Text consolidated by Valsts valodas centrs (State Language Centre) with amending regulations of:

10 December 2013 [shall come into force from 1 January 2014];

2 September 2014 [shall come into force from 5 September 2014];

16 August 2016 [shall come into force from 23 August 2016];

7 August 2018 [shall come into force from 10 August 2018];

23 October 2018 [shall come into force from 27 October 2018];

11 June 2019 [shall come into force from 14 June 2019];

16 August 2022 [shall come into force from 20 August 2022].

If a whole or part of a paragraph has been amended, the date of the amending regulation appears in square brackets at the end of the paragraph. If a whole paragraph or sub-paragraph has been deleted, the date of the deletion appears in square brackets beside the deleted paragraph or sub-paragraph.

Republic of Latvia

Cabinet

Regulation No. 518

Adopted 24 July 2012

**Regulations Regarding the Assessment of Value for the Cultivation and Use of Plant Variety**

*Issued pursuant to*

*Section 11.1, Paragraph one, Clause 3 of the Seed and Variety Circulation Law*

[*16 August 2022*]

**I. General Provisions**

1. This Regulation prescribes the requirements, procedures and pricing for the assessment of value for the cultivation and use of a plant variety (hereinafter – the variety assessment).

2. A variety shall be assessed according to the indicators referred to in Annex 1 to this Regulation in order to ascertain:

2.1. the suitability of the variety in conventional farming;

2.2. the suitability of the variety in organic farming.

[*16 August 2016*]

3. The variety assessment shall be the comparison of cultivation, use of the variety and of quality of the product acquired from it with the standard variety. Several assessment groups may be determined for the species where each of them may have one or several standard varieties. A list of standard varieties according to the determined assessment groups upon recommendation of the National Plant Variety Council shall be created and updated by the Latvia University of Life Sciences and Technologies.

[*16 August 2016*]

4. Requirements for the selection of a standard variety shall be the following:

4.1. a variety is included in the Latvian Catalogue of Plant Varieties (hereinafter – the Catalogue), or if a suitable variety in not included in the Catalogue, it shall be selected from the European Union Common Catalogue of Varieties of Agricultural Plant Species;

4.2. the variety is used in agricultural production;

4.3. seed material is ensured for the variety.

[*16 August 2016*]

5. If none of varieties of the relevant species has been included in the Catalogue, the variety to be assessed shall be compared to the variety of the relevant species with the best indicators.

[*16 August 2016*]

6. If there are more than 15 varieties in the variety assessment, the standard variety shall be sown repeatedly. When assessing a variety, the indicators thereof shall be compared to the average indicators of the standard variety.

7. If the standard variety for the species has not been specified, the actual indicators of a variety shall be assessed according to the indicators referred to in Annex 1 to this Regulation.

[*16 August 2016*]

8. Duration of the variety assessment for the inclusion of a variety in the Catalogue:

8.1. for cereal crops, oil plants, and fibre plants:

8.1.1. for varieties for which winter hardiness is assessed – three years;

8.1.2. for varieties for which winter hardiness is not assessed – two years;

8.2. for fodder plants:

8.2.1. for annual fodder plant varieties for which winter hardiness is assessed (for example, winter crop forms of hairy vetch, field beans, and field peas) – three years;

8.2.2. for annual fodder plant varieties for which winter hardiness is not assessed – two years;

8.2.3. for perennial fodder plant varieties – four years in two trial cycles. For plant variety trials, the perennial fodder plants shall be sown twice a year – in the first and second trial cycle. The documentation and observations shall be made:

8.2.3.1. in the first trial cycle in the sowing year, as well as in the first and second year of use;

8.2.3.2. in the second trial cycle in the sowing year, as well as in the first and second year of use;

8.3. for potatoes – two years.

[*16 August 2022*]

8.1 One trial year shall include arrangement, sowing, maintenance, and observations of a sowing during the vegetation period, harvesting, documentation, and determination of the yield quality indicators.

[*23 October 2018*]

9. If the applicant referred to in Paragraph 13 of this Regulation has previously submitted an application for the assessment of the variety for other purposes in compliance with the criteria referred to in Annex 1 to this Regulation and in accordance with the procedures laid down in this Regulation and submits an application for inclusion of the assessed variety in the Catalogue, the results obtained shall be used in the variety assessment in accordance with the laws and regulations regarding the Latvian Catalogue of Plant Varieties.

[*16 August 2016*]

10. If a variety has been assessed for inclusion in the Catalogue, the intervals during assessment of value for the cultivation and use of the variety shall not exceed one assessment year.

11. The variety assessment shall be ensured by the Latvia University of Life Sciences and Technologies.

12. The following shall be necessary for the variety assessment:

12.1. data of field trials;

12.2. data of quality indicators.

12.1 The Ministry of Agriculture shall recommend the national standardisation authority the list of the standards which may be applied to the fulfilment of the requirements laid down in Annexes 7.1 and 7.6 to this Regulation (hereinafter – the applicable standards). The national standardisation authority shall publish on its official website the list with the applicable standards which have been adapted in the status of national standards and which may be applied to the fulfilment of the requirements laid down in Annexes 7.1 and 7.6 to this Regulation.

[*23 October 2018*]

12.2 The assessment of a variety shall be made with such methods which ensure that the data obtained is credible, representative, and comparable. If the used methods conform to the requirements of the applicable standards, they shall be considered as corresponding for the fulfilment of the requirements referred to in this Regulation.

[*23 October 2018*]

**II. Application for Variety Assessment**

13. An application regarding the assessment of value for cultivation and use of a plant variety (hereinafter – application) may be submitted to the Latvia University of Agriculture by one of the following persons (hereinafter – applicant) in accordance with Annex 2 to this Regulation:

13.1. a breeder;

13.2. a holder of the breeder’s right – a natural person or legal person who has acquired the breeder’s right;

13.3. a maintainer of a variety – a natural person or legal person who ensures the maintenance of the variety;

13.4. an authorised representative of the breeder, holder of the breeder’s right or maintainer of a variety (hereinafter – the authorised representative).

13.1 If the applicant also wishes to include the variety in the Catalogue, the applicant shall submit the application for inclusion of the variety in the Catalogue to the State Plant Protection Service (hereinafter – the Service) in accordance with the laws and regulations regarding the by-laws of the Latvian Catalogue of Plant Varieties.

[*16 August 2016; 23 October 2018*]

14. The application shall be submitted to the Latvia University of Life Sciences and Technologies:

14.1. for spring cereal crops, fodder plants, oil plants, except for winter crop forms, fibre plants, potatoes, and beet varieties – until 1 March;

14.2. for winter Swede rape and winter turnip rape – until 10 July;

14.3. for winter cereal crops – until 1 August.

15. The Latvia University of Life Sciences and Technologies shall register the application received in the register of applications for variety assessment. If the application has been completed in accordance with Annex 2 to this Regulation and all the necessary information has been indicated, the applicant shall, within two weeks, be notified regarding inclusion of the applied variety in the variety field trial plan. The applicant may be informed by sending the abovementioned information to the electronic mail address indicated by him or her.

16. If the application has not been completed in accordance with Annex 2 to this Regulation, the Latvia University of Agriculture shall not include the variety applied in the variety field trial plan and shall request the applicant to submit an updated application within 20 working days. The abovementioned information may be notified to the applicant, by sending it to the electronic mail address indicated by him or her.

17. If an application for the assessment of spring cereal crop, fodder plant, oil plant, except for winter crop forms, fibre plants, potatoes, and beet varieties has been submitted after 20 March, for the assessment of a winter Swede rape and winter turnip rape variety – after 1 August and for the assessment of a winter cereal crop variety – after 20 August, the variety assessment shall be performed in the following year.

**III. Sequence of Variety Assessment**

18. The Latvia University of Agriculture shall ensure locations for conducting of variety assessment field trials in compliance with Annex 3 to this Regulation.

19. After registration of the application, the Latvia University of Life Sciences and Technologies shall ensure the variety assessment in accordance with the following procedures:

19.1. conclude a contract with the applicant for the variety assessment, indicating therein:

19.1.1. the species;

19.1.2. the variety;

19.1.3. the locations of variety field trials;

19.1.4. the necessary quantity of seed material;

19.1.5. the procedures and time for the supply of seeds;

19.1.6. the procedures and deadlines for the submission of assessment results;

19.1.7. the payment procedures for variety assessment;

19.2. the variety shall be included in the variety field trial plan in which species, variety, time when the variety assessment was started, locations of the variety field trials, years of variety assessment, applicant, breeder, state in which the variety has been developed shall be indicated.

20. Pricing for the assessment of plant varieties are indicated in Annex 4 to this Regulation.

21. Quality of the species seed material shall conform to the quality requirements of the basic seed category laid down in the laws and regulations regarding growing and marketing of seeds. The seed material shall be supplied in accordance with the requirements laid down in the laws and regulations regarding the plant quarantine.

[*16 August 2016*]

21.1 The Latvia University of Agriculture shall receive from the applicant of the seed samples Swede rape and turnip rape seeds treated with a plant protection product for treatment of seeds (hereinafter – mordant) registered in Latvia or in another European Union Member State, and untreated seeds of other species. Performers of field trials shall treat them with mordant registered in Latvia and coordinated with the Latvia University of Life Sciences and Technologies.

[*16 August 2016*]

22. The variety shall be assessed in accordance with the assessment groups corresponding to the species laid down in Annex 4.1 to this Regulation. An appropriate standard variety (one or several) has been determined for each specified group. When submitting the application, the applicant shall indicate in which group corresponding to the species the relevant variety shall be assessed.

[*16 August 2016*]

22.1 If several standard varieties are used for the assessment of the variety in the relevant group, the variety to be assessed shall be compared to the average assessment of all standard varieties of the relevant group.

[*16 August 2016*]

**IV. Requirements for the Performance of Field Trials**

23. Trials shall be performed in accordance with a trial scheme, including not less than four replications. The sequence of varieties shall be indicated in the schemes. Varieties in replications shall be laid out randomly.

24. Requirements for the determination of trial conditions shall be the following:

24.1. the principle of a sole difference shall ensure that:

24.1.1. all varieties have equal conditions in the trial;

24.1.2. only varieties may differ at the specific field trial location, but the number of germinating seeds sown, mordant, fertiliser, forecrop, the technology used for the soil treatment, maintenance and harvesting of sowings and plantings, is of a uniform character. Not only the variety but also the mordant may differ for the Swede rape and turnip rape at the specific field trial location;

24.1.3. harvesting terms differ for varieties with different length of vegetation period;

24.2. accuracy shall ensure an accurate fulfilment of all works in accordance with the conditions of good agricultural practice and the requirements of this Regulation;

24.3. the distance from trial field plots to forests, coppices, highways, water reservoirs, buildings and structures, separate trees, motorways, collecting ditches and the edge of a field shall not affect the trial results;

24.4. assessments of field trials and measurements for one feature in one trial shall be performed by the same specialist.

[*16 August 2016*]

25. Trials shall be performed in a field which conforms to the following requirements:

25.1. data regarding the species, sown seeds, fertiliser, plant protection products and yield have been registered in the field history for at least the four previous years;

25.2. the presence of perennial weeds in the field shall not affect the results of trials;

25.3. the phosphorus and potassium content in the soil that can be easily used by plants depending on the soil reaction and granulometric composition shall be high or average;

25.4. prior to the organisation of trials, the levelling sowing where trials are not performed has been arranged in the field within the area intended for it for at least one year;

25.5. the trial for the suitability of variety for organic farming shall be performed in a field certified in accordance with the laws and regulations regarding the monitoring and control of organic farming.

[*16 August 2016*]

26. The cultivation process requirements shall be the following:

26.1. the relevant species of plants may be cultivated repeatedly in the same field with an interval that is not less than four years, but the relevant species of cereal crops – with an interval of three years;

26.2. a forecrop shall be selected for each species in accordance with the conditions of good agricultural practice;

26.3. all works in field trials shall be carried out in compliance with the conditions of good agricultural practice for cultivation of the species to be assessed, paying special attention to a timely, uniform and qualitative fulfilment of the work;

26.4. trial sowing or planting shall be carried out observing the recommended seed rates in accordance with Annex 5 to this Regulation.

[*16 August 2016*]

27. The requirements for fertilisation shall be as follows:

27.1. the following shall be taken into account when calculating the necessary total dose of fertiliser:

27.1.1. results of the agrochemical research of soil which are not more than five years old;

27.1.2. plant nutrient removal;

27.1.3. influence of the forecrop;

27.1.4. other factors influencing the amount of fertiliser dose and time period of fertilisation;

27.2. one or several of the following methods shall be used in organic farming to provide plants with nutrients in crop rotation:

27.2.1. growing of papilionaceous plants;

27.2.2. growing of green manure plants;

27.2.3. growing of green manure plants as a catch crop;

27.2.4. working of plant waste into the soil – straw, herbaceous perennial plant waste, potato foliage, or other plant waste;

27.2.5. use of a compost, manure, or other organic mass;

27.2.6. performance of an additional soil treatment which promotes intensive activity of micro-organisms (for example, repeated inverting of the soil which increases the amount of potassium and phosphorus available to plants);

27.2.7. if necessary, use of fertilisers allowed in Annex II to Commission Implementing Regulation (EU) 2021/1165 of 15 July 2021 authorising certain products and substances for use in organic production and establishing their lists.

[*23 October 2018; 16 August 2022*]

28. The requirements for the disposition of trial field plots shall be as follows:

28.1. plots shall be positioned perpendicularly to the ploughing direction;

28.2. in one trial the accounting area of plots and dimensions of plots shall be the same. The accounting area of plots shall be not less than that referred to in Annex 6 to this Regulation;

28.3. the replication (part of the trial area which includes all varieties) shall be positioned in one up to four rows without the division of replications, in between of which there are zones that allow to harvest each variety separately.

29. The requirements for the maintenance of sowings and plantings shall be as follows:

29.1. maintenance in each trial for all varieties of the relevant species shall be carried out within the same time periods;

29.2. only such plant protection products shall be used for the maintenance thereof, which are permitted in accordance with the laws and regulations regarding plant protection;

29.3. the maintenance of turning zones in order and marking of variants and replications shall be ensured. A labelling shall be positioned next to each plot and the preservation thereof shall be ensured throughout the vegetation period. The number or code of the variety, the name of the variety, and the replication shall be indicated in the labelling.

[*16 August 2016*]

**V. Observations Made During Field Trials and the Their Accounting**

30. Observations and accounting of each species, and processing of the assessment data shall be done by the Latvia University of Life Sciences and Technologies.

[*16 August 2016*]

31. Phenological observations of cultivated plant varieties shall be made during the vegetation period by marking the dates when plants have reached the relevant growth stage. The moment when 10–15 per cent of the plants have reached the relevant growth stage shall be deemed as the beginning of the stage. The moment when 75 per cent of the plants have reached the relevant stage shall be considered a complete stage.

32. Upon making phenological observations, the following growth (plant development) stages shall be marked:

32.1. for the cereal crop:

32.1.1. for all species, except the species referred to in Sub-paragraphs 32.1.2, 32.1.3, and 32.1.4 of this Regulation – full stage of seedlings, beginning of ear or panicle emergence, full stage of blooming (only rye) and full stage of maturing;

32.1.2. for buckwheat – full stage of seedling, beginning of inflorescence emergence stage and full stage of maturing;

32.1.3. for oats to obtain green mass – middle of blooming;

32.1.4. for maize (to obtain green mass) – full stage of seedling, beginning of flowering stage and milky ripeness;

32.2. for fodder plants:

32.2.1. for field peas, field beans, vetches, white lupine, blue lupine, yellow lupine for obtaining of seeds – full stage of seedling, beginning of flowering stage and ripeness for harvesting;

32.2.2. for grasses – full stage of seedling and beginning of ear/panicle emergence;

32.2.3. for papilionaceous plants (for the obtaining of green mass), oil radishes, phacelia – full stage of seedling and beginning of blooming;

32.3. oil plants and fibre plants:

32.3.1. for Swede rape and turnip rape, linseed, hempseed – full stage of seedling, beginning stage of flowering and ripeness for harvesting;

32.3.2. for fibre flax – full stage of seedling, beginning stage of flowering and early yellow ripening;

32.3.3. for fibre hemp – full stage of seedling, beginning stage of blooming and full stage of flowering;

32.3.4. for white mustard (green mass) – full stage of seedling and beginning of flowering stage;

32.3.5. for soybeans – full stage of seedling, beginning of flowering and ripeness for harvesting;

32.4. for potatoes – full seedling stage, beginning of blooming and end of vegetation period (for early varieties only).

[*16 August 2016; 23 October 2018*]

33. In field trials, a variety shall be assessed in accordance with the indicators referred to in Annex 1 to this Regulation, as well as accounting and measurements (except for quality analyses) shall be made in accordance with the methods referred to in Annexes 7, 7.1, 7.2, 7.3, 7.4, and 7.5 to this Regulation. For measurements and weightings, equipment shall be used which has been verified at least once per calendar year.

[*16 August 2022*]

34. If the appearance of diseases or pests have been found on one or several varieties, the date, as well as the growth stage of the variety shall be indicated in the accounting register and plant protection products shall be used during the whole trial.

35. If plants are partially or completely destroyed during the variety assessment trial, a deed shall be drawn up. Reasons for destruction and the amount of area by which the accounting area is reduced shall be indicated in the deed. A commission consisting of three persons shall be established for drawing up of the deed. The procedures for reimbursement of variety assessment expenditure shall be determined upon mutual agreement by and between the Latvia University of Life Sciences and Technologies and the applicant.

36. A deed shall be drawn up so that separate accounting areas of trial plots would be recognised invalid for observations. Upon reducing the accounting areas of trial plots, the following conditions shall be complied with:

36.1. if up to 50 per cent of the trial plants from the accounting area of the plot have been destroyed, the actual accounting area shall be taken into account;

36.2. if more than 50 per cent of the trial plants from the accounting area of the plot have been destroyed, the plot shall be recognised as invalid for observations;

36.3. if more than 50 per cent of the trial plants from the accounting area of the replication have been destroyed, the replication shall be recognised as invalid for observations;

36.4. if more than 50 per cent of trial plants from the trial accounting area have been destroyed, the trial shall be written off.

37. If the observations and accounting regarding any characteristic of a variety differs greatly from the indices characterising the variety submitted in accordance with Annex 2 to this Regulation, conditions and results shall be analysed. These differences may not be the reason for the recognition of the results as invalid. Plots may not be recognised as invalid for observations, on the basis of the difference of yield per replications, if specific reasons for the differences have not been clarified.

38. The harvesting shall be carried out when the variety has reached ripeness for harvesting.

39. Prior to the harvesting, the turning zones, isolation zones and areas that have been recognised as invalid for observations, if any, shall be harvested first. The accounting area of plots shall be updated, taking into account the reduction of the accounting area.

**VI. Performance of Quality Analyses**

40. In order to assess the conformity of a variety with the variety assessment criteria referred to in Annex 1 to this Regulation, the Latvia University of Life Sciences and Technologies shall ensure the performance of quality analyses in accordance with the methods referred to in Annex 7.6 to this Regulation at any of the laboratories referred to in Paragraph 41 of this Regulation.

[*16 August 2016; 23 October 2018*]

41. The variety quality analyses referred to in Annex 1 to this Regulation may be performed at any of the following laboratories:

41.1. a laboratory which has been accredited with the national accreditation authority in accordance with the laws and regulation regarding assessment, accreditation, and supervision of conformity assessment authorities in the field of fodder, food, fibre and malt testing;

41.2. laboratories of the accredited institutions of other European Union Member States, Member States of the European Economic Area and of the European Free Trade Association;

41.3. a laboratory which has at least three years of experience in performance of quality analyses.

[*16 August 2016; 7 August 2018*]

**VII. Variety Assessment, Compilation and Notification of Results**

42. The Latvia University of Life Sciences and Technologies shall compile the data acquired in field trials of variety assessment, the results of quality analyses, analyse them, perform the mathematical processing of data, as well as make the variety assessment in point system according to the variety assessment indicators, taking into account the assessment methods of value for the cultivation and use of varieties (Annexes 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, and 8).

[*16 August 2016; 23 October 2018*]

43. [16 June 2018 / See Paragraph 57]

44. [16 June 2018 / See Paragraph 57]

45. [16 June 2018 / See Paragraph 57]

46. [16 June 2018 / See Paragraph 57]

47. The Latvia University of Life Sciences and Technologies shall notify the applicant as follows:

47.1. full results of the variety assessment referred to in Annex 1 to this Regulation in respect of the relevant species (except for maize, soybeans, hemp, flax, and potatoes) – by 15 October of the current year, but not later than by 25 October, if the preparation of these results is delayed by the weather conditions inappropriate for harvesting or other justified circumstances;

47.2. full results of the variety assessment referred to in Annex 1 to this Regulation in respect maize, soybeans, hemp, flax, and potatoes – by 1 November of the current year, but not later than by 10 November, if the preparation of these results is delayed by the weather conditions inappropriate for harvesting or other justified circumstances.

[*16 August 2016; 23 October 2018*]

48. If the applicant has doubts regarding the accuracy of variety assessment results, the applicant may, within two weeks after notification of the variety assessment results, turn to the Latvia University of Life Sciences and Technologies with justified objections in order to revise the abovementioned results.

