

SCHEDULE 4

Regulations 2(1), 3, 6(2) and (5), 7(3) and 7(4), 11(1), 12(1), (2) and (3), 14(4), 15(2), 20(3), 22(5) and paragraphs 2, 3 and 4 of Part I of Schedule 2, paragraphs 6 and 7 of Part II of Schedule 2 and paragraphs 1 and 2 of Schedule 3

REQUIREMENTS FOR PRE BASIC SEED, BASIC SEED, CERTIFIED SEED, CERTIFIED SEED OF THE FIRST GENERATION AND CERTIFIED SEED OF THE SECOND GENERATION

PART I

CONDITIONS RELATING TO CROPS FROM WHICH SEED IS OBTAINED

Methods of ascertaining whether crop requirements are met

1. The Scottish Ministers may ascertain, so far as practicable, whether the requirements for the crop set out in this Part of this Schedule are met by the use of methods which shall include official field inspection of the crop and which may include examination of a control plot sown with a sample from the seed lot and the consideration of any other relevant information.

Varietal identity and varietal purity

2. The characteristics used for the determination of varietal identity and varietal purity shall be those to which regard was had when the relevant variety was accepted on to the relevant UK National List, an equivalent list in another EEA State or the Common Catalogue.

Crop inspection

3.—(1) An official examination of the crop shall be made by means of an official field inspection.

(2) The official field inspection shall only be carried out when the cultural condition of the field and the stage of development and condition, including state of health, of the crop—

- (a) are such as to permit suitable checks of varietal identity, varietal purity, species purity and wild oats contamination to be made; and
- (b) meet the requirements of the Scottish Ministers.

(3) A crop from which HVS level seed of Basic Seed, Certified Seed of the First Generation or Certified Seed of the Second Generation is to be produced shall not be more than one third lodged at the time of inspection.

(4) Subject to sub paragraphs (5) and (6), at least one field inspection of the crop shall be carried out.

(5) Subject to sub-paragraph (6), at least three field inspections shall be carried out in the case of an inbred line or hybrid of maize.

(6) In the case of maize, where the crop to be examined follows a maize crop in either the preceding or current year, at least one special field inspection shall be carried out to check that the condition contained in paragraph 1 has been complied with.

(7) For the purposes of this paragraph “lodged” means an area of crop which has been displaced from the vertical by more than 45 degrees.

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Harmful organisms in the crop

4. Harmful organisms which reduce the usefulness of the seed, in particular Ustilaginaceae, shall be at the lowest possible level.

Previous cropping

5.—(1) The previous cropping of the field shall not have been incompatible with the production of seed of the species and variety of the crop, and the field shall be sufficiently free from plants which are volunteers from previous cropping.

(2) The crop may be grown only on land which complies with the Scottish Ministers' requirements in respect of previous cropping.

Isolation distances – general

6. There shall be either a physical barrier or at least 2 metres of fallow ground between the seed crop and any crop likely to cause contamination in the seed.

Isolation distances – minimum distances

7. For maize, rye and self pollinating varieties of triticale, the minimum distance from neighbouring crops or plants of other species, or of other varieties of the same species, liable to cross pollinate with the crop shall be the distances specified in column 2 of the following table for the corresponding crop specified in column 1 of the table (which can include any distance of at least 2 metres of fallow ground required under paragraph 6)–

Column 1 Crop	Column 2 Minimum Distance
(a) (a) Maize–	
(i) for the production of Basic Seed	200 metres
(ii) for the production of Certified Seed	200 metres
(b) (b) Self–pollinating variety of triticale	
(i) for the production of Basic Seed	50 metres
(ii) for the production of Certified Seed	20 metres
(c) (c) Rye (other than hybrids)–	
(i) for the production of Basic Seed	300 metres
(ii) for the production of Certified Seed	250 metres
(d) (d) Hybrids of rye–	
(i) for the production of Basic Seed where male sterility is used	1,000 metres
(ii) for the production of Basic Seed where male sterility is not used	600 metres
(iii) for the production of Certified Seed	500 metres

but with the approval of the Scottish Ministers these distances may be modified or disregarded if there is adequate protection against undesirable foreign pollen.

