodes: Ditylenchus dipsaci Aphelenchoides fragariae, A. bessiyi A. ritzemabosi, A.blastophthorus	Baerman's technique on leaves and buds from crowns	EPPO accredited testing protocol PM 7/39(1) and PM 7/119 (1)

Bacterial diseases: *Xanthomonas fragariae*	Real time PCR (Weller S.A. et al Detection of *Xanthomonas fragariae* and presumptive detection of *Xanthomonas arboricola pv. fragariae*, from strawberry leaves, by real time PCR. Journal of microbiological methods 70 (2007) p.379-383)	EPPO accredited testing protocol PM 7/65(1)

19.2 Material originating outside the UK. All those listed for UK material plus those specified below

Pest or disease	**Preferred test method and indicator plant**	**Other acceptable test methods or indicator plant**
Aphid – borne viruses: Pseudo mild yellow edge carlavirus	Leaf graft onto indicator UC6	UC12, Alpine strawberry
Strawberry latent C	Leaf graft onto indicator UC5	EMC
Nematode – borne viruses: Tomato ringspot nepovirus	Sap inoculation onto *Chenopdium quinoa*	UC5, Alpine strawberry
Leafhopper – borne agents: Aster yellows Lethal decline Mycoplasma yellows Rickettsia yellows	Visual examination of Mother plants for diagnostic symptoms	

Vector unknown:		
Chlorotic fleck	Leaf graft onto EMB, EMC, EMK, UC11	
Leaf roll	Leaf graft onto UC5	Diagnostic symptoms
Witches broom	Leaf graft onto UC4	UC5, symptoms
Multiplier plant	Diagnostic symptoms in Mother plants	
Feather leaf	Leaf graft onto UC4, Alpine strawberry	UC1, Diagnostic symptoms in mother plants
Pallidosis	Leaf graft onto UC11, UC10	
Tobacco streak	Leaf graft onto UC4	Alpine strawberry Sap inoculation onto *Chenopodium quinoa*

Abbreviations for strawberry indicators:

Numbers 1-10 are clones of *Fragaria vesca*, University of California

Numbers 11-12 are clones of *Fragaria virginiana*, University of California

Alpine strawberry means *Fragaria vesca var semperflorens* cg. cv. Baron Solemacher

EMC, EMB, EMK are clones of *Fragaria vesca* from HRI East Malling

Any enquiries regarding this publication should be sent to APHA.

http://www.gov.uk/apha