49. Upon agreeing with the Service on technical preparation of the documents to be delivered, the Latvia University of Life Sciences and Technologies shall submit the following to the Service for inclusion in the Assessment Database of the Plant Variety Value for the Cultivation and Use:

49.1. full results of the variety assessment for the species referred to in Annex 1 to this Regulation (except for maize, soybeans, hemp, flax, and potatoes) per each trial location – by 15 October of the current year, but not later than by 25 October, if the preparation of these results is delayed by the weather conditions inappropriate for harvesting or other justified circumstances;

49.2. full results of the variety assessment referred to in Annex 1 to this Regulation in respect maize, soybeans, hemp, flax, and potatoes per each trial location – by 1 November of the current year, but not later than by 10 November, if the preparation of these results is delayed by the weather conditions inappropriate for harvesting or other justified circumstances.

[*16 August 2016; 23 October 2018*]

49.1 The Service shall publish all variety assessment results on its website by 20 November of the current year.

[*16 August 2016*]

**VIII. Closing Provisions**

50. Cabinet Regulation No. 469 of 30 June 2008, Regulations for the Assessment of Plant Variety Value for Cultivation and Use (Latvijas Vēstnesis, 2008, No. 100), is repealed.

51. Quality analysis for those varieties the assessment of which has been started in accordance with the requirements of Cabinet Regulation No. 469 of 30 June 2008, Regulations for the Assessment of Plant Variety Value for Cultivation and Use, and for which the assessment takes place for the second year, shall be performed using the methods applied in the first year of examination.

52. Quality analysis for those varieties, assessment of which has been started in compliance with the requirements of Cabinet Regulation No. 469 of 30 June 2008, Regulations for the Assessment of Plant Variety Value for Cultivation and Use, and for which it is the first year of assessment in 2012 (also winter crop sown in the autumn of 2011), shall be performed in accordance with the procedures referred to in Chapter VI of this Regulation.

53. Quality analysis for those winter crop varieties, assessment of which has been started in compliance with the requirements of Cabinet Regulation No. 469 of 30 June 2008, Regulations for the Assessment of Plant Variety Value for Cultivation and Use, and for which it is the third year of assessment in 2013, shall be performed using the same methods with which the assessment was started, but in autumn 2012 varieties shall be sown at the locations referred to in Annex 3 to this Regulation.

54. The Service shall submit applications for assessment of value for cultivation and use in 2013, which have been received at the Service after 1 August 2012, to the Latvia University of Life Sciences and Technologies.

55. This Regulation shall be applicable from 1 August 2012.

56. For varieties of the winter cereal crops and oil plants (winter crop forms) applied for inclusion in the Catalogue until 1 September 2016, duration of the variety assessment shall be two years if the wintering conditions were appropriate for assessment of winter hardiness. If the National Plant Variety Council, upon assessing the winter hardiness assessment results of two years for a variety until 1 June of the current year, recognises that wintering conditions had not been appropriate for the assessment of winter hardiness, the variety assessment shall be continued for the third year upon a proposal of the National Plant Variety Council;

[*16 August 2016*]

57. Paragraphs 43, 44, 45, and 46 shall be repealed on 16 June 2018.

[*16 August 2016*]

58. Such requirements which were in force on the day of submitting the application shall be applied to the assessment of the value for the cultivation and use to the varieties the assessment of which was started before 15 November 2018.

[*23 October 2018*]

59. Such requirements which were in force on the day of submitting the application shall be applied to the assessment of the value for the cultivation and use to the varieties the assessment of which was started before 1 July 2019.

[*11 June 2019*]

**Informative Reference to European Union Directive**

This Regulation contains legal norms arising from Commission Directive 2003/90/EC of 6 October 2003 setting out implementing measures for the purposes of Article 7 of Council Directive 2002/53/EC as regards the characteristics to be covered as a minimum by the examination and the minimum conditions for examining certain varieties of agricultural plant species.

Acting for the Prime Minister, Minister for Welfare I. Viņķele

Minister for Agriculture L. Straujuma

**Annex 1**

Cabinet Regulation No. 518

24 July 2012

[*16 August 2022*]

**Assessment Indicators of Varieties in Conventional and Organic Farming**

**1. Assessment Indicators of the Value for the Cultivation and Use of Cereal Crop Varieties**

1.1. Assessment of common wheat (*Triticum aestivum* L. subsp. *aestivum*), durum wheat (*Triticum turgidum* L. subsp. *durum* (Desf.) van Slageren), spelt wheat (*Triticum aestivum* L. subsp. *spelta* (L.) Thell) varieties

Field trial indicators:

1.1.1. winter hardiness (winter crop form), points;

1.1.2. height of plants, cm\*;

1.1.3. lodging resistance, points\*\*;

1.1.4. grain yield at standard moisture, t ha–1\*;

1.1.5. grain yield, % (in comparison with the standard variety or the average indicator of standard varieties);

1.1.6. length of vegetation period, days\*;

1.1.7. mass of 1000 grains, g;

Quality indicators:

1.1.8. bulk density, g l–1;

1.1.9. protein content, %;

1.1.10. gluten content, %;

1.1.11. sedimentation (*Zeleny* index), cm3\*;

1.1.12. falling number, s\*;

1.1.13. starch content, %;

1.1.14. colour, unit (for durum wheat);

1.1.15. vitreous aspect, % (for durum wheat).

1.2. Assessment of rye (*Secale cereale L.*) varieties

Field trial indicators:

1.2.1. winter hardiness, points;

1.2.2. lodging resistance, points\*\*;

1.2.3. grain yield at standard moisture, t ha–1\*;

1.2.4. grain yield, % (in comparison with the standard variety or the average indicator of standard varieties);

1.2.5. height of plants, cm\*;

1.2.6. length of vegetation period, days\*;

1.2.7. mass of 1000 grains, g;

Quality indicators:

1.2.8. bulk density, g l–1;

1.2.9. protein content, %;

1.2.10. falling number, s\*;

1.2.11. starch content, %.

1.3. Assessment of triticale (*x Triticosecale Wittm. ex A. Camus*) varieties

Field trial indicators:

1.3.1. winter hardiness (for winter triticale), points;

1.3.2. lodging resistance, points\*\*;

1.3.3. grain yield at standard moisture, t ha–1\*;

1.3.4. grain yield, % (in comparison with the standard variety or the average indicator of standard varieties);

1.3.5. height of plants, cm\*;

1.3.6. length of vegetation period, days\*;

1.3.7. mass of 1000 grains, g;

Quality indicators:

1.3.8. bulk density, g l–1;

1.3.9. protein content, %;

1.3.10. falling number, s\*;

1.3.11. starch content, %.

1.4. Assessment of barley (*Hordeum vulgare L.*) varieties

Field trial indicators:

1.4.1. winter hardiness (for winter barley), points;

1.4.2. lodging resistance, points\*\*;

1.4.3. grain yield at standard moisture, t ha–1\*;

1.4.4. grain yield, % (in comparison with the standard variety or the average indicator of standard varieties);

1.4.5. height of plants, cm\*;

1.4.6. length of vegetation period, days\*;

1.4.7. mass of 1000 grains, g;

1.4.8. threshability, % (for hulless barley);

Quality indicators:

1.4.9. protein content, %;

1.4.10. bulk density, g l–1;

1.4.11. starch content, %;

1.4.12. extractivity (content of extract for barley in dry matter %, for malt group);

1.4.13. grain fractions, %, over 2.5 mm (for malt group).

1.5. Assessment of oat (*Avena sativa L.*) and hulless oat (*Avena nuda L.*) (hereinafter all together – oats) varieties

1.5.1. For a grain group:

Field trial indicators:

1.5.1.1. grain yield at standard moisture, t ha–1\*;

1.5.1.2. grain yield, % (in comparison with the standard variety or the average indicator of standard varieties);

1.5.1.3. lodging resistance, points\*\*;

1.5.1.4. height of plants, cm\*;

1.5.1.5. length of vegetation period, days\*;

1.5.1.6. mass of 1000 grains, g;

Quality indicators:

1.5.1.7. bulk density, g l-1;

1.5.1.8. huskiness, %;

1.5.1.9. threshability, % (for hulless oats);

1.5.1.10. protein content, %;

1.5.1.11. fat content, %;

1.5.2. For a green mass group:

Field trial indicators:

1.5.2.1. green mass yield, t ha-1\*;

1.5.2.2. height of plants, cm\*;

1.5.2.3. lodging resistance, points\*\*;

1.5.2.4. dry matter yield, t ha-1\*;

1.5.2.5. dry matter yield, % (in comparison with the standard variety or the average indicator of standard varieties);

1.5.2.6. length of vegetation period, days\*;

Quality indicators:

1.5.2.7. dry matter content, %\*;

1.5.2.8. crude protein content in the dry matter, %.

1.6. Assessment of buckwheat (*Fagopyrum esculentum Moench*) varieties

Field trial indicators:

1.6.1. grain (nutlet) yield at standard moisture, t ha–1\*;

1.6.2. grain (nutlet) yield, % (in comparison with the standard variety or the average indicator of standard varieties);

1.6.3. lodging resistance, points;

1.6.4. height of plants, cm\*;

1.6.5. length of vegetation period, days\*;

1.6.6. mass of 1000 grains (nutlets), g;

Quality indicators:

1.6.7. bulk density, g l-1;

1.6.8. huskiness, %;

1.6.9. protein content, %;

1.6.10. starch content, %.

1.7. Assessment of maize (*Zea mays L.*) varieties (for the obtaining of green mass)

Field trial indicators:

1.7.1. green mass yield, t ha-1\*;

1.7.2. height of plants, cm\*;

1.7.3. length of vegetation period, days\*;

1.7.4. lodging resistance, points\*\*;

1.7.5. number of ears, pcs\*;

1.7.6. dry matter yield, t ha-1\*;

1.7.7. dry matter yield, % (in comparison with the standard variety or the average indicator of standard varieties);

Quality indicators:

1.7.8. dry matter content, %;

1.7.9. crude protein content in the dry matter, %;

1.7.10. neutral detergent fibre (NDF), %, in the dry matter;

1.7.11. acid detergent fibre (ADF), %, in dry matter.

**2. Assessment Indicators of Value for Cultivation and Use of Fodder Plants**

2.1. Assessment of field pea (also winter form) (*Pisum sativum* L. (*partim*)) and field bean (also winter form) (*Vicia faba* L. (*partim*)) varieties

Field trial indicators:

2.1.1. seed yield at standard moisture, t ha–1\*;

2.1.2. seed yield, % (in comparison with the standard variety or the average indicator of standard varieties);

2.1.3. lodging resistance, points;

2.1.4. height of plants, cm\*;

2.1.5. length of vegetation period, days\*;

2.1.6. winter hardiness (for winter forms), points;

2.1.7. mass of 1000 seeds, g\*;

Quality indicators:

2.1.8. protein content, %.

2.2. Assessment of white lupine (*Lupinus albus* L.), blue lupine (*Lupinus angustifolius* L.), and yellow lupine (*Lupinus luteus* L.) varieties

2.2.1. For obtaining of seeds:

Field trial indicators:

2.2.1.1. seed yield at standard moisture, t ha–1\*;

2.2.1.2. seed yield, % (in comparison with the standard variety or the average indicator of standard varieties);

2.2.1.3. lodging resistance, points;

2.2.1.4. height of plants, cm\*;

2.2.1.5. length of vegetation period, days\*;

2.2.1.6. mass of 1000 seeds, g\*;

Quality indicators:

2.2.1.7. protein content, %;

2.2.2. For the obtaining of green mass:

Field trial indicators:

2.2.2.1. green mass yield, t ha-1\*;

2.2.2.2. height of plants, cm\*;

2.2.2.3. lodging resistance, points\*\*;

2.2.2.4. dry matter yield, t ha-1\*;

2.2.2.5. dry matter yield, % (in comparison with the standard variety or the average indicator of standard varieties);

2.2.2.6. length of vegetation period, days\*;

Quality indicators:

2.2.2.7. dry matter content, %\*;

2.2.2.8. crude protein content in the dry matter, % (in comparison with the standard variety or the average indicator of standard varieties).

2.3. Assessment of cereal grass (*Poaceae* (*Gramineae*)) varieties

Field trial indicators:

2.3.1. winter hardiness (except annual Westerwolds ryegrass), points;

2.3.2. green mass yield, t ha-1\*;

2.3.3. number of days until the first cutting (until blooming), days\*;

2.3.4. height of plants, cm\*;

2.3.5. lodging resistance, points;

2.3.6. dry matter yield, t ha-1\*;

2.3.7. dry matter yield, % (in comparison with the standard variety or the average indicator of standard varieties);

Quality indicators:

2.3.8. dry matter content, %\*;

2.3.9. crude protein content in the dry matter, %;

2.3.10. neutral detergent fibre (NDF), %, in the dry matter\*;

2.3.11. acid detergent fibre (ADF), %, in dry matter\*.

2.4. Assessment of common vetch (*Vicia sativa* L.), hairy vetch (*Vicia villosa* Roth), oil radish (*Raphanus sativus* L. var. *oleiformis* Pers.), and phacelia (*Phacelia tanacetifolia* Benth.) varieties for the obtaining of green mass

Field trial indicators:

2.4.1. green mass yield, t ha-1\*;

2.4.2. height of plants, cm\*;

2.4.3. lodging resistance, points\*\*;

2.4.4. dry matter yield, t ha-1\*;

2.4.5. dry matter yield, % (in comparison with the standard variety or the average indicator of standard varieties);

2.4.6. length of vegetation period, days\*;

2.4.7. winter hardiness (for hairy vetch), points;

Quality indicators:

2.4.8. dry matter content, %\*;

2.4.9. crude protein content in the dry matter, % (for oil radish, phacelia);

2.4.10. crude protein content in the dry matter, % (in comparison with the standard variety or the average indicator of standard varieties), for vetch in organic and conventional agriculture.

2.5. Assessment of previously not mentioned papilionaceous plant (*Fabaceae* (*Leguminosae*)) varieties

Field trial indicators:

2.5.1. winter hardiness, points;

2.5.2. green mass yield, t ha-1\*;

2.5.3. number of days until the first cutting (until flowering out), days\*;

2.5.4. height of plants, cm\*;

2.5.5. lodging resistance, points;

2.5.6. dry matter yield, t ha-1\*;

2.5.7. dry matter yield, % (in comparison with the standard variety or the average indicator of standard varieties);

Quality indicators:

2.5.8. dry matter content, %\*;

2.5.9. crude protein content in the dry matter, %;

2.5.10. neutral detergent fibre (NDF), %, in the dry matter\*;

2.5.11. acid detergent fibre (ADF), %, in the dry matter\*.

**3. Assessment Indicators of the Value for Cultivation and Use of Oil Plant and Fibre Plant Varieties**

3.1. Assessment of Swede rape (*Brassica napus* L. (*partim*)) and turnip rape (*Brassica rapa* L. var. *silvestris* (Lam.) Briggs) varieties

Field trial indicators:

3.1.1. seed yield at standard moisture, t ha–1\*;

3.1.2. seed yield, % (in comparison with the standard variety or the average indicator of standard varieties);

3.1.3. winter hardiness (for winter Swede rape and winter turnip rape), points;

3.1.4. lodging resistance, points\*;

3.1.5. height of plants, cm\*;

3.1.6. length of vegetation period, days\*;

3.1.7. oil yield, % (in comparison with the standard variety or the average indicator of standard varieties);

3.1.8. mass of 1000 seeds, g\*;

Quality indicators:

3.1.9. bulk density, g l–1\*;

3.1.10. oil content, % (in comparison with the standard variety or the average indicator of standard varieties)\*.

3.2. Assessment of flax (*Linum usitatissimum* L.) varieties

3.2.1. Fibre flax:

Field trial indicators:

3.2.1.1. stalk yield, t/ha-1\*;

3.2.1.2. stalk yield, % (in comparison with the standard variety or the average indicator of standard varieties);

3.2.1.3. lodging resistance, points;

3.2.1.4. length of vegetation period (until yellow ripening), days\*;

3.2.1.5. height of plants, cm;

Quality indicators:

3.2.1.6. average length of cork, cm;

3.2.1.7. non-retted fibre content, %;

3.2.2. Linseed:

Field trial indicators:

3.2.2.1. seed yield, t ha–1\*;

3.2.2.2. seed yield, % (in comparison with the standard variety or the average indicator of standard varieties);

3.2.2.3. lodging resistance, points;

3.2.2.4. length of vegetation period (until maturity of seeds is reached), days\*;

3.2.2.5. height of plants, cm\*;

3.2.2.6. oil yield, % (in comparison with the standard variety or the average indicator of standard varieties);

Quality indicators:

3.2.2.7. oil content, % (in comparison with the standard variety or the average indicator of standard varieties)\*.

3.3. Assessment of hemp (*Cannabis sativa* L.) varieties

3.3.1. Fibre hemp:

Field trial indicators:

3.3.1.1. stalk yield, t/ha-1\*;

3.3.1.2. stalk yield, % (in comparison with the standard variety or the average indicator of standard varieties);

3.3.1.3. length of vegetation period (until full flowering stage), days\*;

3.3.1.4. height of plants, cm;

Quality indicators:

3.3.1.5. non-retted fibre content, %;

3.3.2. Hempseed:

Field trial indicators:

3.3.2.1. seed yield, t ha–1\*;

3.3.2.2. seed yield, % (in comparison with the standard variety or the average indicator of standard varieties);

3.3.2.3. length of vegetation period (until maturity of seeds is reached), days\*;

3.3.2.4. height of plants, cm\*;

3.3.2.5. oil yield, % (in comparison with the standard variety or the average indicator of standard varieties);

3.3.2.6. mass of 1000 seeds, g\*;

Quality indicators:

3.3.2.7. oil content, % (in comparison with the standard variety or the average indicator of standard varieties)\*.

3.4. Assessment of white mustard (*Sinapis alba* L.) varieties

Field trial indicators:

3.4.1. green mass yield, t ha-1\*;

3.4.2. height of plants, cm\*;

3.4.3. lodging resistance, points\*\*;

3.4.4. dry matter yield, t ha-1\*;

3.4.5. dry matter yield, % (in comparison with the standard variety or the average indicator of standard varieties);

3.4.6. length of vegetation period, days\*;

Quality indicators:

3.4.7. dry matter content, %\*;

3.4.8. crude protein content in the dry matter, %.

3.5. Assessment of soybean (*Glycine max*) varieties

Field trial indicators:

3.5.1. seed yield at standard moisture, t ha–1\*;

3.5.2. seed yield, % (in comparison with the standard variety or the average indicator of standard varieties);

3.5.3. lodging resistance, points;

3.5.4. height of plants, cm\*;

3.5.5. length of vegetation period, days\*;

3.5.6. weight of 1000 seeds, g\*;

3.5.7. oil yield, % (in comparison with the standard variety or the average indicator of standard varieties);

Quality indicators:

3.5.8. protein content, % (in comparison with the standard variety or the average indicator of standard varieties);

3.5.9. oil content, % (in comparison with the standard variety or the average indicator of standard varieties)\*.

**4. Assessment Indicators of the Value for Cultivation and Use of Potato Varieties**

4.1. Assessment of early potato (*Solanum tuberosum* L.) varieties

Field trial indicators:

4.1.1. tuber yield 45 days after emergence of seedlings, t ha–1\*;

4.1.2. yield of medium-sized and large tubers (hereinafter – the market tubers) 45 days after emergence of seedlings, t ha–1\*;

4.1.3. market tuber yield, %, (in comparison with the standard variety or the average indicator of standard varieties 45 days after emergence of seedlings);

4.1.4. tuber yield 55 days after emergence of seedlings, t ha–1\*;

4.1.5. tuber yield 55 days after emergence of seedlings, t ha–1\*;

4.1.6. market tuber yield, %, (in comparison with the standard variety or the average indicator of standard varieties 55 days after emergence of seedlings);

4.1.7. yield at the end of vegetation period, t ha–1\*;

4.1.8. yield at the end of vegetation period, % (in comparison with the standard variety or the average indicator of standard varieties);

4.1.9. market tuber yield at the end of vegetation period, t ha–1\*;

4.1.10. market tuber yield at the end of vegetation period, % (in comparison with the standard variety or the average indicator of standard varieties);

4.1.11. the length of the vegetation period (from emergence of seedlings (full stage of seedling) until falling over of the foliage), days\*;

4.1.12. average weight of market tuber, g\*;

4.1.13. taste characteristics, points\*;

4.1.14. starch content in tubers, %\*;

4.1.15. resistance to diseases:

4.1.15.1. foliage infection with late blight (*Phytophtora infestans*), %;

4.1.15.2. foliage infection with early blight (*Alternaria solani*), %;

4.1.15.3. tuber infection with late blight (*Phytophtora infestans*), %;

4.1.15.4. tuber infection with bacterial soft rot (*Pseudomonas fluorescens*, *Xanthomonas spp.*, *Clostridium spp.*), %;

4.1.15.5. tuber infection with dry rot (*Fusarium spp.* and *Phoma foveata*), %.