Standards for varietal purity

- 8.—(1) The crop shall have sufficient varietal identity and varietal purity, including—
- (a) in the case of a crop of an inbred line, sufficient varietal identity and varietal purity as regards its characteristics; and
 - (b) in the case of a crop used for the production of seed of hybrid varieties, sufficient varietal identity and varietal purity as regards the characteristics of the components of the hybrid variety, including male sterility or fertility restoration.
- (2) In crops of rye, including hybrids of rye, the number of plants of the crop species which are recognisable as obviously not being true to the variety shall not exceed—
- (a) one plant in 30 square metres for the production of Basic Seed; and
 - (b) subject to sub-paragraph (4)(a) in relation to hybrids of rye, one plant in 10 square metres for the production of Certified Seed.
- (3) In crops of maize—
- (a) the percentage by number of plants which are recognisable as obviously not being true to the variety, to the inbred line or to the component shall not exceed the percentage specified in column 2 of the following table corresponding to the relevant crop specified in column 1 of the table—

Column 1 Crop of maize	Column 2 Percentage by number of plants
(i) For the production of Basic Seed—	
(aa) inbred lines	0.1%
(bb) simple hybrid, each component	0.1%
(cc) open-pollinated varieties	0.5%
(ii) For the production of Certified Seed—	
(aa) a component of a hybrid variety	
(aaA) in the case of an inbred line	0.2%
(aaB) in the case of a simple hybrid	0.2%
(aaC) in the case of open pollinated variety	1.0%
(bb) in the case of open pollinated varieties	1.0%

- (b) used for the production of seed of hybrid varieties—
 - (i) sufficient pollen shall be shed by the plants of the male component while the plants of the female component are in flower;
 - (ii) where appropriate emasculation shall be carried out; and
 - (iii) where 5% or more of the female component plants have receptive stigmas, the percentage of female component plants which have shed pollen or are shedding pollen shall not exceed—
 - (aa) 1% at any official field inspection; and
 - (bb) 2% at the total of the official field inspections;
- (c) for the purposes of sub paragraphs (b)(i) and (iii) plants shall be considered as having shed pollen or to be shedding pollen where, on 50 millimetres or more of the central axis or

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laterals of a panicle, the anthers have emerged from their glumes and have shed or are shedding pollen.

- (4) In crops of hybrids of rye–
 - (a) in an official field inspection the standard in paragraph (2)(b) shall apply to the female component only;
 - (b) in the case of Basic Seed, where male sterility is used, the level of sterility of the male sterile component shall be at least 98%; and
 - (c) where appropriate, Certified Seed shall be produced in mixed cultivation of a female male sterile component with a male component which restores male fertility.
- (5) In crops of hybrids of barley, durum wheat, oats, self pollinating triticale, spelt wheat or wheat–
 - (a) subject to sub paragraph (b) varieties of the female component of the crop shall be at least 25 metres from a crop of any other variety of the same species except from a crop of the male component;
 - (b) sub paragraph (a) shall not apply if there is sufficient protection from any undesirable foreign pollination;
 - (c) where seed is produced using a chemical hybridisation agent, the crop shall conform to the following standards or other conditions–
 - (i) the minimum varietal purity of each component shall be–
 - (aa) in the case of barley, durum wheat, oats, spelt wheat or wheat, 99.7%; and
 - (bb) in the case of self pollinating varieties of triticale, 99.0%; and
 - (ii) the minimum hybridity must be 95%; and
 - (d) in cases where the hybridity is determined during seed testing prior to certification, the determination of the hybridity during a field inspection need not be done.

Standards for wild oats contamination

9. The maximum number of wild oats per hectare shall be as follows–

Crops to produce	Level where applicable	Barley (other than hybrids)	Hybrid of barley	Durum wheat, spelt wheat and wheat (other than hybrids in each case)	Hybrid of durum wheat and spelt wheat	Maize and rye (including hybrids)	Oats (other than hybrids)	Hybrid of oats	Hybrid of self-pollinating varieties of triticale	Triticale
Basic Seed	HVS	7	n/a	7	n/a	n/a	0	n/a	n/a	n/a
	Minimum	7	n/a	7	n/a	7	0	n/a	n/a	7
Certified Seed		n/a	20	n/a	50	50	n/a	0	50	n/a

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Crops to produce	Level where applicable	Barley (other than hybrids)	Hybrid of barley	Durum wheat, spelt wheat and wheat (other than hybrids in each case)	Hybrid of durum wheat, spelt wheat and wheat	Maize and rye (including hybrids)	Oats (other than hybrids)	Hybrid of oats	Hybrid of self-pollinating varieties of triticale	Triticale
Certified Seed of the First Generation	HVS	7	n/a	7	n/a	n/a	0	n/a	n/a	n/a
Minimum	20	n/a	50	n/a	n/a	0	n/a	n/a	50	
Certified Seed of the Second Generation	HVS	7	n/a	7	n/a	n/a	0	n/a	n/a	n/a
Minimum	20	n/a	50	n/a	n/a	0	n/a	n/a	50	