4.2. Assessment of medium early, medium late and late potato (*Solanum tuberosum* L.) varieties

Field trial indicators:

4.2.1. yield at the end of vegetation period, t ha–1\*;

4.2.2. yield at the end of vegetation period, % (in comparison with the standard variety or the average indicator of standard varieties);

4.2.3. market tuber yield at the end of vegetation period, t ha–1\*;

4.2.4. market tuber yield at the end of vegetation period, % (in comparison with the standard variety or the average indicator of standard varieties);

4.2.5. length of vegetation period (from emergency of seedlings (full stage of seedling) until falling over or destruction of the foliage), days\*;

4.2.6. taste characteristics, points\*;

4.2.7. average weight of market tubers, g\*;

4.2.8. starch content in tubers, %;

4.2.9. starch yield, % (in comparison with the standard variety or the average indicator of standard varieties)\*;

4.2.10. dry matter content in tubers, %\*;

4.2.11. resistance to diseases:

4.2.11.1. foliage infection with late blight (*Phytophtora infestans*), %;

4.2.11.2. foliage infection with early blight (*Alternaria solani*), %;

4.2.11.3. tuber infection with late blight (*Phytophtora infestans*), %;

4.2.11.4. tuber infection with bacterial soft rot (*Pseudomonas fluorescens*, *Xanthomonas spp.*, *Clostridium spp.*), %;

4.2.11.5. tuber infection with dry rot (*Fusarium spp.* and *Phoma foveata*), %.

Notes.

1. \* The indicator shall be determined for informative purposes, but it shall not be taken into account in the assessment of the value for the cultivation and use of the varieties in accordance with Annex 8 to Cabinet Regulation No. 518 of 24 July 2012, Assessment of Value for the Cultivation and Use of Plant Variety.

2. \*\* The indicator shall be taken into account only when assessing the suitability of the variety for organic farming.

**Annex 2**

Cabinet Regulation No. 518

24 July 2012

**Information to be Included in the Application for the Assessment of a Variety**

[*16 August 2016; 23 October 2018*]

1. Information regarding the applicant:

1.1. for a legal person – name, legal address, registration number in the Enterprise Register or the Commercial Register, contact information (for example, telephone number, e-mail address);

1.2. for a natural person – given name, surname, personal identity number, address of the place of residence, contact information (for example, telephone number, e-mail address).

2. Applicant – breeder, holder of the breeder’s right, maintainer of a variety (for varieties that do not have a breeder), authorised representative of the breeder, holder of the breeder’s right, or maintainer of a variety.

3. Information regarding the breeder:

3.1. for a legal person – name, registration number in the Enterprise Register or the Commercial Register, address, nationality, contact information (for example, telephone number, e-mail address);

3.2. for a natural person – given name, surname, personal identity number, address, nationality, contact information (for example, telephone number, e-mail address).

4. Information regarding the maintainer of the variety:

4.1. for a legal person – name, registration number in the Enterprise Register or the Commercial Register, address, nationality, contact information (for example, telephone number, e-mail address);

4.2. for a natural person – given name, surname, personal identity number, address, nationality, contact information (for example, telephone number, e-mail address).

5. Expanded name of the plant variety in Latin, specifying the genus, species, subspecies, variety.

6. Name of the plant species in Latvian.

7. Denomination of the variety or proposed denomination of the variety (if it is not recognised) and breeder’s reference.

8. State in which the variety was developed.

9. Information regarding whether the variety has been genetically modified.

10. Information regarding whether a variety has been applied for assessment of the value for cultivation and use:

10.1. in conventional farming;

10.2. organic farming.

11. Information regarding the indicators characterising the variety (for example, for cereal crop – winter or summer crop form, hulless grain or flake form, for barley – the number of ear edges, type of use: for obtaining of green mass or grain, for barley – for the obtaining of malt, for potatoes – ripeness for harvest (earliness), for lupine (except for perennial) – the type of use: for the obtaining of green mass or seeds, for flax – for the obtaining of oil or fibre, for hemp – for the obtaining of oil or fibre, a note as to whether the variety is a hybrid (and hybrid type) and which types shall be taken into account, cultivating the variety in a trial. An indication in which group corresponding to the variety in accordance with Annex 4.1 to Cabinet Regulation No. 518 of 24 July 2012, Assessment of Value for Cultivation and Use of Plant Variety, the variety shall be assessed.

12. Indication “I wish to receive all information in electronic form” (the indication shall be used if the applicant wishes to receive all information related to the variety assessment to the indicated e-mail address).

13. Date, signature and seal.

Note. Details of the document “signature”, “date” and “place for a seal” need not be completed if the electronic document has been drawn up in conformity with the laws and regulations regarding the drawing up of electronic documents.

**Annex 3**

Cabinet Regulation No. 518

24 July 2012

[*16 August 2022*]

**Locations for the Performance of Assessment Field Trials of a Variety**

|  |  |  |
| --- | --- | --- |
| No. | Species, variety assessment group (indicate if trial locations for various assessment groups differ) | Trial locations |
| in conventional farming | in organic farming |
| number of locations | locations | number of locations | locations |
| 1. | Common wheat, durum wheat, spelt wheat (winter form) | 4 | Training and research farm “Pēterlauki” of the Faculty of Agriculture of the Latvia University of Life Sciences and Technologies (hereinafter – LULST) | 3 | LULST Research Institute of Agronomy |
| LULST agency “Malnava College of the Latvia University of Life Sciences and Technologies” | Stende Research Centre of the scientific institute “Institute of Agricultural Resources and Economics” (hereinafter – AREI) |
| LULST Research Institute of Agronomy |
| AREI Stende Research Centre | AREI Viļāni Division |
| 2. | Rye | 3 | AREI Stende Research Centre | 3 | AREI Stende Research Centre |
| LULST agency “Malnava College of the Latvia University of Life Sciences and Technologies” | LULST Research Institute of Agronomy |
| AREI Priekuli Research Centre |
| AREI Viļāni Division |
| 3. | Triticale | 3 |  LULST training and research farm “Vecauce” | 2 | AREI Stende Research Centre |
| AREI Priekuļi Research Centre | LULST Research Institute of Agronomy |
| LULST agency “Malnava College of the Latvia University of Life Sciences and Technologies” |
| 4. | Barley (winter form) | 2 | AREI Stende Research Centre | 2 | AREI Stende Research Centre |
| Training and research farm “Pēterlauki” of LULST Faculty of Agriculture | LULST Research Institute of Agronomy |
| 5. | Common wheat, durum wheat, spelt wheat (spring form) | 4 | Training and research farm “Pēterlauki” of LULST Faculty of Agriculture | 3 | LULST Research Institute of Agronomy |
| LULST Research Institute of Agronomy | AREI Stende Research Centre |
| LULST agency “Malnava College of the Latvia University of Life Sciences and Technologies” |
| AREI Stende Research Centre | AREI Viļāni Division |
| 6. | Barley (all groups of spring form) | 4 | Training and research farm “Pēterlauki” of LULST Faculty of Agriculture | 3 | LULST Research Institute of Agronomy |
| LULST agency “Malnava College of the Latvia University of Life Sciences and Technologies” | AREI Stende Research Centre |
| LULST Research Institute of Agronomy |
| LULST training and research farm “Vecauce” | AREI Viļāni Division |
| 7. | Oats, naked oats | 3 | AREI Stende Research Centre | 3 | LULST Research Institute of Agronomy |
| LULST Research Institute of Agronomy | AREI Stende Research Centre |
| LULST agency “Malnava College of the Latvia University of Life Sciences and Technologies” | AREI Viļāni Division |
| 8. | Maize | 2 | Training and research farm “Pēterlauki” of LULST Faculty of Agriculture | 2 | LULST Research Institute of Agronomy |
| AREI Priekuļi Research Centre | AREI Priekuļi Research Centre |
| 9. | Buckwheat | 2 | LULST agency “Malnava College of the Latvia University of Life Sciences and Technologies” | 2 | AREI Stende Research Centre |
| LULST Research Institute of Agronomy | LULST Research Institute of Agronomy |
| 10. | Field peas, field beans (also winter forms) | 2 | AREI Stende Research Centre | 2 | AREI Stende Research Centre |
| LULST Research Institute of Agronomy | LULST Research Institute of Agronomy |
| 11. | Swede rape (all groups of winter form), turnip rape (winter form) | 4 | AREI Stende Research Centre | 2 | AREI Stende Research Centre |
| Training and research farm “Pēterlauki” of LULST Faculty of Agriculture | LULST Research Institute of Agronomy |
| LULST Research Institute of Agronomy |
| LULST agency “Malnava College of the Latvia University of Life Sciences and Technologies” |
| 12. | Swede rape (all groups of spring form), turnip rape (spring form) | 3 | Training and research farm “Pēterlauki” of LUA Faculty of Agriculture | 2 | AREI Stende Research Centre |
| LULST Research Institute of Agronomy | LULST Research Institute of Agronomy |
| LULST agency “Malnava College of the Latvia University of Life Sciences and Technologies” |
|   |
| 13. | Potatoes | 2 |  AREI Priekuļi Research Centre | 2 | AREI Stende Research Centre |
| LULST Research Institute of Agronomy | LULST Research Institute of Agronomy |
| 14. | White lupine, blue lupine, yellow lupine, common vetch, hairy vetch, oil radish, phacelia | 2 | Training and research farm “Pēterlauki” of LULST Faculty of Agriculture | 2 | LULST Research Institute of Agronomy |
| AREI Priekuļi Research Centre | AREI Priekuļi Research Centre |
| 15. | Cereal grasses | 2 | AREI Stende Research Centre | 2 | AREI Stende Research Centre |
| LULST Research Institute of Agronomy | LULST Research Institute of Agronomy |
| 16. | Previously not mentioned papilionaceous plants | 2 | Training and research farm “Pēterlauki” of LULST Faculty of Agriculture | 2 | AREI Stende Research Centre |
| LULST Research Institute of Agronomy | LULST Research Institute of Agronomy |
| 17. | Lucerne, hybrid lucerne | 2 | AREI Stende Research Centre | 2 | AREI Stende Research Centre |
| Training and research farm “Pēterlauki” of LULST Faculty of Agriculture | AREI Priekuļi Research Centre |
| 18. | Flax | 2 | LULST agency “Malnava College of the Latvia University of Life Sciences and Technologies” | 2 | AREI Stende Research Centre |
| LULST Research Institute of Agronomy | LULST Research Institute of Agronomy |
| 19. | Hemp | 2 | LULST agency “Malnava College of the Latvia University of Life Sciences and Technologies” | 2 | AREI Stende Research Centre |
| Training and research farm “Pēterlauki” of LULST Faculty of Agriculture | LULST Research Institute of Agronomy |
| 20. | White mustard | 2 | Training and research farm “Pēterlauki” of LULST Faculty of Agriculture | 2 | LULST Research Institute of Agronomy |
| AREI Priekuļi Research Centre | AREI Priekuļi Research Centre |
| 21. | Soybeans | 2 | AREI Stende Research Centre | 2 | AREI Stende Research Centre |
| LULST Research Institute of Agronomy | LULST Research Institute of Agronomy |

**Annex 4**

Cabinet Regulation No. 518

24 July 2012

[*16 August 2022*]

**Pricing of the Variety Assessment**

|  |  |  |
| --- | --- | --- |
| No. | Species | Assessment of one variety at one trial location for one year/trial cycle (euro)\* |
| in total | including |
| for field trials | for quality analyses and administrative expenditure |
| **I.** | **Cereals** |
| 1. | Common wheat (*Triticum aestivum* L. subsp. *aestivum*), durum wheat (*Triticum turgidum* L. subsp. *durum* (Desf.) van Slageren), and spelt wheat (*Triticum aestivum* L. subsp. *spelta* (L.) Thell) | 282 | 205 | 77 |
| 2. | Rye (*Secale cereale* L.) | 282 | 205 | 77 |
| 3. | Triticale (*x Triticosecale Wittm. ex A. Camus*) | 282 | 205 | 77 |
| 4. | Barley (*Hordeum vulgare* L.), except for barley referred to in Paragraph 5 | 282 | 205 | 77 |
| 5. | Barley (*Hordeum vulgare* L.) – malt group | 332 | 205 | 127 |
| 6. | Oats (*Avena sativa* L.), naked oats (*Avena nuda* L.) | 282 | 205 | 77 |
| 7. | Buckwheat (*Fagopyrum esculentum Moench*), maize (*Zea mays L.*) | 256 | 185 | 71 |
| **II.** | **Fodder plants** |
| 8. | Field peas (*Pisum sativum* L. (*partim*)), field beans (*Vicia faba* L. (*partim*)) | 282 | 205 | 77 |
| 9. | White lupine (*Lupinus albus* L.), blue lupine (*Lupinus angustifolius* L.), yellow lupine (*Lupinus luteus* L.), common vetch (*Vicia sativa* L.), hairy vetch (*Vicia villosa* Roth), oil radish (*Raphanus sativus* L. var. *oleiformis* Pers.), phacelia (*Phacelia tanacetifolia* Benth.), annual (multiflorous) Westerwolds ryegrass (*Lolium multiflorum* Lam.) | 249 | 185 | 64 |
| 10. | Cereal grasses (*Poaceae* (*Gramineae*)) (except for annual Westerwolds ryegrass), papilionaceous plants (previously not mentioned species (*Fabaceae* (*Leguminosae*)) – for a trial cycle | 520 | 390 | 130 |
| **III.** | **Oil plants and fibre plants** |
| 11. | Swede rape (*Brassica napus* L. (*partim*)), turnip rape (*Brassica rapa* L. var. *silvestris* (Lam.) Briggs), white mustard (*Sinapis alba* L.), soybeans (*Glycine max*) | 282 | 205 | 77 |
| 12. | Flax (*Linum usitatissimum* L.) (fibre group), hemp (*Cannabis sativa* L.) (fibre group) | 256 | 185 | 71 |
| 13. | Flax (*Linum usitatissimum* L.) (oil group), hemp (*Cannabis sativa* L.) (oil group) | 249 | 185 | 64 |
| **IV.** | **Potatoes** |
| 14. | Potatoes (*Solanum tuberosum* L.) | 282 | 207 | 75 |
| Note. \* In accordance with Section 3, Paragraph eight of the Value Added Tax Law, the value added tax shall not be applied. |

**Annex 4.1**

Cabinet Regulation No. 518

24 July 2012

[*16 August 2022*]

**Groups of Variety Assessment**

**I. Cereal crop**

1. Rye (*Secale cereale* L.):

1.1. winter form, varieties;

1.2. winter form, hybrid varieties.

2. Common wheat (*Triticum aestivum* L. subsp. *aestivum*):

2.1. winter form, varieties;

2.2. winter form, hybrid varieties;

2.3. spring form, varieties;

2.4. spring form, hybrid varieties.

3. Durum wheat (*Triticum turgidum* L. subsp. *durum* (Desf.) van Slageren) – spring form.

4. Spelt wheat (*Triticum aestivum* L. subsp. *spelta* (L.) Thell).

5. Barley (*Hordeum vulgare* L.):

5.1. winter form, varieties;

5.2. winter form, hybrid varieties;

5.3. spring barley:

5.3.1. hulless barley;

5.3.2. grains group;

5.3.3. malt group.

6. Oats (*Avena sativa* L.):

6.1. grain group;

6.2. green mass group.

7. Hulless oats (*Avena nuda* L.).

8. Hybrids resulting from the crossing of a species of the genus *Triticum* and a species of the genus *Secale* (*x Triticosecale* Wittm. ex A. Camus) (hereinafter – triticale):

8.1. winter form;

8.2. spring form.

9. Buckwheat (*Fagopyrum esculentum* Moench).

10. Maize (*Zea mays* L.) – green mass group.

**II. Fodder plants\***

11. Field peas (*Pisum sativum* L. (*partim*)) – for obtaining of seeds:

11.1. white-blossom peas:

11.1.1. spring form;

11.1.2. winter form.

11.2. pink-blossom peas:

11.2.1. spring form;

11.2.2. winter form.

12. Field beans (*Vicia faba* L. (partim)):

12.1. spring form;

12.2. winter form.

13. White lupine (*Lupinus albus* L.):

13.1. for obtaining of seeds;

13.2. for the obtaining of green mass.

14. Blue lupine (*Lupinus angustifolius* L.):

14.1. for obtaining of seeds;

14.2. for the obtaining of green mass.

15. Yellow lupine (*Lupinus luteus* L.):

15.1. for obtaining of seeds;

15.2. for the obtaining of green mass.

16. Red clover (*Trifolium pratense* L.):

16.1. early and medium-early clover;

16.2. medium-late and late clover.

17. Festulolium (hybrids resulting from the crossing of a variety of the genus *Festuca* with a variety of the genus *Lolium*) (*x Festulolium* Asch. & Graebn.):

17.1. crossing of tall fescue with perennial ryegrass (*x Festulolium holmbergii* (Dörfl.) *P. Fourn.* *Festuca arundinacea x Lolium perenne* L.);

17.2. crossing of meadow fescue with perennial ryegrass (*x Festulolium loliaceum* (Huds.) *P. Fourn.* *Festuca pratensis* Huds *x Lolium perenne* L.).

18. Westerwolds ryegrass (*Lolium multiflorum* Lam.):

18.1. annual Westerwolds ryegrass (*Lolium multiflorum* Lam. ssp. alternativum);

18.2. Italian ryegrass (*Lolium multiflorum* Lam. ssp. non alternativum).

**III. Oil plants and fibre plants**

19. Swede rape (*Brassica napus* L. (*partim*)):

19.1. winter form:

19.1.1. inbred line varieties;

19.1.2. hybrid varieties, except the varieties referred to in Sub-paragraph 19.1.3 of this Annex;

19.1.3. CL, hybrid varieties;

19.2. spring form:

19.2.1. inbred line varieties;

19.2.2. hybrid varieties, except the varieties referred to in Sub-paragraph 19.2.3 of this Annex;

19.2.3. CL, hybrid varieties.

20. Turnip rape (*Brassica rapa* L. var. *silvestris* (Lam.) Briggs):

20.1. winter form;

20.2. spring form.

21. Flax (*Linum usitatissimum* L.):

21.1. fibre flax;

21.2. linseed flax.

22. Hemp (*Cannabis sativa* L.):

22.1. fibre hemp;

22.2. hempseed.

23. White mustard (*Sinapis alba* L.) – for obtaining of green mass.

24. Soybeans (*Glycine max* L.)

**IV. Potatoes**

25. Potatoes:

25.1. early varieties;

25.2. medium-early varieties;

25.3. medium-late varieties;

25.4. late varieties.

Notes.

\* Other fodder plant varieties shall be assessed each variety separately as one group.

**Annex 5**

Cabinet Regulation No. 518

24 July 2012

[*16 August 2022*]

**Recommended Seed Rates**

|  |  |  |
| --- | --- | --- |
| No. | Species or a group of species | Number of germinative seeds per m2 |
| **I.** | **Cereals** |
| 1. | Common wheat (*Triticum aestivum* L. subsp. *aestivum*) |
| 1.1. | winter form, varieties | 400–550 |
| 1.2. | winter form, hybrid varieties | 150–200 |
| 1.3. | spring form, varieties | 500–600 |
| 1.4. | spring form, hybrid varieties | 150–200 |
| 2. | Durum wheat (*Triticum turgidum* L. subsp. *durum* (Desf.) van Slageren), spring form | 500–600 |
| 3. | Spelt wheat (*Triticum aestivum* L. subsp. *spelta* (L.) Thell) | 250–300 |
| 4. | Rye (*Secale cereale* L.) |
| 4.1. | winter form, varieties | 400–550 |
| 4.2. | winter form, hybrid varieties | 150–200 |
| 5. | Triticale (*x Triticosecale* Wittm. ex A. Camus) |
| 5.1. | winter form | 400–550 |
| 5.2. | spring form | 500–550 |
| 6. | Barley (*Hordeum vulgare* L.) |
| 6.1. | winter form, varieties | 350–400 |
| 6.2. | winter form, hybrid varieties | 160–200 |
| 6.3. | spring barley: hulless barley, grain group, malt group | 400–450 |
| 7. | Oats (*Avena sativa* L.) |
| 7.1. | grain group | 500–600 |
| 7.2. | green mass group | 530–630 |
| 8. | Hulless oats (*Avena nuda* L.) | 500–600 |
| 9. | Buckwheat (*Fagopyrum esculentum* Moench) | 250–300 |
| 10. | Maize (*Zea mays* L.) – green mass group | 8–10 |
| **II.** | **Fodder plants** |
| **a.** | **Cereal grasses (*Poaceae* (*Gramineae*))** |
| 1. | Roth redtop (*Agrostis gigantea* Roth) | 6000–6200 |
| 2. | Creeping bent grass (*Agrostis stolonifera* L.) | 5000–7000 |
| 3. | Brown top (*Agrostis capillaris* L.) | 5000–7000 |
| 4. | Meadow foxtail (*Alopecurus pratensis* L.) | 1300–1500 |
| 5. | Tall oatgrass (*Arrhenatherum elatius* (L.) P.Beauv. ex J.Presl & C.Presl) | 600–800 |
| 6. | Cocksfoot (*Dactylis glomerata* L.) | 1400–1600 |
| 7. | Tall fescue (*Festuca arundinacea* Schreber) | 1100–1400 |
| 8. | Sheep’s fescue (*Festuca ovina* L.) | 2200–2700 |
| 9. | Meadow fescue (*Festuca pratensis* Huds.) | 1000–1200 |
| 10. | Red fescue (*Festuca rubra* L.) | 1500–1800 |
| 11. | Hybrid ryegrass (*Lolium x hybridum Hausskn.*) | 1000–1300 |
| 12. | Festulolium (hybrids resulting from the crossing of a variety of the genus *Festuca* with a variety of the genus *Lolium*) (*x Festulolium* Asch. & Graebn.) | 1000–1300 |
| 13. | Westerwolds ryegrass (*Lolium multiflorum* Lam.):annual Westerwolds ryegrass (*Lolium multiflorum* Lam. ssp. alternativum)Italian ryegrass (*Lolium multiflorum* Lam. ssp. non alternativum) | 1000–1200 |
| 14. | Perennial ryegrass (*Lolium perenne* L.) | 1000–1300 |
| 15. | Timothy grass (*Phleum pratense* L.) | 1300–1500 |
| 16. | Swamp meadowgrass (*Poa palustris* L.) | 4500–5000 |
| 17. | Smooth-stalk meadowgrass (*Poa pratensis* L.) | 3700–4000 |
| 18. | Rough-stalked meadowgrass (*Poa trivialis* L.) | 4500–5000 |
| 19. | Reed canarygrass (*Phalaris arundinacea* L.) | 1200–1400 |
| **b.** | **Papilionaceous plants (*Fabaceae* (*Leguminosae*))** |
| 20. | Fodder galega (*Galega orientalis* Lam.) | 300–500 |
| 21. | Birdsfoot trefoil (*Lotus corniculatus* L.) | 700–900 |
| 22. | White lupine (*Lupinus albus* L.) | 100–130 |
| 23. | Blue lupine (*Lupinus angustifolius* L.) | 100–130 |
| 24. | Yellow lupine (*Lupinus luteus* L.) | 100–130 |
| 25. | Lucerne (*Medicago sativa* L.) | 700–900 |
| 26. | Hybrid lucerne (*Medicago × varia* T. Martyn) | 600–800 |
| 27. | Sainfoin (*Onobrychis viciifolia* Scop.) | 300–400 |
| 28. | Field peas, also winter form (*Pisum sativum* L. (*partim*)) (white-blossom, pink-blossom) | 100–120–150 |
| 29. | Alsike clover (*Trifolium hybridum* L.) | 800–1000 |
| 30. | Red clover (*Trifolium pratense* L.) | 500–600 |
| 31. | White clover (*Trifolium repens* L.) | 800–1000 |
| 32. | Field beans, also winter form (*Vicia faba* L. (*partim*)) | 50–60 |
| 33. | Common vetch (*Vicia sativa* L.) | 120–150 |
| 34. | Hairy vetch (*Vicia villosa* Roth) | 150–200 |
| **c.** | **Other species** |
| 35. | Phacelia (*Phacelia tanacetifolia* Benth.) – for the obtaining of green mass | 100–150 |
| 36. | Oil radish (*Raphanus sativus* L. var. *oleiformis* Pers.) – for the obtaining of green mass | 80–120 |
| **III.** | **Oil plants and fibre plants** |
| 1. | Swede rape (*Brassica napus* L. (*partim*)) |
| 1.1. | winter rapeseed |
| 1.1.1. | inbred line varieties | 80–100 |
| 1.1.2. | hybrid varieties | 60–80 |
| 1.2. | spring Swede rape |
| 1.2.1. | inbred line varieties | 80–100–120 |
| 1.2.2. | hybrid varieties | 60–80–100 |
| 2. | Turnip rape (*Brassica rapa* L. var. *silvestris* (Lam.) Briggs) |
| 2.1. | winter turnip rape | 80–100 |
| 2.2. | spring turnip rape | 80–100–120 |
| 3. | Flax (*Linum usitatissimum* L.) |
| 3.1. | fibre flax | 1800–2000 |
| 3.2. | linseed | 600–700 |
| 4. | Hemp (*Cannabis sativa* L.) |
| 4.1. | fibre hemp | 350–450 |
| 4.2. | hempseed | 150–200 |
| 5. | White mustard (*Sinapis alba* L.) – for the obtaining of green mass | 80–120 |
| 6. | Soybeans (*Glycine max* L.) | 50–100 |
| **IV.** | **Potatoes (*Solanum tuberosum* L.) (early, medium-early, medium-late and late varieties)** | 5–6 |

**Annex 6**

Cabinet Regulation No. 518

24 July 2012

**Area for the Accounting of Plots**

[*16 August 2016*]

|  |  |  |
| --- | --- | --- |
| No. | Species or a group of species | Accounting area of a plot (at least), m2 |
| 1. | Cereal crops, oil plants and fibre plants | 10 |
| 2. | Fodder plants | 10 |
| 3. | Potatoes | 25 |
| 4. | Early potatoes for determination of the dynamics of yield increase | 2 × 5 |

**Annex 7**

Cabinet Regulation No. 518

24 July 2012

[*16 August 2022*]

**Methods for the Determination of Field Trial Indicators of Cereal Crop, Fodder, Oil Plant and Fibre Plant Varieties**

**1. Assessment of winter hardiness**

**1.1. Assessment of winter hardiness for Swede rape and turnip rape**

1. Winter hardiness for the Swede rape and turnip rape shall be assessed in trial plots, by counting the density of the plants in two marked sites distributed evenly along the plot area, using an accounting frame of 0.5 m2. Location of the accounting frame shall match in spring and autumn.

2. The accounting shall be performed in each replication in autumn before wintering and in spring after the renewal of vegetation period.

3. Each marked site shall be assessed separately, the assessments shall be summed up and divided by two.

4. Winter hardiness in spring shall be calculated in per cent (the accounting of spring plant density comparing to the accounting of autumn plant density) (Table 1).

Table 1

**Assessment of Swede Rape and Turnip Rape Winter Hardiness**

|  |  |  |
| --- | --- | --- |
| No. | Assessment in points | Assessment of Winter Hardiness(the number of surviving plants in spring in per cent in comparison with the number of plants in autumn) |
| 1. | 9 | 91–100 % |
| 2. | 8 | 81–90 % |
| 3. | 7 | 71–80 % |
| 4. | 6 | 61–70 % |
| 5. | 5 | 50–60 % |
| 6. | 4 | 36–49 % |
| 7. | 3 | 26–35 % |
| 8. | 2 | 16–25 % |
| 9. | 1 | 0–15 % |

**1.2. Assessment of winter hardiness for other species**

5. For assessment of winter hardiness for other species, a visual assessment shall be made of the sowing condition in autumn of the year before wintering and in spring after renewal of vegetation in accordance with the indicators of Table 2 of this Annex.

Table 2

**Assessment of the Condition of Sowing**

|  |  |  |
| --- | --- | --- |
| No. | Assessment in points | Condition of sowing (in autumn, spring) |
| 1. | 9 | Very good, density normal (no visual signs of rarefication, there is also no place for lifeless plants), plants healthy |
| 2. | 8 |   |
| 3. | 7 | Good, density is not less than 75 % of normal, plants healthy |
| 4. | 6 |   |
| 5. | 5 | Average, density is not less than 50 % of normal, plants with negligible signs of diseases |
| 6. | 4 |   |
| 7. | 3 | Poor, density is not less than 25 % of normal, plants diseased |
| 8. | 2 | Very poor, density is less than 25 % |
| 9. | 1 | Plants are completely destroyed |

6. Table 3 of this Annex shall be used for the assessment of the winter hardiness in points, from which the assessment of winter hardiness is read according to the condition of the sowing in spring and autumn.

Table 3

**Assessment of Winter Hardiness**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Condition of the sowing in autumn (in points) | 1 |  | – |  |
| 2 | 1 | 9 |  |
| 3 | 1 | 8 | 9 | Winter hardiness (points) |
| 4 | 1 | 7 | 8 | 9 |  |
| 5 | 1 | 6 | 7 | 8 | 9 |  |
| 6 | 1 | 5 | 6 | 7 | 8 | 9 |  |
| 7 | 1 | 4 | 5 | 6 | 7 | 8 | 9 |  |
| 8 | 1 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |  |
| 9 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|  |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Condition of sowing in spring (points) |

7. If the condition of sowing is not even, the plot shall be divided into several equal parts and each part shall be assessed separately. Assessments shall be summed up and divided by the number of plot parts, obtaining the average assessment of the plot.

**2. Assessment of Lodging Resistance**

8. Lodging resistance shall be determined by visually assessing the deviation from the vertical position of the stalks in points in accordance with Table 4 of this Annex.

Table 4

**Assessment of Lodging Resistance**

|  |  |  |
| --- | --- | --- |
| No. | Condition of sowing | Assessment in points |
| 1. | There is no lodging, the stalks are in vertical position | 9 |
| 2. |   | 8 |
| 3. | A little lodging, all the stalks have bent in the obliquity of up to 30 or 3/4 of the stalks have bent in the obliquity of up to 45°, or 1/2 of the stalks have bent in the obliquity of up to 60°, or 1/4 of the stalks have bent in the obliquity of up to 90° | 7 |
| 4. |   | 6 |
| 5. | Lodging is average, all the stalks have bent in the obliquity of up to 45 or 3/4 of the stalks have bent in the obliquity of up to 60°, or 1/2 of the stalks have bent in the obliquity of up to 90° | 5 |
| 6. |   | 4 |
| 7. | Lodging is strong, all the stalks have bent in the obliquity of up to 60°, or 3/4 of the stalks have bent in the obliquity of up to 90° | 3 |
| 8. |   | 2 |
| 9. | Lodging is very strong, all the stalks have bent in the obliquity of up to 90° | 1 |

9. Lodging resistance shall be assessed in two stages:

9.1. as soon as lodging appears, the growth stage and sowing condition of the plant shall be noted in accordance with Table 4 of this Annex;

9.2. the final assessment shall be carried out prior to the harvesting.

10. If lodging is uneven, it shall be assessed separately per plot parts and the average shall be calculated.

**3. Determination of the Height of Plants**

11. The height of plants shall be measured in two replications not located next to each other.

12. The height of plants shall be measured in accordance with the procedures referred to in Paragraph 15 of this Annex in two places of the plot in an equal distance from the end of the plot.

13. Measurements shall be performed with a measuring stick, on which sections are marked in centimetres.

14. The height of plants for the variety shall be calculated as the average result of the measurements, rounding up to a whole number.

15. The height of the plants shall be measured as follows:

15.1. the height of the plant for cereals (except for buckwheat and maize) shall be measured during the yellow ripeness growth stage by measuring the height of plants from the soil to the top of the last ear/panicle (not counting awns);

15.2. for the buckwheat the height of the plant shall be measured when it has reached the technical maturity (70–75 % nutlets have matured), by measuring the height of the plants from the soil to the top of the highest situated inflorescence;

15.3. the height of the plant for maize shall be determined during the stage of flowering, by measuring the height of the plants from the soil to the top of the stalk;

15.4. the height of the plant for field peas, field beans, white lupine, blue lupine and yellow lupine shall be determined at the end of the flowering stage – by measuring the height of the plants from the soil to the top of the stalk at the beginning of the pod development stage;

15.5. the height of the plant for oil plants and fibre plants shall be determined during the flowering stage, by measuring the height of the plants from the soil to the top of the stalk or stem;

15.6. for annual species for which the green mass yield is assessed, the height of the plants shall be determined prior to harvest, by measuring the height of the plant from the soil to the top of the stalk or stem;

15.7. the height of the cereal grasses or perennial papilionaceous plants shall be determined prior to the first cutting, by measuring the height of the plants from the soil to the top of the stalk or stem.

**4. Determination of the Length of Vegetation Period**

**4.1. Determination of the length of vegetation period for cereal crops**

16. For buckwheat, the length of vegetation period in days shall be determined from the full seedling stage until the plant growth stage 89 (full ripeness) according to the BBCH decimal code scale developed by the Federal Biological Research Centre, the Federal Plant Variety Office, and the Chemical industry (hereinafter – the BBCH decimal code scale).

17. For maize (green mass), the length of vegetation period in days shall be determined from the full seedling stage until the plant growth stage 79 (milky ripeness) according to the BBCH decimal code scale.

18. For the varieties of winter cereal crops, the length of vegetation period in days shall be determined from 1 January until the plant growth stage 89 (full ripeness) according to the BBCH decimal code scale. In addition, the following shall be determined and indicated:

18.1. end of the vegetation period in autumn. The end of the vegetation period shall be the last of the five days when the average daily temperature does not exceed 5 °C, for winter rye  it does not exceed 4 °C, but when the temperature rapidly decreases below 0 °C – the first day of decrease in temperature. If the vegetation during the winter period temporarily restores, it shall be noted;

18.2. renewal of vegetation in spring.

19. For other cereal crops, the length of the vegetation period in days shall be determined as follows:

19.1. for grain group – from the plant growth stage 11 until growth stage 89 (full ripeness) according to the BBCH decimal code scale;

19.2. for green mass group – from the plant growth stage 11 until growth stage 65 (middle of flowering) according to the BBCH decimal code scale.

**4.2. Determination of the length of the vegetation period for fodder plants**

20. The length of the vegetation period in days shall be determined from the full stage of seedling until:

20.1. plant growth stage 87–88 (ripened) according to the BBCH decimal code scale – for field peas;

20.2. plant growth stage 85–88 (ripened) according to the BBCH decimal code scale – for field beans, white lupine, blue lupin, and yellow lupine for the obtaining of seeds.

21. For hairy vetch, the length of the vegetation period in days shall be determined from 1 January until the beginning of the flowering stage according to the BBCH decimal code scale. In addition, the following shall be determined and indicated:

21.1. the end of the vegetation period in autumn and renewal of vegetation in spring. The end of the vegetation period shall be the last of the five days when the average daily temperature does not exceed 5 °C, but during rapid decrease of the temperature below 0 °C – the first day of lowering of the temperature. If the vegetation during the winter period temporarily restores, it shall be noted;

21.2. renewal of vegetation in spring.

22. For cereal grasses and perennial papilionaceous plants the number of days from the beginning of growth or renewal of vegetation in spring until the first cutting shall be determined, i.e.:

22.1. until the beginning of ear/panicle emergence for cereal grasses;

22.2. until the beginning of the flowering stage for papilionaceous plants;

22.3. in addition, the end of the vegetation in autumn and renewal of vegetation in spring when the average daily temperature exceeds 0 °C.

23. For annual fodder plants for which the green mass yield is assessed, the length of the vegetation period in days shall be determined from the full stage of seedling to the ripeness for harvest at the beginning of flowering.

23.1For winter form varieties of field peas and field beans, the length of the vegetation period in days shall be determined from 1 January until full ripeness according to the BBCH decimal code scale. In addition, the following shall be determined and indicated:

23.1 1. end of the vegetation period in autumn. The end of the vegetation period shall be the last of the five days when the average daily temperature does not exceed 5 °C, but during rapid decrease of the temperature below 0 °C – the first day of lowering of the temperature. If the vegetation during the winter period temporarily restores, it shall be noted;

23.1 2. renewal of vegetation in spring.

**4.3. Determination of the length of the vegetation period for oil plants and fibre plants**

24. For summer Swede rape and summer turnip rape, the length of the vegetation period in days shall be determined from the full seedling stage until the plant growth stage 85–89 (full ripeness) according to the BBCH decimal code scale.

25. For the winter Swede rape and winter turnip rape, the length of the vegetation period in days shall be determined from 1 January until the plant growth stage 89 (full ripeness) according to the BBCH decimal code scale. The following shall be additionally noted for the Swede rape and turnip rape:

25.1. end of the vegetation period in autumn. The end of the vegetation period shall be the last of the five days when the average daily temperature does not exceed 3 °C for Swede rape and 2oC for turnip rape, but during rapid decrease of the temperature below 0 °C – the first day of lowering of the temperature;

25.2. renewal of vegetation – at the beginning of the growth of leaves.

26. For soybeans, the length of vegetation period in days shall be determined from the full seedling stage until the plant growth stage 81–89 according to the BBCH decimal code scale.

27. For flax, the length of the vegetation period in days shall be determined from the full stage of seedling until:

27.1. the plant growth stage 83 (early yellow ripening) according to the BBCH decimal code scale – for fibre flax;

27.2. the plant growth stage 89 (fully ripe) according to the BBCH decimal code scale – for linseed.

28. The length of the vegetation period in days for the hemp shall be determined from the full stage of seedling until:

28.1. the plant growth stage 89 (ripeness for harvesting) according to the BBCH decimal code scale – for hempseed;

28.2. the plant growth stage 65 (full flowering) according to the BBCH decimal code scale – for fibre hemp.

29. For white mustard, the length of vegetation period in days shall be determined from the full seedling stage until the plant growth stage 61 (beginning of flowering) according to the BBCH decimal code scale.

**Annex 7.1**

Cabinet Regulation No. 518

24 July 2012

**Determination of Seed Yield of Cereal Crop, Fodder Plants and Oil Plants**

[*23 October 2018*]

**1. Harvesting**

1. The seeds shall be harvested during their ripeness for harvest, i.e.:

1.1. cereal crops (except for buckwheat) – in the plant growth stage 89–91 according to the BBCH decimal code scale;

1.2. buckwheat – in the plant growth stage 87–88 according to the BBCH decimal code scale;

1.3. field peas – in the plant growth stage 87–88 according to the BBCH decimal code scale;

1.4. field beans, white lupines, blue lupines, and yellow lupine – in the plant growth stage 85–88 according to the BBCH decimal code scale;

1.5. Swede rape and turnip rape – in the plant growth stage 85–89 according to the BBCH decimal code scale;

1.6. linseed – in the plant growth stage 89 according to the BBCH decimal code scale;

1.7. hempseed – when seeds turned grey, and the leaves enveloping the nuts have opened up;

1.8. soybeans – in the plant growth stage 81–88 according to the BBCH decimal code scale.

2. Yield shall be harvested when the relevant plant growth stage specified for the species has been reached, but not later than a week after this stage has set in.

3. First, the lodged plants shall be unbent from the isolating paths, then turning, isolation and spacing zones shall be harvested.

4. The accounting area of plots shall be updated, adjusting their size in relation to spacing, if any.

5. Harvesting shall be started with the earliest varieties.

6. At first all replications shall be harvested in consecutive order for one variety, then according to the time of variety maturity time – all replications for each subsequent variety.

7. If variety ripeness for all varieties is the same, at first all varieties shall be harvested in one replication and then in the following.

8. After harvesting of each plot the combine shall be idled for several minutes in order to prevent the accumulation of grains or seeds in combine units.

9. Yield from each plot (replication) shall be threshed in a separate bag, in which one label shall be inserted and another shall be attached to the bag.

10. Yield shall be weighed on the field or in warehouses with accuracy of up to 0.01 kg.

11. The harvest shall be immediately dried until the moisture content thereof is equal to or lower than the standard moisture.

12. Standard moisture:

12.1. for cereal crops, soybeans, and field peas, field beans, white lupine (for the obtaining of seeds), for blue lupine (for the obtaining of seeds), and for yellow lupine (for the obtaining of seeds) – 14.0 %;

12.2. for Swede rape – 8.0 %;

12.3. for turnip rape – 9.0 %;

12.4. for flax – 12.0 %;

12.5. for hemp – 12.0 %.

13. Seeds shall be dried gradually and their temperature may not exceed 40 °C.

**2. Calculation of the Size of the Harvest**

**2.1. Distribution of samples**

14. The harvest must be weighed and the moisture and purity must be determined in one stage of the seed preparation process for each replication of the variety (plot).

15. During weighing, samples shall be taken from each replication of the variety, using methods which ensure that the data obtained is credible, representative, and comparable.

16. The following working samples shall be prepared for each replication of the variety of the mass of the samples referred to in Paragraph 15 of this Annex:

16.1. for determining the sample moisture:

16.1.1. 150 g sample shall be taken with a spatula from the mass of the samples referred to in Paragraph 15 of this Annex;

16.1.2. it shall be put in an airtight packaging;

16.2. purity of samples shall be determined using such methods which ensure that the data obtained is credible, representative, and comparable;

16.3. for the determination of the sample threshability (for hulless barley and hulless oats):

16.3.1. sample size  100 g;

16.3.2. such methods shall be used for separation which ensure that the data obtained is credible, representative, and comparable.

**2.2. Determination of moisture**

17. The seed moisture content shall be determined within the shortest possible time (so that the seeds would not start to rot), using one of the following methods:

17.1. verified express equipment;

17.2. such methods which ensure that the data obtained is credible, representative, and comparable;

17.3. other calibrated equipment.

18. If the seed moisture is determined, using the method referred to in Sub-paragraph 17.1 of this Regulation, the following requirements shall be met:

18.1. two successive replications of determination shall be made for each sample;

18.2. the results shall be determined with accuracy of 0.01 %;

18.3. the difference between two replications of the moisture sample, determining quickly one after the other, may not exceed 0.15 %. If it is higher, another two independent replications shall be made;

18.4. the sample moisture content shall be expressed as the arithmetical average indicator of two replications.

**2.3. Determination of purity and mass of 1000 grains**

19. The sample purity shall be determined, using such methods which ensure that the data obtained is credible, representative, and comparable.

20. Concurrently with purity, mass of 1000 grains shall be determined for a pure seed fraction, using methods which ensure that the data obtained is credible, representative, and comparable.