Standards for other cereal species

10. In the case of barley, durum wheat, oats, spelt wheat and wheat, the crop shall conform to the following standards as regards the minimum species purity–

Crops to produce	Minimum standard (percentage by number)	Higher Voluntary Standard (percentage by number)
(a) (a) Basic seed	n/a	99.99%
(b) (b) Certified Seed of the First Generation	n/a	99.99%
(c) (c) Certified Seed of the Second General	n/a	99.99%

Crop standards for loose smut infection

11. The maximum percentage by number of loose smut infection shall be as follows–

Column 1 Category (Barley, durum wheat, spelt wheat and wheat)	Column 2 Level (where appropriate)	Column 3 Maximum percentage by number of loose smut infection
(a) (a) Basic Seed	HVS	0.1%

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Column 1 Category (Barley, durum wheat, spelt wheat and wheat)	Column 2 Level (where appropriate)	Column 3 Maximum percentage by number of loose smut infection
	Minimum	0.5%
(b) (b) Certified Seed –		0.5%
(c) (c) Certified HVS Seed of the First Generation		0.2%
	Minimum	0.5%
(d) (d) Certified HVS Seed of the Second Generation		0.2%
	Minimum	0.5%

Seeds produced from a crop which has failed on official examination to meet the standards laid down by this paragraph may nevertheless be eligible for official certification—

- (a) if they have been adequately treated by any method approved by the Scottish Ministers for the control of loose smut; or
- (b) if an embryo test carried out by an official seed testing station, on the sample submitted for official examination shows that the seeds meet the seed standards in paragraph 18.

Crop conditions for Pre basic Seed

12. For the purpose of determining whether a crop from which Pre basic Seed is to be produced meets the conditions specified in this Part of this Schedule, the crop from which such seed is to be produced shall be treated in the same way as a crop from which minimum level Basic Seed is to be produced.

PART II

CONDITIONS RELATING TO BASIC SEED, CERTIFIED SEED, CERTIFIED SEED OF THE FIRST GENERATION AND CERTIFIED SEED OF THE SECOND GENERATION

Standards for varietal purity

13.—(1) The seed shall possess sufficient varietal identity and varietal purity or, in the case of an inbred line, sufficient identity and purity as regards its characteristics.

(2) For the seed of hybrid varieties, the requirement for sufficient identity and purity shall also apply to the characteristics of the components.

(3) In particular, seed of the species, category and level specified in columns 1 and 2 of the following table shall possess at least the percentage of minimum varietal purity specified in the corresponding entry in column 3 of the table—

Column 1 Species and category	Column 2 Level (where appropriate)	Column 3 Percentage of minimum varietal purity
(a) (a) Barley, durum wheat, oats, spelt wheat and wheat except hybrids in each case—		
(i) Basic Seed	HVS	99.95%
	Minimum	99.90%
(ii) Certified Seed of the First Generation	HVS	99.90%
	Minimum	99.70%
(iii) Certified Seed of the Second Generation	HVS	99.70%
	Minimum	99.00%
(b) (b) Hybrids of barley, durum wheat, oats, self pollinating varieties of triticale, spelt wheat and wheat—		
(i) Certified Seed	—	90.00%
(c) (c) Self pollinating varieties of triticale—		
(i) Basic Seed	—	99.70%
(ii) Certified Seed of the First Generation	—	99.00%
(iii) Certified Seed of the Second Generation	—	98.00%

(4) For the purposes of sub paragraph (3)(a) and (b), the minimum varietal purity of seed shall be examined mainly in official field inspections carried out in accordance with the conditions specified in paragraph 3 of Part I of this Schedule.

(5) For the purposes of sub paragraph (3)(c), the minimum varietal purity of the seed shall be examined in official post-control tests on an appropriate proportion of samples.

Production of Certified Seed of hybrids of maize

14.—(1) Where a female male-sterile component and a male component which does not restore male fertility have been used for the production of Certified Seed of hybrids of maize, the seed produced—

- (a) by mixing the seed lots in a proportion appropriate to the variety where, on the one hand a female male sterile component has been used and, on the other, a female male fertile component has been used; or
- (b) by growing the female male sterile component and the female male fertile component in a proportion appropriate to the variety.