21. The pure seed fraction from all replications of the variety shall be joined and used for the creation of the sample intended for quality analyses in accordance with Paragraph 25 of this Annex.

**2.4. Calculation of the size of the harvest**

22. Harvest (t ha-1) shall be calculated applying standard moisture and 100 % purity with two digits after comma, using the following formula:

|  |  |  |
| --- | --- | --- |
| X = | A × (100 − B) × E | where |
| (100 − D) × 10 C |

X – grain (seed) yield at the standard moisture (t ha–1);

A − grain (seed) mass (weight) of the plot yield (weight) (kg);

B – grain (seed) moisture (%) during weighing of the yield;

C – accounting area of the plot (m2);

D – standard moisture (%);

E − purity (%).

23. The output of oil from a hectare shall be determined, using the following formula:

|  |  |  |
| --- | --- | --- |
| X = | (A × 92) / 100) × B | where |
| 100 |

X – oil yield (t ha–1);

A – seed yield at the standard moisture (t ha–1);

B – content of oil in dry matter (%).

24. Grain (seed, oil) yield (%) in comparison with the standard variety or the average of standard varieties shall be calculated, using the following formula:

|  |  |  |
| --- | --- | --- |
| X = | A × 100 | where |
| B |

X – yield of grains or seeds, or oil (%) in comparison with the standard variety;

A – yield of grains or seeds, or oil of the trial variety (t ha–1);

B – yield of grains or seeds, or oil of the standard variety (t ha–1).

**3. Preparation of the Joint Sample for the Determination of Quality Indicators**

25. The pure seed fraction from each replication shall be joined, forming a single joint sample.

26. An average sample(s) for the determination of quality indicators shall be prepared from the dried and cleaned joint sample, the mass of the sample(s) being as follows:

26.1. 2.0 kg – for field peas, soybeans, field beans, white lupine (for the obtaining of seeds), blue lupine (for the obtaining of seeds), and yellow lupine (for the obtaining of seeds);

26.2. 1.5 kg – for hulless barley and hulless oats;

26.3. 0.5 kg – for oil plants, except for soybeans;

26.4. 1.0 kg – for other previously not mentioned species.

27. The average sample from the joint sample shall be separated, using one of the following methods:

27.1. with a special sample divider – according to the description of the equipment;

27.2. the cross-division method.

28. Packaging of the average sample:

28.1. the average sample for the determination of quality analyses shall be packed in a new paper or a clean, washed fabric bag;

28.2. a label indicating the assigned variety code shall be attached to the outside of the sample. The label shall be attached so that it could not fall off or get lost otherwise. The duplicate of the label shall be inserted in the sample bag.

29. While the sample is being stored, the moisture cannot increase for more than 2.0 % above the standard moisture.

**4. Determination of Threshability for Hulless Barley and Hulless Oats**

30. Determination of threshability for hulless barley and hulless oats:

30.1. each sample of hulless barley shall be divided in two parts – in grains with separated flakes and grains with non-separated flakes (if the sample also contains admixture of other varieties – grains of husky barley, they must be sorted separately);

30.2. each sample of hulless oats shall be divided into two parts – in grains with separated flakes and grains with non-separated flakes;

30.3. the percentage of the grains with non-separated flakes shall be calculated for each sample and the average from all four samples shall be calculated.

**Annex 7.2**

Cabinet Regulation No. 518

24 July 2012

**Harvesting and Accounting of Flax and Hemp Fibre Yield**

[*23 October 2018*]

**1. Harvesting of Yield, Preparation of Sample Bundle**

1. The fibre harvest shall be picked by hand during ripeness for harvest:

1.1. flax for fibre – during early yellow ripening;

1.2. hemp for fibre – during full flowering stage.

2. The accounting area of plots shall be updated, adjusting their size in relation to spacing, if any.

3. Harvesting of fibre flax yield:

3.1. flax stalks shall be plucked by hand;

3.2. after plucking, flax stalks shall be spread out on the plucked plot;

3.3. a sample replication bundle with a diameter of 15–17 cm shall be prepared from the spread stalks, taking evenly a handful from different places of the plot. The sample bundle shall be specially marked (for example, by tying around coloured labelling);

3.4. the other fibre flax stalks shall be tied in bundles;

3.5. the bundles referred to in Sub-paragraphs 3.3 and 3.4 of this Annex shall be arranged in stacks for drying on the relevant plot (or the yield of each plot separately);

3.6. seeds shall be threshed from all bundles not later than after 10–12 days;

3.7. stalks for each replication shall be weighed with accuracy of up to 0.1 kg.

4. Harvesting of fibre hemp yield:

4.1. the fibre hemp stalks shall be cut 8–10 cm from the top of the soil;

4.2. inflorescences shall be cut;

4.3. after cutting of inflorescences, stalks shall be spread out on the relevant plot;

4.4. a sample replication bundle with a diameter of 15–20 cm shall be prepared from the spread stalks, taking evenly a handful from different places of the plot. The sample bundle shall be specially marked (for example, by tying around coloured labelling);

4.5. the other fibre hemp stalks shall be tied together in separate bundles (with a diameter of 15–20 cm) and together with the sample bundle arranged in stacks for drying on the relevant plot (or the yield of each plot separately);

4.6. stalks for each replication shall be weighed with accuracy of up to 0.1 kg.

5. Standard moisture for flax and hemp stalks – 19.0 %.

**2. Calculation of the Size of the Harvest**

**2.1. Determination of flax purity**

6. The sample bundle of each replication shall be weighed with accuracy of up to 0.1 kg.

7. The content of the sample bundle shall be sorted into the basic species and admixtures (other plants).

8. Purity shall be calculated, using the following formula:

|  |  |  |
| --- | --- | --- |
| E = | (a – b) × 100 | where |
| a |

E − purity (%);

a – mass of the sample bundle (g);

b – mass of admixture (g).

**2.2. Determination of moisture**

9. The following shall be separated from the sample bundle:

9.1. 300 grams – for flax;

9.2. 900 grams – for hemp.

10. The separated stalks shall be cut in 2–3 cm long pieces.

11. To determine the moisture content, two test portions shall be weighted out, each with accuracy of up to 0.01 g:

11.1. for flax – 50 g each;

11.2. for hemp – 100 g each.

12. The test portions shall be dried in a moisture extraction oven at the temperature of 100–105 °C, until their mass is constant, i.e. upon weighing with accuracy of up to 0.01 g, the difference between the mass of the last two weightings must not exceed 0.02 g.

13. The moisture content for each sample shall be calculated, using the following formula:

|  |  |  |
| --- | --- | --- |
| M = | (a – b) × 100 | where |
| a |

M – moisture (%);

a – weighed amount of green mass (g);

b – mass of the dried weighed amount (g).

14. The moisture content for each replication shall be calculated as the average result of both samples.

**2.3. Calculation of the size of the harvest**

15. Stalk yield (t ha-1) shall be recalculated applying the standard moisture with two digits after comma, using the following formula:

|  |  |  |
| --- | --- | --- |
| X = | A × (100 − B) × E | where |
| (100 − D) × 10C |

X – stalk yield at the standard moisture (t ha-1);

A – weight of stalks in the plot (kg);

B – stalk moisture (%) during weighing of the yield;

C – accounting area of the plot (m2);

D – standard moisture (%);

E − purity (%).

16. Stalk yield (%) in comparison with the standard variety or the average indicator of standard varieties shall be calculated, using the following formula:

|  |  |  |
| --- | --- | --- |
| X = | A × 100 | where |
| B |

X – stalk yield (%) in comparison with the standard variety or the average indicator of standard varieties;

A – stalk yield of the variety to be assessed (t ha-1);

B – stalk yield of the standard variety (t ha-1).

**2.4. Preparation of the joint sample for the determination of quality indicators**

17. For quality analyses, an average sample (1.5–1.6 kg) of the variety shall be formed from the dried sample replication bundles.

18. For quality analyses, an average sample:

18.1. shall be packed in a new paper bag;

18.2. a label indicating the assigned variety code shall be attached to the outside of the sample;

18.3. the label shall be attached so that it could fall off or get lost otherwise. The duplicate of the label shall be inserted in the sample bag.

19. While the sample is being stored, the moisture cannot increase for more than 2.0 % above the standard moisture.

**Annex 7.3**

Cabinet Regulation No. 518

24 July 2012

**Harvesting and Accounting of Green Mass Yield of Cereal Grasses and Perennial Papilionaceous Plants**

[*23 October 2018*]

**1. Harvesting**

1. If the perennial cereal grasses and papilionaceous plants are mowed in the sowing year, the yield shall not be accounted.

2. For annual Westerwolds ryegrass, the green mass yield in the sowing year shall be harvested and accounted:

2.1. for the first cutting – at the beginning of blooming stage;

2.2. for the second and third cutting – at the beginning of blooming.

3. For other cereal grasses, the green mass yield in the first and second year of use shall be harvested and accounted:

3.1. for the first cutting – at the beginning of paniculation or blooming stage;

3.2. for the second and third cutting (if stalks are formed after regrowing) – at the beginning of blooming.

4. For perennial papilionaceous plants, the green mass yield in the first and second year of use shall be harvested and accounted:

4.1. for the first cutting – at the beginning of flowering;

4.2. for the second cutting:

4.2.1. at the beginning of flowering – for the early clover, medium-early clover and lucerne;

4.2.2. approximately 40 days after the previous cutting, but not earlier than the plants have reached the height of 25 cm – for the medium-late clover and late clover;

4.3. for the third cutting – approximately 40 days after the previous mowing, but not earlier than the plants have reached the height of 25 cm.

5. The height of cutting shall be at least 5 cm.

6. Turning, isolation and spacing zones shall be harvested first.

7. The accounting areas of plots shall be updated, adjusting their size in relation to spacing, if any.

8. Harvesting shall be carried out when the relevant variety has reached ripeness for harvesting.

9. Harvesting shall be started with the earliest varieties. At first all replications shall be harvested in consecutive order for one variety, then according to the time of variety maturity time – all replications for each subsequent variety.

10. If variety ripeness for all varieties is the same, at first all varieties shall be harvested in one replication and then in the following.

**2. Calculation of the Size of the Harvest**

**2.1. Determination of purity**

11. Green mass obtained from each plot shall be weighed (with accuracy of 0.1 kg), while taking an average sample of 1 kg from each replication.

12. The average sample of each replication shall be weighed with accuracy of up to 0.01 kg and sorted in the basic species and admixtures (for example, other plants, post-harvest residue).

**2.2. Determination of moisture**

13. To determine the moisture content of each replication, two test portions shall be weighted out, each with accuracy of up to 0.01 g:

13.1. for papilionaceous plants and timothy – 100 g each;

13.2. for other cereal grasses – 50 g each.

14. The weighed test portions shall be dried in a moisture extraction oven at the temperature of 100–105 °C, until their mass is constant, i.e. upon weighing with accuracy of up to 0.01 g, the difference between the mass of the last two weightings must not exceed 0.02 g.

15. The moisture content for each sample shall be calculated, using the following formula:

|  |  |  |
| --- | --- | --- |
| M = | (a – b) × 100 | where |
| a |

M – moisture (%);

a – weighed amount of green mass (g);

b – mass of the dried weighed amount (g).

16. The moisture content for each replication shall be calculated as the average result of both samples.

**2.3. Calculation of the size of the harvest**

17. Green mass of each replication of the trial variety shall be calculated, using the following formula:

|  |  |  |
| --- | --- | --- |
| R = | P × M | x 10 where |
| K × L |

R – green mass yield of the cutting of the replication of the trial variety (t ha-1);

P – mass of the replication of the trial variety in an average sample (after sorting) (kg);

K – mass of the replication of an average sample prior to sorting (kg);

M – mass of the grass harvested from the plot (kg);

L – plot area (m2).

18. The green mass yield for the trial variety for the replication shall be calculated as the sum of the green mass yield of all cuttings in the replication.

**3. Preparation of the Joint Sample for the Determination of Quality Indicators**

19. The samples for the quality analyses shall be taken from the first cutting of the variety for the determination of the dry matter and crude protein of the pure fraction of the average sample of each replication (so that, by combining them, a sample with a mass of 1 kg could be prepared for quality analyses).

20. The joint sample of the trial variety shall be immediately cut into 2–3 cm long pieces.

21. The cut sample shall be heated for 20–30 minutes at the temperature of 80–90 °C in order to suspend the activity of enzymes and micro-organisms.

22. After heating, the drying of the sample shall be continued at a temperature not exceeding 60–65 °C until a constant mass is obtained.

23. For quality analyses, the dried sample shall be packed as follows:

23.1. sample shall be inserted in a new paper or clean fabric bag;

23.2. a label indicating the assigned variety code shall be attached to the outside of the sample;

23.3. the label shall be attached so that it could not fall off or get lost otherwise;

23.4. the duplicate of the label shall be inserted in the sample bag.

**4. Calculation of the Dry Matter Yield**

24. The dry matter yield for each cutting of each replication shall be calculated, using the following formula:

|  |  |  |
| --- | --- | --- |
| X = | A × (100 – M) | where |
| 100 |

X – dry matter yield (t ha-1);

A – green mass yield (t ha-1);

M – moisture of the green mass during weighing of the yield (%).

25. The dry matter yield for the variety shall be calculated as the sum of the dry matter yield of all cuttings.

26. The dry matter yield (%) in comparison with the standard variety or the average indicator of the standard variety shall be calculated, using the following formula:

|  |  |  |
| --- | --- | --- |
| X = | A × 100 | where |
| B |

X – the dry matter yield (%) in comparison with the standard variety or the average indicator of standard varieties;

A – the dry matter yield of the variety to be assessed (t ha-1);

B – the dry matter yield of the standard variety (t ha-1).

**Annex 7.4**

Cabinet Regulation No. 518

24 July 2012

**Harvesting and Accounting of Green Mass Yield of Oil Radish, White Mustard, Phacelia, Oats, Common Vetch, Hairy Vetch, White Lupine, Blue Lupine, Yellow Lupine, and Maize**

[*23 October 2018*]

**1. Harvesting**

1. Harvesting and accounting of green mass yield shall be carried out:

1.1. at the beginning of flowering – for oil radish, white mustard, phacelia, common vetch, hairy vetch, white lupine, blue lupine, and yellow lupine;

1.2. as late as possible, however, before the autumn frost – for maize;

1.3. in the middle of flowering – for oats.

2. Turning, isolation and spacing zones shall be harvested first.

3. The accounting areas of plots shall be updated, adjusting their size in relation to spacing, if any.

4. Harvesting shall be carried out when the relevant variety has reached ripeness for harvesting.

5. Harvesting shall be started with the earliest varieties. At first all replications shall be harvested in consecutive order for one variety, then according to the time of variety maturity time – all replications for each subsequent variety.

6. If variety ripeness for all varieties is the same, at first all varieties shall be harvested in one replication and then in the following.

**2. Determination of the Number of Ears for Maize**

7. Five stalks shall be selected in each replication evenly from the area of the whole plot.

8. Ears shall be chopped off and counted for the selected stalks.

9. The average number of ears for each replication and then – variety shall be calculated.

**3. Calculation of the Size of the Harvest**

**3.1. Determination of purity**

10. The green mass obtained from each plot shall be weighed with accuracy of up to 0.1 kg.

11. After weighing of the total yield of the plot, the average sample of each replication of 1 kg shall be taken and weighed with accuracy of up to 0.01 kg

12. The sample taken shall be sorted in the following fractions:

12.1. plants of the basic species;

12.2. admixtures (for example, other plants, post-harvest residue).

13. The fractions of the sorted sample referred to in Paragraph 12 of this Annex shall be weighed with accuracy of up to 0.01 kg.

14. The content in percentage of the sample purity shall be calculated by comparing the mass of the plants of the basic species with the total mass of the sample.

15. The selected plants of the basic species of all replications shall be joined, forming the sample referred to in Paragraph 33 of this Annex.

**3.2. Determination of moisture**

16. To determine the moisture content of each replication:

16.1. two stalks shall be selected for maize;

16.2. the fraction referred to in Sub-paragraph 12.1 of this Regulation shall be used for other species.

17. The sample referred to in Sub-paragraphs 16.1 and 16.2 of this Annex shall be cut into 2–3 cm long pieces.

18. Two test portions of 250 g shall be weighed with accuracy of up to 0.01 g.

19. The test portions shall be dried in a moisture extraction oven at the temperature of 100–105 °C, until their mass is constant, i.e. upon weighing with accuracy of up to 0.01 g, the difference between the mass of the last two weightings must not exceed 0.02 g.

20. The moisture content for each sample shall be calculated, using the following formula:

|  |  |  |
| --- | --- | --- |
| M = | (a – b) × 100 | where |
| a |

M – moisture (%);

a – weighed amount of green mass (g);

b – mass of the dried weighed amount (g).

21. The moisture content for each replication shall be calculated as the average result of both samples.

**3.3. Calculation of the size of the harvest**

22. Green mass of each replication of the trial variety shall be calculated, using the following formula:

|  |  |  |
| --- | --- | --- |
| R = | P × M | x 10 where |
| K × L |

R – green mass yield of the replication of the trial variety (t ha-1);

P – mass of the replication of the trial variety in an average sample (after sorting) (kg);

K – mass of the replication of an average sample prior to sorting (kg);

M – mass of the grass harvested from the plot (kg);

L – plot area (m2).

23. The green mass yield for the trial variety shall be calculated as the sum of the green mass yield of all replications.

**3.4. Calculation of the dry matter yield**

24. The dry matter yield for each cutting of each replication shall be calculated, using the following formula:

|  |  |  |
| --- | --- | --- |
| X = | A × (100 – M) | where |
| 100 |

X – dry matter yield (t ha-1);

A – green mass yield (t ha-1);

M – moisture of the green mass during weighing of the yield (%).

25. The dry matter yield (%) in comparison with the standard variety or the average indicator of the standard variety shall be calculated, using the following formula:

|  |  |  |
| --- | --- | --- |
| X = | A × 100 | where |
| B |

X – the dry matter yield (%) in comparison with the standard variety or the average indicator of standard varieties;

A – the dry matter yield of the variety to be assessed (t ha-1);

B – the dry matter yield of the standard variety (t ha-1).

**4. Preparation of the Joint Sample for the Determination of Quality Indicators**

**4.1. Preparation of the joint sample of maize for quality analyses**

26. A sample for quality analyses – for the determination of the dry matter content, the crude protein content, the neutral detergent fibre (NDF), and the acid detergent fibre (ADF) in dry matte – shall be prepared from the stalks selected for each replication referred to in Sub-paragraph 16.1 of this Annex which, in accordance with Paragraph 17 of this Annex, have been chopped into small pieces (so that, by combining them, a sample with a mass of 1 kg could be prepared).

27. The stalks of the joint sample chopped into 2–3 cm long pieces shall be mixed up and a sample for laboratory analyses shall be taken.

28. Handing over for laboratory analyses:

28.1. a green mass sample shall be delivered, without delay, to the corresponding laboratory for quality analyses;

28.2. an air-dry sample (moisture not more than 15 %) shall be dried in a moisture extraction oven at the temperature of 55 °C for at least 48 hours, until constant mass of the dried sample is obtained, and then shall be delivered to the corresponding laboratory for analyses in an airtight packaging.

**4.2. Preparation of the joint sample of other species for quality analyses**

29. The samples for quality analyses – for the determination of the dry matter and crude protein content – shall be taken from the pure fraction of the average sample of each replication so that, by combining them, a sample with a mass of 1 kg could be prepared for quality analyses.

30. The joint sample of the trial variety shall be immediately cut into 2–3 cm long pieces.

31. The cut sample shall be heated for 20–30 minutes at the temperature of 80–90 °C in order to suspend the activity of enzymes and micro-organisms.

32. After heating, the sample shall be continued to be dried at a temperature not exceeding 60–65 °C until a constant mass is obtained.

33. For quality analyses, the dried sample shall be packed as follows:

33.1. the sample shall be inserted in a new paper or clean fabric bag;

33.2. a label indicating the assigned variety code shall be attached to the outside of the sample;

33.3. the label shall be attached so that it could not fall off or get lost otherwise;

33.4. the duplicate of the label shall be inserted in the sample bag.

**Annex 7.5**

Cabinet Regulation No. 518

24 July 2012

**Methods for the Assessment of the Indicators for the Assessment of the Value for the Cultivation and Use of Potato Varieties**

[*23 October 2018*]

**1. Establishing of the Length of Vegetation period for Potatoes**

1. For early potatoes, the length of vegetation period in days shall be determined from the full seedling stage until the plant growth stage 97 (stems and leaves dead) according to the BBCH decimal code scale.

2. For medium-early, medium-late and late potatoes the length of vegetation period in days shall be determined from the full seedling stage until the plant growth stage 97 (stems and leaves dead) according to the BBCH decimal code scale.

**2. Accounting of potato diseases**

3. The accounting of diseases shall be carried out within the time periods indicated in the phytopathological accounting calendar (Table 1).

**Phytopathological Accounting Calendar**

Table 1

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Disease | Time period for accounting | Accounting indicator |
| 1. Potato foliage diseases |
| 1.1. | Late blight(*Phytophthora infestans*) | For the first time – upon emergence of the disease. For the second time – 10 days after the first accounting. For the third time – 10 days after the second accounting. | Level of infection (%) |
| 1.2. | Early blight of foliage(*Alternaria solani Sor.*) | During the vegetation period, upon emergence of the symptoms of the disease | Level of infection (%) |
| 2. Potato tuber diseases |
| 2.1. | Late blight(*Phytophtora infestans*) | Upon assessment and sorting | Infected tubers (%) |
| 2.2. | Bacterial soft rot(*Pseudomonas fluorescens, Xanthomonas spp. Clostridium spp.*) | Upon assessment and sorting | Infected tubers (%) |
| 2.3. | Dry rot(*Fusarium spp.* and *Phoma foveata*) | Upon assessment and sorting | Infected tubers (%) |

4. Potato foliage diseases shall be determined visually establishing the level of damages in per cent for the entire plot (surface of the damaged leaves from the surface of plant leaves of the whole plot).

5. To determine potato tuber diseases, 100 tubers shall be selected from market tubers, and they shall be washed and dried.

6. Each tuber shall be assessed, the disease referred to in Paragraph 2 of Table 1 shall be indicated, and accounting thereof shall be carried out.

7. The infected tubers referred to in Paragraph 6 of this Annex shall be added up, considering them being infected with the diseases referred to in Paragraph 2 of Table 1.

8. Infected tubers (%) shall be calculated, using the following formula:

|  |  |  |
| --- | --- | --- |
| A = | I × 100 | where |
| K |

A – infected tubers of the trial variety (%)

I – number of infected tubers of the trial variety (pieces);

K – number of tubers for which potato tuber diseases have been assessed (pieces).

**3. Harvesting and Accounting of Potato Yield**

**3.1. Time period of harvesting**

9. Harvesting of tuber yield shall be carried out in increase dynamics trials of early potato variety yield:

9.1. 45 days after full stage of seedlings for at least one variety – first term;

9.2. 55 days after full stage of seedlings for at least one variety – second term.

10. Harvesting of the yield at the end of vegetation period:

10.1. for the early and medium-early potato varieties shall be started when 75 % of the variety plants have started to turn yellow and their foliage is falling over;

10.2. for medium late and late potato varieties maturation of tubers shall be precipitated (if necessary) by at least 10–12 days, by cutting or destroying foliage using chemical products prior to harvesting.

11. Turning zones, isolation zones, and spacing zones shall be harvested first.

12. The accounting area of plots shall be updated, adjusting their size in relation to spacing, if any.

**3.2. Determination of the average mass of market tubers**

13. The average mass of market tubers according to the abovementioned method shall be determined:

13.1. for trials of the yield increase dynamics of early varieties;

13.2. for varieties of all earliness groups prior to harvesting at the end of vegetation period.

14. Prior to harvesting in each replication 10 potato plants shall be harvested (dug up), taking five plants in consecutive order in two typical places in a way to ensure that they do not bear the edge effect.

15. Tubers shall be sorted into three fractions in accordance with Paragraph 20 of this Annex.

16. Tubers shall be added up, washed, dried, and weighed with accuracy of up to 0.1 kg.

17. Mass of the medium-sized and large tubers shall be added up and divided by the number of the medium-sized and large tubers, thus obtaining the average mass of market tubers in grams. The average mass of market tubers shall be calculated, using the following formula:

|  |  |  |
| --- | --- | --- |
| P = | (B + C) | where |
| (d + e) |

P – average mass of market tubers (kg);

B – mass of large tubers (kg);

C – mass of medium tubers (kg);

d – number of large tubers (pieces);

e – number of medium tubers (pieces).

18. When calculating the total yield, the data obtained shall be added to the weight of each relevant fraction.

**3.3. Accounting of yield in yield increase dynamics of early varieties**

19. In trials of yield increase dynamics of early potato varieties, the yield of tubers shall be collected within the time period referred to in Paragraph 9 of this Annex.

20. Tubers shall be sorted in three fractions, using templates: small tubers, medium-sized tubers, and large tubers:

20.1. the diameter of the small tubers is less than 35 mm;

20.2. the diameter of the medium-sized tubers is 35–55 mm;

20.3. the diameter of large tubers exceeds 55 mm.

21. Each of three fractions shall be weighed separately with accuracy of up to 0.1 kg.

22. Tubers with external damages, including rotten tubers, shall be collected separately, weighed with accuracy of up to 0.1 kg, and this quantity shall be included in the non-standard yield (small tubers).

23. Mechanically damaged tubers shall be added to the weight of the relevant fraction based on their size.

24. The proportion (%) of tubers of each fraction in the yield shall be calculated. The fraction of market tubers shall be obtained by joining the groups of medium-sized and large potatoes.

25. The yield of the tubers 45 days after emergence of seedlings or the yield of tubers 55 days after emergence of seedlings shall be calculated, using the following formula:

|  |  |  |
| --- | --- | --- |
| R = | S + N | x 10 where |
| L |

R – the yield of the tubers 45 days after emergence of seedlings (t ha–1) or the yield of tubers 55 days after emergence of seedlings (t ha–1);

S – the mass of the market tubers of the trial variety 45 days after emergence of seedlings (kg) or the mass of the market tubers 55 days after emergence of seedlings (kg);

N – the mass of the small tubers of the trial variety 45 days after emergence of seedlings (kg) or the mass of the small tubers 55 days after emergence of seedlings (kg);

L – plot area (m2).

26. The yield of the market tubers 45 days after emergence of seedlings or the yield of market tubers 55 days after emergence of seedlings shall be calculated, using the following formula:

|  |  |  |
| --- | --- | --- |
| Rs = | S | x 10 where |
| L |

Rs – the yield of the market tubers of the trial variety 45 days after emergence of seedlings (t ha–1) or the yield of the market tubers 55 days after emergence of seedlings (t ha–1);

S – the mass of the market tubers of the trial variety 45 days after emergence of seedlings (kg) or the mass of the market tubers 55 days after emergence of seedlings (kg);

L – plot area (m2).

27. The yield of the market tubers (%) (in comparison with the standard variety or the average indicator of the standard variety 45 days after emergence of seedlings) or the yield of the market tubers (%) (in comparison with the standard variety or the average indicator of the standard variety 55 days after emergence of seedlings) shall be calculated, using the following formula:

|  |  |  |
| --- | --- | --- |
| A = | B × 100 | where |
| C |

A – the yield of the market tubers of the trial variety (%) (in comparison with the standard variety or the average indicator of the standard variety 45 days after emergence of seedlings) or the yield of the market tubers (%) (in comparison with the standard variety or the average indicator of the standard variety 55 days after emergence of seedlings);

B – the yield of the market tubers of the trial variety 45 days after emergence of seedlings (t ha–1) or the yield of the market tubers 55 days after emergence of seedlings (t ha–1);

C – the yield of the market tubers of the standard variety or of the medium market tubers of standard varieties 45 days after emergence of seedlings (t ha–1) or the yield of the market tubers 55 days after emergence of seedlings (t ha–1).

**3.4. Accounting of the yield at the end of the vegetation period**

28. Upon harvesting the yield at the end of vegetation period, tubers shall be sorted into fractions in accordance with Paragraph 20 of this Annex.

29. Each of the three fractions shall be weighed separately with accuracy of up to 0.1 kg.

30. Tubers with external damages, including rotten tubers, shall be collected separately, weighed with accuracy of up to 0.1 kg, and this quantity shall be included in the non-standard yield (small tubers).

31. Mechanically damaged tubers shall be added to the weight of the relevant fraction based on their size.

32. The proportion (%) of tubers of each fraction in the yield shall be calculated. The fraction of market tubers shall be obtained by joining the fractions of medium-sized and large potatoes.

33. The yield of tubers of the trial variety at the end of vegetation period shall be calculated, using the following formula:

|  |  |  |
| --- | --- | --- |
| R = | S + N | x 10 where |
| L |

R – yield of tubers at the end of vegetation period (t ha–1);

S – mass of market tubers at the end of vegetation period (kg);

N – mass of small tubers at the end of vegetation period (kg);

L – plot area (m2).

34. The yield of market tubers of the trial variety at the end of vegetation period shall be calculated, using the following formula:

|  |  |  |
| --- | --- | --- |
| Rs = | S | x 10 where |
| L |

Rs – yield of market tubers of the trial variety at the end of vegetation period (t ha–1);

S – mass of market tubers of the trial variety at the end of vegetation period (kg);

L – plot area (m2).

35. The yield of market tubers of the trial variety at the end of vegetation period (%) (in comparison with the standard variety or the average indicator of standard varieties) shall be calculated, using the following formula:

|  |  |  |
| --- | --- | --- |
| A = | B × 100 | where |
| C |

A – yield of market tubers of the trial variety at the end of vegetation period (%) (in comparison with the standard variety or the average indicator of standard varieties);

B – yield of market tubers of the trial variety at the end of vegetation period (t ha–1);

C – average yield of market tubers of the standard variety or standard varieties at the end of vegetation period (t ha–1).

**4. Determination of Starch and Dry Matter Content**

36. The starch content shall be determined as soon as possible after harvest for all samples of earliness group at the same time.

37. To determine the starch content for potatoes, 7 kg of sample tubers not affected by diseases and mechanically undamaged shall be selected from market tubers.

38. The selected sample shall be washed and dried.

39. The starch content for potatoes shall be determined as follows:

39.1. a water basin, scales, two plastic or metal baskets or containers of for the weighing of 5.5 kg of potatoes, and a rack shall be used;

39.2. the basin shall be filled with water the temperature of which shall be 17.5 °C. The baskets or containers for the weighing of potatoes shall be placed on the scales on the rack, hanging one basket under the other. The bottom basket shall be placed in the basin with water so that the basket would fully sink into the water. The scales shall be aligned in balance or to the 0 mark;

39.3. the top basket (in the air) shall be filled with 5000 g of washed dry potatoes or 5050 g of wet potatoes, and weighed (weight in the air). The potatoes shall be then placed in the bottom basket which is sunk into the water. Slightly shake for air bubbles to appear. Weigh potatoes in the water (weight in the water). The starch content (%) shall be read in Table 2 of this Annex.

**Determination of Specific Weight, Dry Matter and Starch Content**

Table 2

|  |  |  |  |
| --- | --- | --- | --- |
| Weight of 5 kg potatoes in water (g) | Specific weight | Dry matter (%) | Starch (%) |
| 250 | 1.0526 | 15.12 | 8.17 |
| 255 | 1.0537 | 15.36 | 8.40 |
| 260 | 1.0549 | 15.62 | 8.65 |
| 265 | 1.0560 | 15.86 | 8.88 |
| 270 | 1.0571 | 16.09 | 9.11 |
| 275 | 1.0582 | 16.33 | 9.34 |
| 280 | 1.0593 | 16.57 | 9.57 |
| 285 | 1.0604 | 16.81 | 9.80 |
| 290 | 1.0616 | 17.06 | 10.05 |
| 295 | 1.0627 | 17.30 | 10.28 |
| 300 | 1.0638 | 17.54 | 10.51 |
| 305 | 1.0650 | 17.80 | 10.77 |
| 310 | 1.0661 | 18.04 | 11.00 |
| 315 | 1.0672 | 18.27 | 11.23 |
| 320 | 1.0684 | 18.53 | 11.46 |
| 325 | 1.0695 | 18.77 | 11.71 |
| 330 | 1.0707 | 19.03 | 11.96 |
| 335 | 1.0718 | 19.26 | 12.19 |
| 340 | 1.0730 | 19.52 | 12.44 |
| 345 | 1.0741 | 19.76 | 12.67 |
| 350 | 1.0753 | 20.02 | 12.92 |
| 355 | 1.0764 | 20.26 | 13.15 |
| 360 | 1.0776 | 20.52 | 13.40 |
| 365 | 1.0787 | 20.75 | 13.63 |
| 370 | 1.0799 | 21.01 | 13.88 |
| 375 | 1.0811 | 21.27 | 14.13 |
| 380 | 1.0823 | 21.53 | 14.38 |
| 385 | 1.0834 | 21.77 | 14.61 |
| 390 | 1.0846 | 22.03 | 14.86 |
| 395 | 1.0858 | 22.28 | 15.11 |
| 400 | 1.0870 | 22.54 | 15.36 |
| 405 | 1.0881 | 22.78 | 15.59 |
| 410 | 1.0893 | 23.04 | 15.85 |
| 415 | 1.0905 | 23.30 | 16.10 |
| 420 | 1.0917 | 23.56 | 16.35 |
| 425 | 1.0929 | 23.82 | 16.60 |
| 430 | 1.0941 | 24.08 | 16.85 |
| 435 | 1.0953 | 24.33 | 17.10 |
| 440 | 1.0965 | 24.59 | 17.35 |
| 445 | 1.0977 | 24.85 | 17.60 |
| 450 | 1.0989 | 25.11 | 17.85 |
| 455 | 1.1001 | 25.37 | 18.10 |
| 460 | 1.1013 | 25.63 | 18.35 |
| 465 | 1.1025 | 25.89 | 18.60 |
| 470 | 1.1038 | 26.17 | 18.88 |
| 475 | 1.1050 | 26.43 | 19.13 |
| 480 | 1.1062 | 26.69 | 19.38 |
| 485 | 1.1074 | 26.94 | 19.63 |
| 490 | 1.1086 | 27.20 | 19.88 |
| 495 | 1.1099 | 27.48 | 20.15 |
| 500 | 1.1111 | 27.74 | 20.40 |
| 505 | 1.1123 | 28.00 | 20.65 |
| 510 | 1.1136 | 28.28 | 20.92 |
| 515 | 1.1148 | 28.54 | 21.18 |
| 520 | 1.1161 | 28.82 | 21.45 |
| 525 | 1.1174 | 29.10 | 21.72 |
| 530 | 1.1186 | 29.36 | 21.97 |
| 535 | 1.1199 | 29.64 | 22.24 |
| 540 | 1.1211 | 29.90 | 22.49 |
| 545 | 1.1223 | 30.16 | 22.74 |
| 550 | 1.1236 | 30.44 | 23.02 |
| 555 | 1.1249 | 30.72 | 23.29 |
| 560 | 1.1261 | 30.98 | 23.54 |
| 565 | 1.1274 | 31.26 | 23.81 |
| 570 | 1.1287 | 31.54 | 24.08 |
| 575 | 1.1299 | 31.80 | 24.33 |
| 580 | 1.1312 | 32.08 | 24.60 |
| 585 | 1.1325 | 32.36 | 24.88 |
| 590 | 1.1338 | 32.64 | 25.15 |
| 595 | 1.1351 | 32.92 | 25.42 |
| 600 | 1.1364 | 33.20 | 25.69 |
| 605 | 1.1377 | 33.48 | 25.96 |
| 610 | 1.1390 | 33.76 | 26.23 |
| 615 | 1.1403 | 34.04 | 26.51 |
| 620 | 1.1416 | 34.32 | 26.78 |
| 625 | 1.1429 | 34.60 | 27.05 |
| 630 | 1.1442 | 34.88 | 27.32 |
| 635 | 1.1455 | 35.16 | 27.59 |
| 640 | 1.1468 | 35.44 | 27.87 |
| 645 | 1.1481 | 35.72 | 28.14 |
| 650 | 1.1494 | 36.01 | 28.41 |
| 655 | 1.1507 | 36.29 | 28.68 |
| 660 | 1.1521 | 36.59 | 28.97 |
| 665 | 1.1534 | 36.87 | 29.24 |

**5. Assessment of Potato Taste Characteristics**

40. Taste characteristic of potato varieties shall be assessed by tasting at all variety assessment locations for all earliness groups of varieties.

41. At least five tasters shall assess varieties in tasting.

42. For potatoes peeled tubers of each variety shall be boiled in separately in a pot in 2 per cent salt solution (20 g salt to 1 l water). Tubers with signs of greening shall not be used for tasting. When potatoes are soft, water shall be drained and potatoes shall be dried on a small flame.

43. Potatoes shall be tasted while warm (varieties shall be served with encoded numbers).

44. Taste characteristics for potatoes shall be determined organoleptically according to a 9-point scale in accordance with Table 3 of this Annex.

**Assessment of Potato Taste Characteristics**

Table 3

|  |  |  |
| --- | --- | --- |
| No. | Taste | Assessment in points |
| 1. | Very tasty | 9 |
| 2. | Tasty | 7 |
| 3. | Partly tasty | 5 |
| 4. | Unpalatable | 3 |
| 5. | Very unpalatable | 1 |

**Annex 7.6**

Cabinet Regulation No. 518

24 July 2012

[*16 August 2022*]

**Determination of Quality Indicators for the Assessment of Varieties**

**I. Basic Conditions**

1. If express equipment is used for quality analyses, they shall be carried out in at least two replications in order to increase the credibility of the result.

2. If a significant difference exceeding 1 % is observed between the two results, a third replication shall be required. The result shall be determined from two closest results of the replication.

**II. Determination of Quality Indicators for Cereal Crop Varieties**

**3. Determination of quality indicators for common wheat (*Triticum aestivum* L. subsp. *aestivum*), durum wheat (*Triticum turgidum* L. subsp. *durum* (Desf.) van Slageren), and spelt wheat (*Triticum aestivum* L. subsp. *spelta* (L.) Thell) varieties:**

3.1. to determine the protein content, starch content, sedimentation (Zeleny index), gluten content, and bulk density, the grain analyser Infratec and the programme WH 280710 T4 shall be used;

3.2. the falling number shall be determined, using such methods which ensure that the data obtained is credible, representative, and comparable;

3.3. the colour of grain for durum wheat shall be determined using the corresponding equipment;

3.4. the vitreous aspect for durum wheat shall be determined based on the size and placement of the starch granules in endosperm. Grains can be broken down into floury or vitreous grains. The diaphanoscope shall be opened, and the sample to be analysed shall be filled into sieve holes. Grains shall be cut into two halves. The lid shall be opened, and the floury grains shall be counted.

Vitreous grains shall be calculated, using the following formula:

|  |  |  |
| --- | --- | --- |
| A = | 100 – (b × 2) | where |

A – vitreous grains (%);

b – floury grains (pieces).

**4. Determination of quality indicators for rye (*Secale cereale* L.) and triticale (*x Triticosecale Wittm. ex A. Camus*) varieties**:

4.1. to determine the bulk density, protein content, and starch content, the grain analyser Infratec and the following programme shall be used:

4.1.1. for rye – RY 310705 T;

4.1.2. for triticale – TR310705 T2;

4.2. the falling number shall be determined, using such methods which ensure that the data obtained is credible, representative, and comparable.

**5. Determination of quality indicators for barley (*Hordeum vulgare* L.) varieties**:

5.1. to determine the protein content, starch content, and bulk density, the grain analyser Infratec and the programme BA 040609 T3 shall be used;

5.2. the content in per cent for the fractions of grains above 2.5 mm shall be determined as follows:

5.2.1. 100 g of sample shall be distributed from the average sample, using a divider;

5.2.2. the following sieves shall be inserted in the automatic seed-grain grader-fractionator:

5.2.2.1. the first sieve – 2.8 mm;

5.2.2.2. the second sieve – 2.5 mm;

5.2.2.3. the third sieve – 2.2. mm;

5.2.3. the sample shall be laid out on the first sieve of the automatic seed-grain grader-fractionator and fractionated for 3 minutes;

5.2.4. admixtures and damaged grains shall be picked out from each sieve and weighed with accuracy of up to 0.01 g;

5.2.5. each fraction shall be weighed separately with accuracy of up to 0.01 g;

5.2.6. the first and the second fraction shall be added up;

5.2.7. the sum shall be expressed in per cent with accuracy of up to one digit after the decimal point;

5.3. extractivity may be determined if the protein content conforms to 5–9 points (9–11.5 %). It shall be determined as follows:

5.3.1. disk mills, scales with accuracy of 0.01 g, mashing equipment, conical flask of 500 ml (with 100 ml graduations), a funnel with a diameter of 200 mm, filter paper, pycnometer or appropriate density measuring device, analytical scales with accuracy of 0.01 g, electric stove, and density measurer shall be used;

5.3.2. 50 g of sample shall be distributed from the average sample, using a divider, and milled. Then 25 g of the milled barley sample shall be weighed. Barley malt of 25 g (finely milled) shall be weighed. The milled barley sample shall be placed in a beaker, 200 ml of distilled water shall be added and mixed. The beaker shall be placed on the electrical stove, and the mixture shall be heated to 90 °C by mixing it. The temperature shall be maintained until the starch has fully turned into gel. As much cold distilled water shall be added to the mixture as it is necessary to lower the temperature to 70–75 °C. Then 1 g of milled malt shall be added, waiting (for approximately 5 minutes) until the mixture liquefies. It shall be boiled for 5–10 minutes. The beaker shall be placed in the mashing equipment, by turning on the mixer and cooling the sample to 45 °C. The rest of the miller malt (approximately 24 g) and 100 ml of distilled water in the temperature of 45 °C shall be added. When the temperature of the mixture has reached 70 °C, 50 ml of distilled water shall be added.

Extractivity shall be calculated, using the following formula:

|  |  |  |
| --- | --- | --- |
| a) EA = | P × (1600 + MM + MA) | – EM |
| 100 – P |

|  |  |  |
| --- | --- | --- |
| b) EA (%) = | EA × 100 | where |
| 100 – MA |

EA – extractivity (content of extract in the barley sample (%));

EA (%) – extractivity (content of extract for barley (in dry matter, %));

EM – extractivity for malt (content of extract in malt (in dry matter; %));

MM – moisture content for malt, %;

MA – moisture content (for barley sample, %);

P – extractivity (content of extract for mash, %), w/w.