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(2) In the case of seed produced in the manner specified in sub paragraph (1)(b) the proportion of the female male sterile and female male fertile components shall be examined in field inspections carried out in accordance with the conditions laid down in paragraph 3 of Part I of this Schedule.

Standards for varietal purity for hybrid varieties of rye

15. In the case of seed of a hybrid variety of rye, the seed shall not be certified as Certified Seed unless due account has been taken of the results of official post control tests on samples of Basic Seed taken in accordance with regulation 15(1) and carried out during the growing season of the seed for which an application has been made for certification as Certified Seed to ascertain whether the Basic Seed has met the requirements for Basic Seed specified in these Regulations in respect of varietal identity as regards the characteristics of the components, including male sterility and in respect of the minimum varietal purity.

Standards of germination, analytical purity and content of seed of other plant species

16.—(1) The seed shall conform to the standards or other conditions as regards germination, analytical purity and the content of seeds of other plant species specified in the following table—

Species and category	Germination (% of pure seed)		Analytical purity (% by weight)		Other plant species (inc. seeds of the species specified in columns 8 to 15)		Other cereal species		All species other than cereals		Avena fatua, A. ludoviciana, or A sterilis, Lolium temulentum		Agropyron repens; Agrostemma githago; Bromus sterilis; or Raphanus raphanistrum		Ergot (pieces)	
	Min Std	HVS	Min Std	HVS	Min Std	HVS	Min Std	HVS	Min Std	HVS	Min Std	HVS	Min Std	HVS	Min Std	HVS
I	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Avena sativa, Hordeum vulgare																
Triticum aestivum, T. durum, T. spelta:																
– basic seed	85	85	99	99	4	1	1 ^(a)	0	3	1	0 ^(b)	0	1 ^(c)	0 ^(d)	1	0

Maximum content by number of seeds of other plant species in a sample of the weight specified in column 6 of paragraph 26(2) of Part II of Schedule 5																
Species and category seed	Germination (% of pure seed)		Analytical purity (% by weight)		Other plant species (inc. seeds of the species specified in columns 8 to 15)		Other cereal species		All species other than cereals		<i>Avena fatua</i> , <i>A. ludoviciana</i> , or <i>A. sterilis</i> , <i>Lolium temulentum</i>		<i>Agropyron repens</i> ; <i>Agrostemma githago</i> ; or <i>Bromus sterilis</i> ; or <i>Raphanus raphanistrum</i>		Ergot (pieces)	
	Min Std	HVS	Min Std	HVS	Min Std	HVS	Min Std	HVS	Min Std	HVS	Min Std	HVS	Min Std	HVS	Min Std	HVS
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
– certified seed	85 ^(c)	n/a	98	n/a	10	n/a	7	n/a	7	n/a	0 ^(b)	n/a	3 ^(d)	n/a	3	n/a
– certified seed of the First generation	85 ^(c)	85 ^(c)	98	99	10	2	7	1	7	1	0 ^(b)	0	3 ^(d)	1	3	1
– certified seed of the Second generation	85 ^(c)	85 ^(c)	98	99	10	4	7	3	7	2	0 ^(b)	0	3 ^(d)	1	3	1
Secale cereale																
– basic seed	85	n/a	98	n/a	4	n/a	1 ^(a)	n/a	3	n/a	0 ^(b)	n/a	1 ^(d)	n/a	1	n/a
– certified seed	85	n/a	98	n/a	10	n/a	7	n/a	7	n/a	0 ^(b)	n/a	3 ^(d)	n/a	3	n/a
xTriticosecale																
– basic seed	80	n/a	98	n/a	4	n/a	1 ^(a)	n/a	3	n/a	0 ^(b)	n/a	1 ^(d)	n/a	1	n/a

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Species and category	Germination (% of pure seed)		Analytical purity (% by weight)		Other plant species (inc. seeds of the species specified in columns 8 to 15)		Other cereal species		All species other than cereals		<i>Avena fatua</i> , <i>A. ludoviciana</i> , or <i>A. sterilis</i> , <i>Lolium temulentum</i>		<i>Agropyron repens</i> ; <i>Agrostemma githago</i> ; or <i>Bromus sterilis</i> ; or <i>Raphanus raphanistrum</i>		Ergot (pieces)	
	Min Std	HVS	Min Std	HVS	Min Std	HVS	Min Std	HVS	Min Std	HVS	Min Std	HVS	Min Std	HVS	Min Std	HVS
– certified seed	80	n/a	98	n/a	10	n/a	7	n/a	7	n/a	0 ^(b)	n/a	3 ^(d)	n/a	3	n/a
– certified seed of the First generation	80	n/a	98	n/a	10	n/a	7	n/a	7	n/a	0 ^(b)	n/a	3 ^(d)	n/a	3	n/a
– certified seed of the Second generation	80	n/a	98	n/a	10	n/a	7	n/a	7	n/a	0 ^(b)	n/a	3 ^(d)	n/a	3	n/a
<i>Zea mays</i>																
– All categories	90	n/a	98	n/a	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