The sum shall be expressed in per cent with accuracy of up to one digit after the decimal point;

5.3.3. the malt extract shall be determined as follows:

5.3.3.1. a sample of 2 x 55 g shall be taken from the average sample and milled in disc mills (0.20 mm distance between discs). The extraction containers shall be filled with 50.0 g of milled malt. Obtaining of mash: 50.0 g of milled malt shall be covered with 200 ml warm (46 °C) distilled water and mixed. The basin of mash water shall be warmed to the temperature of 45 °C in advance. The extraction containers shall be placed in the water basin and mixers shall be turned on. The temperature of 45 °C shall be ensured in the mixture for 30 minutes. Then, within 25 minutes, the temperature shall be increased by 1 °C per minute to 70 °C. When the temperature in the mash has reached 70 °C, additional 50 ml of distilled water (70 °C) shall be added to the extraction container. The temperature of 70 °C shall be maintained for 1 hour, then within 10–15 minutes it shall be cooled to the room temperature. The mixers shall be rinsed in a small amount of water. The content of the containers shall be balanced with distilled water to 450.0 g. Filtering: the content of the beaker shall be mixed with a glass stick and immediately filtered. The first 100 ml of the filtrate shall be poured back into the filter;

5.3.3.2. the measuring device Densito 30PX shall be used for determination of the extract content in mash. A tube for taking of sample shall be placed in mash, and by manually pressing a button, sucked into the measuring device by avoiding formation of air bubbles. Then “OK” shall be pressed and after 3 seconds (after a signal) result in degrees Plato shall be read;

5.3.3.3. extractivity of malt shall be calculated, using the following formula:

|  |  |  |
| --- | --- | --- |
| a) E1 = | P × (M + 800) |   |
| 100 – P |

|  |  |  |
| --- | --- | --- |
| b) EM = | E1 × 100 | where |
| 100 – M |

E1 – extract content in the sample (%) (m/m);

EM – extract content in malt (in dry matter, %) (m/m);

P – extract content g/100 g mash (% Plato);

M – malt moisture (%) (m/m);

800 – the amount of distilled water added to 100 g of malt.

The sum shall be expressed in per cent with accuracy of one digit after the decimal point.

**6. Determination of quality indicators for oat (*Avena sativa* L.) and hulless oat (*Avena nuda* L.) varieties**:

6.1. grain group:

6.1.1. to determine the protein content, fat content, and bulk density, the grain analyser Infratec and the programme OA 070308 LV shall be used;

6.1.2. huskiness shall be determined as follows:

6.1.2.1. pure grain fraction of the joint sample shall be used for the analysis by weighing in two replications ~ 5 g of weighed amount. Flakes for the grains shall be separated, using the preparation needle;

6.1.2.2. the deflaked bare grain shall be weighed with accuracy up to 0.01 g;

6.1.2.3. huskiness of grain shall be calculated, using the following formula:

|  |  |  |
| --- | --- | --- |
| a = | 100 × (P – K) | where |
| P |

a – huskiness of grain (%);

K – mass of the deflaked grain in weighed amount (g);

P – weighed amount (g);

6.1.2.4. huskiness shall be calculated as the arithmetic mean from the results of two replications. The admissible difference between the quantity of flakes determined in both replications for oat grain shall not exceed 1 %. If the difference is larger, the analysis shall be repeated. The final result shall be determined from the two closest results;

6.2. green mass group:

the crude protein content in the dry matter and the dry matter content shall be determined, using such methods which ensure that the data obtained is credible, representative, and comparable.

**7. Determination of quality indicators for buckwheat (*Fagopyrum esculentum Moench*) varieties**:

7.1. the bulk density, protein content, and starch content shall be determined, using such methods which ensure that the data obtained is credible, representative, and comparable;

7.2. huskiness shall be determined as follows:

7.2.1. pure nutlet fraction of the joint sample shall be used for the analysis by weighing in two replications ~ 2.5 g of weighed amount. Nutlets shall be pressed in the pestle to the degree that kernels may be separated from the shells;

7.2.2. the separated flakes shall be weighed with accuracy of 0.01 g;

7.2.3. huskiness of nutlets shall be calculated, using the following formula:

|  |  |  |
| --- | --- | --- |
| a = | K × 100 | where |
| P |

a – huskiness of nutlets (%);

K – mass of flakes in weighed amount (g);

P – weighed amount (g);

7.2.4. huskiness shall be calculated as the arithmetic mean from the results of two replications. The admissible difference between the quantity of flakes determined in both replications for buckwheat nutlets shall not exceed 1 %. If the difference is larger, the analysis shall be repeated. The final result shall be determined from the two closest results.

**8. Determination of quality indicators for maize (*Zea mays* L.) varieties for the obtaining of green mass**

The neutral detergent fibre (NDF), and the acid detergent fibre (ADF) shall be determined, using such methods which ensure that the data obtained is credible, representative, and comparable.

**III. Determination of Quality Indicators for Fodder Plant Varieties**

**9.** To determine the protein content of **field pea (*Pisum sativum* L. (*partim*)), field bean (*Vicia faba* L. (*partim*))** varieties, the grain analyser Infratec and the programme FP 310804 shall be used.

**10. Determination of quality indicators for white lupine (*Lupinus albus* L.), blue lupine (*Lupinus angustifolius* L.), and yellow lupine (*Lupinus luteus* L.) varieties**:

10.1. the protein content for the varieties for the obtaining of seeds shall be determined, using such methods which ensure that the data obtained is credible, representative, and comparable;

10.2. the dry matter content and the crude protein content in the dry matter for the varieties for the obtaining of green mass shall be determined, using such methods which ensure that the data obtained is credible, representative, and comparable.

**11. Determination of quality indicators for cereal grass (*Poaceae* (*Gramineae*)) varieties**

The dry matter content, the crude protein content in the dry matter (only for samples which have been prepared from the first cutting of the year/cycle), the neutral detergent fibre (NDF), and the acid detergent fibre (ADF) shall be determined, using such methods which ensure that the data obtained is credible, representative, and comparable.

**12. Determination of quality indicators for common vetch (*Vicia sativa* L.), hairy vetch (*Vicia villosa* Roth), oil radish (*Raphanus sativus* L. var. *oleiformis* Pers.), and phacelia (*Phacelia tanacetifolia* Benth.) varieties**

The dry matter content and the crude protein content in the dry matter shall be determined, using such methods which ensure that the data obtained is credible, representative, and comparable.

**13. Determination of quality indicators for previously not mentioned papilionaceous plant (*Fabaceae* (*Leguminosae*)) varieties**

The dry matter content, the crude protein content in the dry matter (shall be determined for the first cutting), the neutral detergent fibre (NDF), and the acid detergent fibre (ADF) shall be determined, using such methods which ensure that the data obtained is credible, representative, and comparable.

**IV. Determination of Quality Indicators for Oil Plant and Fibre Plant Varieties**

**14.** To determine **quality indicators for Swede rape ((*Brassica napus* L. (*partim*)) varieties**, i.e. the oil content and the bulk density, the grain analyser Infratec and the programme RA 050904 T3 shall be used.

**15. Determination of quality indicators for flax (*Linum usitatissimum* L.) and hemp (*Cannabis sativa* L.) varieties:**

15.1. the quality indicator for linseed and hempseed varieties – the oil content – shall be determined, using such methods which ensure that the data obtained is credible, representative, and comparable;

15.2. the quality indicator for fibre flax and fibre hemp varieties – the content of non-retted fibre – shall be determined as follows:

15.2.1. the content of non-retted fibre shall be determined for the sample bundle. For the flax 50 g of stalk and for the hemp – 500 g of stalk shall be taken from the sample bundle;

15.2.2. the sample shall be divided into two parts according to mass. Two test portions shall be weighted out from each sample on the scales for the determination of the bark content – 10 g for flax and 100 g for hemp – with accuracy of up to 0.01 g. They shall be milled with a device which is provided for this purpose and which consists of two ribbed metal rolls grinding shives. Shives shall be separated by combing and shaking. If necessary, milling shall be repeated until the quantity of the shives in the non-retted fibre does not exceed 10 %. The remaining shives shall be picked by hand (on the table covered with a dark paper);

15.2.3. the clean bark shall be weighed with accuracy of up to 0.01 g. The non-retted fibre content shall be calculated, using the following formula:

|  |  |  |
| --- | --- | --- |
| C = | S × 100 | where |
| L |

C – non-retted fibre content (%);

S – mass of flax (hemp) stalk (g);

L – mass of non-retted fibre (g).

The non-retted fibre content for each variety shall be calculated as the average result of both samples.

**16. Determination of quality indicators for white mustard (*Sinapis alba* L.) varieties**

The dry matter content and the crude protein content in the dry matter shall be determined, using such methods which ensure that the data obtained is credible, representative, and comparable.

**17.**To determine the **quality indicator for soybean(*Glycine max*) varieties** – the oil and protein content – the grain analyser Infratec and the programme SO 090711 shall be used.

**17.1 The Swede rape, linseed, hempseed, and soybean quality indicator**, i.e. the oil content, % (in comparison with the standard variety or the average indicator of standard varieties), shall be calculated, using the following formula:

|  |  |  |
| --- | --- | --- |
| X = | A × 100 | where |
| B |

X – the oil content (%) in comparison to the standard variety;

A – the oil content of the trial variety (%);

B – the oil content of the standard variety (%).

**17.2 The soybean quality indicator**, i.e. the protein content, % (in comparison with the standard variety or the average indicator of standard varieties), shall be calculated, using the following formula:

|  |  |  |
| --- | --- | --- |
| X = | A × 100 | where |
| B |

X – the protein content (%) in comparison to the standard variety;

A – the protein content of the trial variety (%);

B – the protein content of the standard variety (%).

18. If there are no appropriate methods in Latvia for the determination of any of the quality indicators, it shall be determined, using accepted international methods.

**Annex 8**

Cabinet Regulation No. 518

24 July 2012

[*16 August 2022*]

**Score of the Indicators for the Assessment of the Value for the Cultivation and Use of Varieties in 9-point Scale**

**1. Score of the Indicators for the Assessment of the Value for the Cultivation and Use of Cereal Crop Varieties in 9-point Scale**

|  |
| --- |
| **1.1.**Score of the indicators for the assessment of the value for the cultivation and use of common wheat (*Triticum aestivum* L. subsp. *aestivum*), durum wheat (*Triticum turgidum* L. subsp. *durum* (Desf.) van Slageren), and spelt wheat (*Triticum aestivum* L. subsp. *spelta* (L.) Thell) varieties in 9-point scale |
| Indicators | Points |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Winter hardiness | very poor |   | poor |   | medium |   | good |   | very good |
| Lodging resistance\* | very poor |   | poor |   | medium |   | good |   | very good |
| Grain yield, % (in comparison with the standard variety or the average indicator of standard varieties)\*\* | very poor | 66–75 | poor76–85 | 86–95 | medium96–105 | 106–115 | good116–125 | 126–135 | very good> 135 |
| mass of 1000 grains for winter wheat, g | very low | 27.0–30.9 | low31.0–34.9 | 35.0–38.9 | medium39.0–42.9 | 43.0–46.9 | high47.0–50.9 | 51.0–54.0 | very high> 54.0 |
| mass of 1000 grains for spring wheat, g | very low | 20.0–24.9 | low25.0–28.9 | 29.0–32.9 | medium33.0–36.9 | 37.0–41.9 | high42.0–45.9 | 46.0–50.0 | very high> 50.0 |
| mass of 1000 grains for durum wheat (spring form), g | very low | 20.0–24.9 | low25.0–28.9 | 29.0–32.9 | medium33.0–36.9 | 37.0–41.9 | high42.0–45.9 | 46.0–50.0 | very high> 50.0 |
| Bulk density, g l-1 | very low | 688–709 | low710–719 | 720–729 | medium730–750 | 751–770 | high771–785 | 786–799 | very high> 799 |
| Protein content, % | very low | 9.0–9.6 | low9.7–10.3 | 10.4–11.2 | medium11.3–11.9 | 12.0–13.0 | high13.1–14.0 | 14.1–16.0 | very high> 16.0 |
| Gluten content, % | very low | 15.0–18.0 | low18.1–19.0 | 19.1–22 | medium22.1–23.0 |   | high23.1–25.0 | 25.1–29.0 | very high> 29.0 |
| Starch content, % | very low | 65.0–65.6 | low65.7–66.3 | 66.4–67.0 | medium67.1–67.7 | 67.8–68.4 | high68.5–69.1 | 69.2–70.0 | very high> 70 |
| Colour, unit (for durum wheat) | very pale |   | pale15–16 |   | medium golden17–18 |   | golden19–20 |   | very bright golden> 20 |
| Vitreous aspect, % (for durum wheat) | very low | 20–30 | low30–40 | 40–50 | medium50–60 | 60–70 | high70–80 | 80–90 | very high> 90 |
|  |  |  |  |  |  |  |  |  |  |
| **1.2. Score of the indicators for the assessment of the value for the cultivation and use of rye** (*Secale cereale* L.) **varieties in 9-point scale** |
| Indicators | Points |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Winter hardiness | very poor |   | poor |   | medium |   | good |   | very good |
| Lodging resistance\* | very poor |   | poor |   | medium |   | good |   | very good |
| Grain yield, % (in comparison with the standard variety or the average indicator of standard varieties)\*\* | very poor | 66–75 | poor76–85 | 86–95 | medium96–105 | 106–115 | good116–125 | 126–135 | very good> 135 |
| mass of 1000 grains, g | for tetraploid rye | very low | 30.0–33.9 | low34.0–37.9 | 38.0–41.9 | medium42.0–45.9 | 46.0–50.9 | high51.0–54.9 | 55.0−60.0 | very high> 60.0 |
| for diploid rye | very low | 25.0–28.9 | low29.0–31.9 | 32.0–34.9 | medium35.0–37.9 | 38.0–40.9 | high41.0–43.9 | 44.0–46.0 | very high> 46.0 |
| Bulk density, g l-1 | very low | 600–620 | low621–640 | 641–660 | medium661–680 | 681–700 | high701–720 | 721–730 | very high> 730 |
| Protein content, % | very low | 8.0–8.9 | low9.0–9.9 | 10.0–10.9 | medium11.0–11.9 | 12.0–12.9 | high13.0–13.9 | 14.0–15.0 | very high> 15.0 |
| Starch content, % | very low | 60.0–60.9 | low61.0–61.9 | 62.0–62.9 | medium63.0–63.9 | 64.0–64.9 | high65.0–65.9 | 66.0 | very high> 66 |
|  |  |  |  |  |  |  |  |  |  |
| **1.3. Score of the indicators for the assessment of the value for the cultivation and use of triticale** (*x Triticosecale Wittm. ex A. Camus*) **varieties in 9-point scale** |  |
| Indicators | Points |  |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |  |
| Winter hardiness | very poor |   | poor |   | medium |   | good |   | very good |  |
| Lodging resistance\* | very poor |   | poor |   | medium |   | good |   | very good |  |
| Grain yield, % (in comparison with the standard variety or the average indicator of standard varieties)\*\* | very poor | 66–75 | poor76–85 | 86–95 | medium96–105 | 106–115 | good116–125 | 126–135 | very good> 135 |  |
| mass of 1000 grains, g | very low | 31.0–33.9 | low34.0–36.9 | 37.0–39.9 | medium40.0–43.9 | 44.0–46.9 | high47.0–50.9 | 51.0–54.0 | very high> 54 |  |
| Bulk density, g l-1 | very low | 650–660 | low661–670 | 671–680 | medium681–690 | 691–700 | high701–730 | 731–750 | very high> 750 |  |
| Protein content, % | very low | 8.0–8.9 | low9.0–9.9 | 10.0–10.9 | medium11.0–11.9 | 12.0–12.9 | high13.0–13.9 | 14.0–15.0 | very high> 15.0 |  |
| Starch content, % | very low | 61.0–62.0 | low62.1–63.0 | 63.1–64.0 | medium64.1–65.0 | 65.1–66.0 | high66.1–67.0 | 67.1–68.0 | very high> 68 |  |
|   |   |   |   |   |   |   |   |   |   |  |
| **1.4. Score of the indicators for the assessment of the value for the cultivation and use of barley** (*Hordeum vulgare* L.) **varieties in 9-point scale** |  |
| Indicators | Points |  |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |  |
| Winter hardiness | very poor |   | poor |   | medium |   | good |   | very good |  |
| Lodging resistance\* | very poor |   | poor |   | medium |   | good |   | very good |  |
| Grain yield, % (in comparison with the standard variety or the average indicator of standard varieties)\*\* | very poor | 66–75 | poor76–85 | 86–95 | medium96–105 | 106–115 | good116–125 | 126–135 | very good> 135 |  |
| mass of 1000 grains, g | very low | 34.1–36.0 | low36.1–38.0 | 38.1–40.0 | medium40.1–42.0 | 42.1–45.0 | high45.1–48.0 | 48.1–50.0 | very high> 50.0 |  |
| Bulk density,g l-1 | very low | 550–570 | low571–590 | 591–600 | medium601–620 | 621–650 | high651–680 | 681–700 | very high> 700 |  |
| Bulk density,g l–1 (for hulless barley) | very low | 650–670 | low671–690 | 691–700 | medium701–720 | 721–750 | high751–780 | 781–800 | very high> 800 |  |
| Protein content, % (for grain group) | very low | 8.1–9.0 | low9.1–10.0 | 10.1–12.0 | medium12.1–13.0 | 13.1–14.0 | high14.1–15.0 | 15.1–17.0 | very high> 17.0 |  |
| Starch content, % | very low | 55.0–56.6 | low 56.7–58.3 | 58.4–60.1 | medium60.2–61.9 | 62.0–63.6 | high63.7–65.3 | 65.4–67.0 | very high> 67.0 |  |
| Threshability, % (for hulless barley) | > 25.0 | 20.1–25.0 | 15.1–20.0 | 10.1–15.0 | 5.1–10.0 | 2.6–5.0 | 1.6–2.5 | 0.6–1.5 | 0–0.5 |  |
| Protein content, % (for malt group) | very poor> 12.0 |   | poor11.6–12.0 |   | medium11.1–11.5 |   | good8.0–8.910.1–11.0 |   | very good9.0–10.0 |  |
| Grain fractions, %, over 2.5 mm (for malt group) | 79.1–81.0 | 81.1–83.0 | 83.1–85.0 | 85.1–87.0 | 87.1–89.0 | 89.1–91.0 | 91.1–93.0 | 93.1–95.0 | > 95 |  |
| Extractivity, % (for malt group) | very low | 75.0–75.9 | low76.0–76.9 | 77.0–77.9 | medium78.0–78.9 | 79–79.9 | high80–80.9 | 81–82 | very high> 82 |  |
|   |   |   |   |   |   |   |   |   |   |  |
| **1.5. Score of the indicators for the assessment of the value for the cultivation and use of oat** (*Avena sativa* L.)  **and hulless oat** (*Avena nuda* L.) (grain group) **varieties in 9-point scale** |  |
| Indicators | Points |  |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |  |
| Lodging resistance\* | very poor |   | poor |   | medium |   | good |   | very good |  |
| Grain yield, % (in comparison with the standard variety or the average indicator of standard varieties)\*\* | very poor | 66–75 | poor76–85 | 86–95 | medium96–105 | 106–115 | good116–125 | 126–135 | very good> 135 |  |
| mass of 1000 grains, g | very low | 18.0–19.9 | low20.0–22.9 | 23.0–25.9 | medium26.0–30.9 | 31.0–35.9 | high36.0–40.9 | 41.0–45.0 | very high> 45.0 |  |
| Bulk density, g l-1 | very low | 431–445 | low446–460 | 461–475 | medium476–490 | 491–505 | high506–520 | 521–535 | very high> 535 |  |
| Huskiness, % | very high> 35.0 | 33.0–35.0 | high30.0–32.9 | 26.0–29.9 | medium24.0–25.9 | 22.0–23.9 | low20.0–21.9 | 18.0–19.9 | very low |  |
| Huskiness, % (for hulless oats) | very high> 15.0 | 12.1–15.0 | high9.1–12.0 | 7.1–9.0 | medium5.1–7.0 | 3.1–5.0 | low1.6–3.0 | 0.6–1.5 | very low |  |
| Protein content, % | very low | 8.0–9.0 | low9.1–10.0 | 10.1–11.0 | medium11.1–12.0 | 12.1–13.0 | high13.1–15.0 | 15.1–16.0 | very high> 16.0 |  |
| Fat content, % | very low | 3.5–4.0 | low4.1–4.5 | 4.6–5.0 | medium5.1–5.5 | 5.6–6.0 | high6.1–6.5 | 6.6–7.0 | very high> 7.0 |  |
| Threshability, % (for hulless oats) | > 25.0 | 20.1–25.0 | 15.1–20.0 | 10.1–15.0 | 5.1–10.0 | 2.6–5.0 | 1.6–2.5 | 0.6–1.5 | 0–0.5 |  |
|   |   |   |   |   |   |   |   |   |   |  |
| **1.6. Score of the indicators for the assessment of the value for the cultivation and use of oat** (*Avena sativa* L.) (green mass group) **varieties in 9-point scale** |  |
| Indicators | Points |  |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |  |
| Dry matter yield, % (in comparison with the standard variety or the average indicator of standard varieties) | very low | 66–75 | low76–85 | 86–95 | medium96–105 | 106–115 | high116–125 | 126–135 | very high> 135 |  |
| Lodging resistance\* | very poor |   | poor |   | medium |   | good |   | very good |  |
| Crude protein content in the dry matter, % | very low | 2.6–3.5 | low3.6–4.5 | 4.6–5.5 | medium5.6–6.5 | 6.6–7.5 | high7.6–8.5 | 8.6–9.5 | very high> 9.5 |  |
|   |   |   |   |   |   |   |   |   |   |  |
| **1.7. Score of the indicators for the assessment of the value for the cultivation and use of buckwheat** (*Fagopyrum esculentum Moench*) **varieties in 9-point scale** |  |
| Indicators | Points |  |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |  |
| Nutlet yield, % (in comparison with the standard variety or the average indicator of standard varieties)\*\* | very poor | 66–75 | poor76–85 | 86–95 | medium96–105 | 106–115 | good116–125 | 126–135 | very good> 135 |  |
| Lodging resistance | very poor |   | poor |   | medium |   | good |   | very good |  |
| mass of 1000 nutlets, g | very low | 20.0–21.0 | low21.1–22.0 | 22.1–23.0 | medium23.1–24.0 | 24.1–25.0 | high25.1–27.0 | 27.1–30.0 | very high> 30.0 |  |
| Bulk density, g l-1 | very low | 501–520 | low521–540 | 541–560 | medium561–580 | 581–600 | high601–620 | 620–650 | very high> 650 |  |
| Huskiness, % | very high> 25.0 | 24.1–25.0 | high23.1–24.0 | 22.1–23.0 | medium21.1–22.0 | 20.1–21.0 | low19.1–20.0 | 18.0–19.0 | very low |  |
| Protein content, % | very low | 10.0–11.0 | low11.1–12.0 | 12.1–13.0 | medium13.1–14.0 | 14.1–15.0 | high15.1–16.0 | 16.1–17.0 | very high> 17.0 |  |
| Starch content, % | very low | 52.0–53.0 | low53.1–54.0 | 54.1–55.0 | medium55.1–56.0 | 56.1–57.0 | high57.1–58.0 | 58.1–60.0 | very high> 60 |  |
|   |   |   |   |   |   |   |   |   |   |  |
| **1.8. Score of the indicators for the assessment of the value for the cultivation and use of maize** (*Zea mays* L.) **(for the obtaining of green mass) varieties in 9-point scale** |  |
| Indicators | Points |  |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |  |
| Dry matter yield, % (in comparison with the standard variety or the average indicator of standard varieties) | very low | 66–75 | low76–85 | 86–95 | medium96–105 | 106–115 | high116–125 | 126–135 | very high> 135 |  |
| Dry matter content, % | or> 50 | 20.1–21.9or48.1–50.0 | 22.0–23.9or46.1–48.0 | 24.0–24.9or43.1–46.0 | 25.0–25.9or40.1–43.0 | 26.0–27.9or38.1–40.0 | 28.0–29.9or37.1–38.0 | 30.0–31.9or35.1–37.0 | 32.0–35.0 |  |
| Crude protein content in the dry matter, % (N % x 6.25) | very low | 4.0–5.0 | low5.1–6.0 | 6.1–7.0 | medium7.1–8.0 | 8.1–9.0 | high9.1–10.0 | 10.1–11.0 | very high> 11.0 |  |
| Neutral detergent fibre (NDF), %, in the dry matter | very high> 50.0 | 47.1–50.0 | high44.1–47.0 | 42.1–44.0 | medium40.1–42.0 | 38.1–40.0 | low36.1–38.0 | 34.0–36.0 | very low |  |
| Acid detergent fibre (ADF), %, in the dry matter | very high> 32.0 | 30.1–32.0 | high29.1–30.0 | 28.1–29.0 | medium27.1–28.0 | 26.1–27.0 | low25.1–26.0 | 24.0–25.0 | very low |  |
| Lodging resistance\* | very low |   | low |   | medium |   | high |   | very high |  |