- (a) A second seed shall not be regarded as an impurity if a second sample of the same weight is free from any seeds of other cereals species.
- (b) The presence of one seed of *Avena fatua*, *A. ludoviciana*, *A. sterilis* or *Lolium temulentum* in a sample of the prescribed weight shall not be regarded as an impurity where a second sample of the same weight is free from any seeds of these species.
- (c) In the case of varieties of *Avena sativa* which are officially classified as of the “naked oat” type the minimum germination standard is 75% . In such a case the official label shall be endorsed “minimum germination capacity 75%”.
- (d) In HVS Basic Seed the nil standard shall apply in respect of *Agrostemma githago* and *Raphanus raphanistrum*.
- (e) For hybrids of rye. The presence of five ergots or fragments of ergot in a sample of seed of a hybrid of rye of the prescribed weight shall be deemed to be in conformity with required sample purity standards, where a second sample of the same weight contains not more than four ergots or fragments of ergot.
- (f) In minimum standard seed, the standards shall apply in respect of *Agrostemma githago* and *Raphanus raphanistrum* only.

(2) Subject to sub paragraphs (3) and (4) it shall be determined, by way of a germination test, whether the seed attains the percentage of germination for the relevant level specified in columns 2 and 3 of the table set out in sub paragraph (1) for the appropriate category of seed.

(3) Sub paragraph (2) shall not apply to seed that has been subjected to a tetrazolium test carried out by the Scottish Ministers or a licensed seed testing station to establish the viability of the seed unless the result of the test casts doubt on whether it will satisfy the applicable germination standard set out in column 2 of the table set out in sub paragraph (1).

(4) Where a tetrazolium test is carried out on seed which does not comply with the Scottish Ministers' requirements for eligibility for tetrazolium testing or where the results of a tetrazolium test do not meet the standards set out in the Scottish Ministers' requirements in respect of such tests, the test will cast doubt on whether the seed will satisfy the applicable germination standards set out in column 2 or 3 of the table set out in sub-paragraph (1).

Harmful organisms in the seed

17. Harmful organisms which reduce the usefulness of the seed shall be at the lowest possible level.

Standards for loose smut infection

18. In any sample of seed the maximum percentage by number of loose smut infection shall be as follows–

Column 1 Category (Barley, durum wheat, spelt wheat and wheat)	Column 2 Level (where appropriate)	Column 3 Maximum percentage by number of loose smut infection
(a) (a) Basic Seed	HVS	0.1%
	Minimum	0.5%
(b) (b) Certified Seed	–	0.5%
(c) (c) Certified Seed of the First Generation	HVS	0.2%
	Minimum	0.5%
(d) (d) Certified Seed of the Second Generation	HVS	0.2%
	Minimum	0.5%

Seeds produced from a crop which has failed on official examination to meet the standards laid down by this paragraph may nevertheless be eligible for official certification–

- (a) if they have been adequately treated by any method approved by the Scottish Ministers for the control of loose smut; or
- (b) if an embryo test carried out by an official seed testing station, on the sample submitted for official examination, shows that the seeds met these standards.

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Moisture content

19.—(1) The maximum moisture content of the seed shall not exceed 17% by weight.

(2) The results of any moisture testing which is not carried out in accordance with the requirements of the Scottish Ministers shall be disregarded.

(3) The minimum weight of the sample to be submitted for moisture content testing shall be the minimum weight of a sample specified in column 5 of the table in paragraph 26 of Part II of Schedule 5 and this sample shall be submitted for testing in addition to the submitted sample and in an airtight moisture proof container.

PART III

OFFICIAL EXAMINATIONS USED TO ASCERTAIN WHETHER A CROP OR SEED LOT MEETS THE CONDITIONS RELATING TO BASIC SEED, CERTIFIED SEED, CERTIFIED SEED OF THE FIRST GENERATION AND CERTIFIED SEED OF THE SECOND GENERATION

Methods for official examinations

20. All official examinations used to ascertain whether crops or seed lots meet the standards specified in this Schedule shall be carried out in accordance with current international methods insofar as such methods exist.