**2. Score of the Indicators for the Assessment of the Value for the Cultivation and Use of Fodder Plant Varieties in 9-point Scale**

|  |
| --- |
| **2.1. Score of the indicators for the assessment of the value for the cultivation and use of field pea** (*Pisum sativum* L. (*partim*)) **varieties in 9-point scale** |
| Indicators | Points |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Seed yield, % (in comparison with the standard variety or the average indicator of standard varieties) in pure sowing\*\* | very low | 66–75 | low76–85 | 86–95 | medium96–105 | 106–115 | high116–125 | 126–135 | very high> 135 |
| Lodging resistance | very low |   | low |   | medium |   | high |   | very high |
| Winter hardiness (for winter forms) | very poor |   | poor |   | medium  |   | good  |   | very good |
| Protein content in seeds, % | very low | 17.1–18.0 | low18.1–19.0 | 19.1–20.0 | medium20.1–21.0 | 21.1–22.0 | high22.1–23.0 | 23.1–25.0 | very high> 25.0 |
|   |   |   |   |   |   |   |   |   |   |
| **2.2. Score of the indicators for the assessment of the value for the cultivation and use of field bean** (*Vicia faba* L. (*partim*)) **varieties in 9-point scale** |
| Indicators | Points |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Seed yield, % (in comparison with the standard variety or the average indicator of standard varieties) in pure sowing\*\* | very low | 66–75 | low76–85 | 86–95 | medium96–105 | 106–115 | high116–125 | 126–135 | very high> 135 |
| Lodging resistance | very low |   | low |   | medium |   | high |   | very high |
| Winter hardiness (for winter forms) | very poor |   | poor |   | medium |   | good |   | very good |
| Protein content in seeds, % | very low | 22.1–23.0 | low23.1–24.0 | 24.1–25.0 | medium25.1–27.0 | 27.1–29.0 | high29.1–31.0 | 31.1–32.0 | very high> 32.0 |
|   |   |   |   |   |   |   |   |   |   |
| **2.3. Score of the indicators for the assessment of the value for the cultivation and use of white lupine** (*Lupinus albus* L.), **blue lupine** (*Lupinus angustifolius* L.), **and yellow lupine** (*Lupinus luteus* L.) **(for the obtaining of seeds) varieties in 9-point scale** |
| Indicators | Points |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Seed yield, % (in comparison with the standard variety or the average indicator of standard varieties) in pure sowing\*\* | very low | 66–75 | low76–85 | 86–95 | medium96–105 | 106–115 | high116–125 | 126–135 | very high> 135 |
| Lodging resistance | very low |   | low |   | medium |   | high |   | very high |
| Protein content in seeds, % | very low | 32.1–34.0 | low34.1–36.0 | 36.1–38.0 | medium38.1–40.0 | 40.1–42.0 | high42.1–44.0 | 44.1–48.0 | very high> 48.0 |
|   |   |   |   |   |   |   |   |   |   |
| **2.4. Score of the indicators for the assessment of the value for the cultivation and use of white lupine** (*Lupinus albus* L.)**, blue lupine** (*Lupinus angustifolius* L.)**, and yellow lupine** (*Lupinus luteus* L.) **(for the obtaining of green mass) varieties in 9-point scale** |
| Indicators | Points |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Dry matter yield, % (in comparison with the standard variety or the average indicator of standard varieties) | very low | 66–75 | low76–85 | 86–95 | medium96–105 | 106–115 | high116–125 | 126–135 | very high> 135 |
| Lodging resistance\* | very low |   | low |   | medium |   | high |   | very high |
| Crude protein content in the dry matter, %(in comparison with the standard variety or the average indicator of standard varieties) | very low | 66–75 | low76–85 | 86–95 | medium96–105 | 106–115 | high116–125 | 126–135 | very high> 135 |
|   |   |   |   |   |   |   |   |   |   |
| **2.5. Score of the indicators for the assessment of the value for the cultivation and use of cereal grass** (*Poaceae* (*Gramineae*)) **varieties in 9-point scale** |
| Indicators | Points |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Winter hardiness (except for annual Westerwolds ryegrass) | very low, plants are totally destroyed |   | low, about 25 % of plants have hibernated |   | average, about 50 % of plants have hibernated |   | high, about 75 % of plants have hibernated |   | very high, all plants have hibernated |
| Lodging resistance | very low |   | low |   | medium |   | high |   | very high |
| Dry matter yield, % (in comparison with the standard variety or the average indicator of standard varieties) | very low | 66–75 | low76–85 | 86–95 | medium96–105 | 106–115 | high116–125 | 126–135 | very high> 135 |
| Crude protein content in the dry matter, % | very low | 4.0–6.0 | low6.1–8.0 | 8.1–10.0 | medium10.1–12.0 | 12.1–15.0 | high15.1–18.0 | 18.1–20.0 | very high> 20.0 |
|   |   |   |   |   |   |   |   |   |   |
| **2.6. Score of the indicators for the assessment of the value for the cultivation and use of common vetch** (*Vicia sativa* L.)and **hairy vetch** (*Vicia villosa* Roth) **(for the obtaining of green mass) varieties in 9-point scale** |
| Indicators | Points |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Winter hardiness (for hairy vetch) | very poor |   | poor |   | medium |   | good |   | very good |
| Dry matter yield, % (in comparison with the standard variety or the average indicator of standard varieties) | very low | 66–75 | low76–85 | 86–95 | medium96–105 | 106–115 | high116–125 | 126–135 | very high> 135 |
| Lodging resistance\* | very low |   | low |   | medium |   | high |   | very high |
| Crude protein content in the dry matter, % (in comparison to the standard) | very low | 66–75 | low76–85 | 86–95 | medium96–105 | 106–115 | high116–125 | 126–135 | very high> 135 |
|   |   |   |   |   |   |   |   |   |   |
| **2.7. Score of the indicators for the assessment of the value for the cultivation and use of oil radish** (*Raphanus sativus* L. var. *oleiformis* Pers.) **and phacelia** (*Phacelia tanacetifolia* Benth.) **(for the obtaining of green mass) varieties in 9-point scale** |
| Indicators | Points |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Dry matter yield, % (in comparison with the standard variety or the average indicator of standard varieties) | very low | 66–75 | low76–85 | 86–95 | medium96–105 | 106–115 | high116–125 | 126–135 | very high> 135 |
| Crude protein content in the dry matter, % | for oil radishes | very low | 8.0–9.0 | low9.1–11.0 | 11.1–13.0 | medium13.1–15.0 | 15.1–17.0 | high17.1–18.9 | 19.0–20.0 | very high> 20.0 |
| for phacelia | very low | 5.0–7.0 | low7.1–8.0 | 8.1–10.0 | medium10.1–11.0 | 11.1–13.0 | high13.1–14.0 | 14.1–15.0 | very high> 15.0 |
| Lodging resistance\* | very low |   | low |   | medium |   | high |   | very high |
| Crude protein content in the dry matter, % | for oil radishes | very low | 1.28–1.44 | low1.45–1.76 | 1.77–2.08 | medium2.09–2.40 | 2.41–2.72 | high2.73–3.04 | 3.05–3.20 | very high> 3.20 |
| for phacelia | very low | 0.80–1.12 | low1.13–1.28 | 1.29–1.60 | medium1.61–1.76 | 1.77–2.08 | high2.09–2.24 | 2.25–2.40 | very high> 2.40 |
|   |  |  |
| **2.8. Score of the indicators for the assessment of the value for the cultivation and use of previously not mentioned papilionaceous plant** (*Fabaceae* (*Leguminosae*)) **varieties in 9-point scale** |  |  |
| Indicators | Points |  |  |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |  |  |
| Winter hardiness (for hairy vetch) | very low, plants are totally destroyed |   | low, about 25 % of plants have hibernated |   | average, about 50 % of plants have hibernated |   | high, about 75 % of plants have hibernated |   | very high, all plants have hibernated |  |  |
| Dry matter yield, % (in comparison with the standard variety or the average indicator of standard varieties) | very low | 66–75 | low76–85 | 86–95 | medium96–105 | 106–115 | high116–125 | 126–135 | very high> 135 |  |  |
| Lodging resistance\* | very low |   | low |   | medium |   | high |   | very high |  |  |
| Crude protein content in the dry matter, % | very low | 10.0–14.0 | low14.1–17.0 | 17.1–20.0 | medium20.1–22.0 | 22.1–25.0 | high25.1–27.0 | 27.1–30.0 | very high> 30 |  |  |

**3. Score of the Indicators for the Assessment of the Value for the Cultivation and Use of Oil Plant and Fibre Plant Varieties in 9-point Scale**

|  |
| --- |
| **3.1. Score of the indicators for the assessment of the value for the cultivation and use of Swede rape** (*Brassica napus* L. (*partim*)) **and turnip rape** (*Brassica rapa* L. var. *silvestris* (Lam.) Briggs) **varieties in 9-point scale** |
| Indicators | Points |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Winter hardiness (for winter Swede rape and winter turnip rape) | very poor |   | poor |   | medium |   | good |   | very good |
| Seed yield, % (in comparison with the standard variety or the average indicator of standard varieties)\*\* | very low | 66–75 | low76–85 | 86–95 | medium96–105 | 106–115 | high116–125 | 126–135 | very high> 135 |
| Oil yield, % (in comparison with the standard variety or the average indicator of standard varieties) | very low | 66–75 | low76–85 | 86–95 | medium96–105 | 106–115 | high116–125 | 126–135 | very high> 135 |
|   |   |   |   |   |   |   |   |   |   |
| **3.2. Score of the indicators for the assessment of the value for the cultivation and use of flax** (*Linum usitatissimum* L.) **(fibre flax) varieties in 9-point scale** |
| Indicators | Points |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Stalk yield, % (in comparison with the standard variety or the average indicator of standard varieties) | very low | 66–75 | low76–85 | 86–95 | medium96–105 | 106–115 | high116–125 | 126–135 | very high> 135 |
| Lodging resistance | very low |   | low |   | medium |   | high |   | very high |
| Average length of cork, cm |  | 60–64 | 65–68 | 69–72 | 73–76 | 77–80 | 81–84 | 85–88 | > 88 |
| Non-retted fibre content, % |  | 20–22 | 23–24 | 25–26 | 27–28 | 29–30 | 31–32 | 33–34 | > 35 |
| Height of plants, cm |  | 70–72 | 73–75 | 76–78 | 79–81 | 82–84 | 85–87 | 88–90 | > 90 |
|   |   |   |   |   |   |   |   |   |   |
| **3.3. Score of the indicators for the assessment of the value for the cultivation and use of flax** (*Linum usitatissimum* L.) **(linseed) varieties in 9-point scale** |
| Indicators | Points |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Seed yield, % (in comparison with the standard variety or the average indicator of standard varieties)\*\* | very low | 66–75 | low76–85 | 86–95 | medium96–105 | 106–115 | high116–125 | 126–135 | very high> 135 |
| Lodging resistance | very low |   | low |   | medium |   | high |   | very high |
| Oil yield, % (in comparison with the standard variety or the average indicator of standard varieties) | very low | 66–75 | low76–85 | 86–95 | medium96–105 | 106–115 | high116–125 | 126–135 | very high> 135 |
|   |   |   |   |   |   |   |   |   |   |
| **3.4. Score of the indicators for the assessment of the value for the cultivation and use of hemp** (*Cannabis sativa* L.) **(fibre hemp) varieties in 9-point scale** |
| Indicators | Points |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Stalk yield, % (in comparison with the standard variety or the average indicator of standard varieties) | very low | 66–75 | low76–85 | 86–95 | medium96–105 | 106–115 | high116–125 | 126–135 | very high> 135 |
| Height of plants, cm |  | 200–230 | 231–260 | 261–290 | 291–310 | 311–340 | 341–370 | 371–400 | > 400 |
| Non-retted fibre content, % |  | 30–32 | 33–34 | 35–36 | 37–38 | 39–40 | 41–42 | 43–44 | > 45 |
|   |   |   |   |   |   |   |   |   |   |
| **3.5. Score of the indicators for the assessment of the value for the cultivation and use of hemp** (*Cannabis sativa* L.) **(hempseed) varieties in 9-point scale** |
| Indicators | Points |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Seed yield, % (in comparison with the standard variety or the average indicator of standard varieties)\*\* | very low | 66–75 | low76–85 | 86–95 | medium96–105 | 106–115 | high116–125 | 126–135 | very high> 135 |
| Oil yield, % (in comparison with the standard variety or the average indicator of standard varieties) | very low | 66–75 | low76–85 | 86–95 | medium96–105 | 106–115 | high116–125 | 126–135 | very high> 135 |
|   |   |   |   |   |   |   |   |   |   |
| **3.6. Score of the indicators for the assessment of the value for the cultivation and use of white mustard** (*Sinapis alba* L.) **varieties in 9-point scale** |
| Indicators | Points |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Dry matter yield, % (in comparison with the standard variety or the average indicator of standard varieties) | very low | 66–75 | low76–85 | 86–95 | medium96–105 | 106–115 | high116–125 | 126–135 | very high> 135 |
| Crude protein content in the dry matter, % | very low | 9.0–10.0 | low10.1–11.0 | 11.1–13.0 | medium13.1–14.0 | 14.1–15.0 | high15.1–16.0 | 16.1–18.0 | very high> 18.0 |
| Crude protein content in the dry matter, %\* | very low | 1.44–1.60 | low1.61–1.76 | 1.77–2.08 | medium2.09–2.24 | 2.25–2.40 | high2.41–2.56 | 2.57–2.88 | very high> 2.88 |
| Lodging resistance\* | very low |   | low |   | medium |   | high |   | very high |
|   |   |   |   |   |   |   |   |   |   |
| **3.7. Score of the indicators for the assessment of the value for the cultivation and use of soybean** (*Glycine max*) **varieties in 9-point scale** |
| Indicators | Points |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Seed yield, % (in comparison with the standard variety or the average indicator of standard varieties)\*\* | very low | 66–75 | low76–85 | 86–95 | medium96–105 | 106–115 | high116–125 | 126–135 | very high> 135 |
| Lodging resistance | very poor |   | poor |   | medium |   | good |   | very good |
| Protein content, % (in comparison with the standard variety or the average indicator of standard varieties) | very low | 66–75 | low76–85 | 86–95 | medium96–105 | 106–115 | high116–125 | 126–135 | very high> 135 |
| Oil yield, % (in comparison with the standard variety or the average indicator of standard varieties) | very low | 66–75 | low76–85 | 86–95 | medium96–105 | 106–115 | high116–125 | 126–135 | very high> 135 |

**4. Score of the Indicators for the Assessment of the Value for the Cultivation and Use of Potato Varieties in 9-point Scale**

|  |
| --- |
| **4.1. Score of the indicators for the assessment of the value for the cultivation and use of potato** (*Solanum tuberosum* L.) **varieties in 9-point scale** |
| Indicators | Points |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Market tuber yield, % (in comparison with the standard variety or the average indicator of standard varieties 45 days after emergence of seedlings (to be assessed for early varieties)) | very low | 66–75 | low76–85 | 86–95 | medium96–105 | 106–115 | high116–125 | 126–135 | very high> 135 |
| Market tuber yield, % (in comparison with the standard variety or the average indicator of standard varieties 55 days after emergence of seedlings (to be assessed for early varieties)) | very low | 66–75 | low76–85 | 86–95 | medium96–105 | 106–115 | high116–125 | 126–135 | very high> 135 |
| Yield at the end of vegetation period, % (in comparison with the standard variety\*\*) | very low | 66–75 | low76–85 | 86–95 | medium96–105 | 106–115 | high116–125 | 126–135 | very high> 135 |
| Market tuber yield at the end of vegetation period, % (in comparison with the standard variety or the average indicator of standard varieties) | very low | 66–75 | low76–85 | 86–95 | medium96–105 | 106–115 | high116–125 | 126–135 | very high> 135 |
| Starch content in tubers, % (to be assessed for medium and late varieties) |  | 10.0–12.0 | 12.1–14.0 | 14.1–15.0 | 15.1–17.0 | 17.1–18.0 | 18.1–19.0 | 19.1–20.0 | > 20.0 |
| Infection of foliage with late blight, degree of infection, %, in the third accounting time | 81–100 | 66–80 | 51–65 | 41–50 | 31–40 | 21–30 | 11–20 | 1–10 | 0 |
| Foliage infection with early blight, % | 81–100 | 66–80 | 51–65 | 41–50 | 31–40 | 21–30 | 11–20 | 1–10 | 0 |
| Tuber infection with dry rot, % | > 70 | 61–70 | 51–60 | 41–50 | 31–40 | 21–30 | 11–20 | 1–10 | 0 |
| Tuber infection with bacterial soft rot, % | > 70 | 61–70 | 51–60 | 41–50 | 31–40 | 21–30 | 11–20 | 1–10 | 0 |
| Tuber infection with late blight, % | > 70 | 61–70 | 51–60 | 41–50 | 31–40 | 21–30 | 11–20 | 1–10 | 0 |
| Notes.1. \* The indicator shall be taken into account only when assessing the suitability of variety for organic farming.2. \*\* The number of points shall be doubled when assessing a variety. |