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PART II

Statutory Notifications (S. R. O.)

GOVERNMENT OF PAKISTAN

FOOD AND AGRICULTURE DIVISION

NOTIFICATION

Islamabad, the 24th, February, 1987

S. R. O. 107 (I) 87.—In exercise of the powers conferred by section 29 of the Seed Act, 1976 (XXIX of 1976), the Federal Government is pleased to make the following rules, namely :—

1. **Short title and commencement.**—(1) These rules may be called the Seed (Registration) Rules, 1987.

(2) They shall come into force at once.

2. **Definitions.**—In these rules, unless there is anything repugnant in the subject or context,—

- (a) “Act” means the Seed Act, 1976 (XXIX of 1976);
- (b) “Committee” means Federal Seed Registration Committee constituted under rule 3;
- (c) “crop” means one or more related species or sub-species of crop plants which are individually or collectively known by one common name such as wheat, rice, maize, cotton and potato;
- (d) “Form” means a form appended to these rules;

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- (c) "maintainer" means a breeder, institution or agency indicated in the registered variety list as responsible for maintenance of a particular variety ;
- (f) "denomination" means any designation given to the variety for the purpose of rules 9, 11, 20 and 21 ;
- (g) "plant material" means individual plant as a whole or parts thereof, for example, stems, leaves, bolls, fruits and ears representing specific growth stages as the plant passes through seedling, flowering and fruiting stages ;
- (h) "sale", for the purpose of these rules, includes any transaction effected in the course of business—
 - (i) under which property of the seed passess from one person to another ; or
 - (ii) under which the seed is made over by one person to another in pursuance of a contract under which he will use the seed for growing further seed ; and
- (i) "Schedule" means a Schedule to these rules.

3. **Constitution, functions, etc. of the Committee.**—(1) There shall be constituted a Federal Seed Registration Committee consisting of the following members, namely :—

- | | |
|---|-------------------------------|
| (i) The Secretary, Ministry of Food, Agriculture and Co-operatives, Islamabad | <i>Chairman</i> |
| (ii) The Chairman, Pakistan Agricultural Research Council, Islamabad | <i>Member</i> |
| (iii) The Director General, Ayub Agricultural Research Institute, Faisalabad | <i>Member</i> |
| (iv) The Director General, Federal Seed Certification Department, Islamabad | <i>Member</i> |
| (v) One Agronomist, to be nominated by the Ministry of Food, Agriculture and Cooperatives | <i>Member</i> |
| (vi) The Agricultural Development Commissioner, Food and Agriculture Division, Islamabad | <i>Member</i> |
| (vii) The Member/Secretary of Variety Evaluation Committee, Pakistan Agricultural Research Council, Islamabad | <i>Member</i> |
| (viii) The Director, National Seed Registration Department, Rawalpindi | <i>Member/
Secretary.</i> |

Note—The Committee may co-opt, the concerned crop specialists of the related fields from the Pakistan Agricultural Research Council, Pakistan Central Cotton Committee, and other Institutions and agencies as and when required.

(2) The functions of the Committee shall be—

- (a) to assess suitability of varieties for registration in regard to *inter alia*, distinctness, uniformity, stability and value for cultivation and use based on recommendations of the Provincial Government; and
- (b) to recommend for registration of new varieties and areas for their suitability.

(3) The Committee shall, for the performance of its functions, meet as and when required to do so and when it is so desired by the Federal Government.

(4) No act or proceeding of the Committee shall be invalid merely on the ground of existence of a vacancy in, or any defect in the constitution of, the Committee.

(5) The Secretary of the Committee shall sign the certificate of registration after the committee has approved the registration of a variety.

(6) The Committee may authorise the Chairman to exercise any of its powers or to perform any of its functions under these rules.

(7) The Committee may appoint a technical sub-committee comprising of its members and may include experts from outside the Committee for the technical scrutiny of any matter.

4. **Powers of members of the Committee.**—The members of the Committee shall exercise all powers to inspect seed and stand of any variety without restriction as to the area.

5. **Application for registration of a variety.**—(1) An application for registration of a variety of a crop specified in schedule I shall be made in Form A in duplicate, to the Director, National Registration Agency and separate applications shall be made for each variety.

(2) If there are more applications than one for the registration of the same variety, the Committee shall entertain the application first received by it.

(3) The National Registration Agency shall conduct such tests and trials of a variety which is subject of an application for registration as may appear to it to be necessary to establish that it conforms with the requirements of Schedule 2.

(4) Any applicant, making an application for the registration of a variety or for the renewal of such registration, shall—

- (a) give such information and produce or deliver such documents, records, illustrations and facilities as may, from time to time, be required; and
- (b) deliver such seed and other material of the plant variety and, in the case of a hybrid or synthetic or composite plant variety, inbreds or its hereditary sources, in the quantity and in such condition as may

be required from time to time and also such material as may be required to replace any material already delivered which has or may have been damaged in transit or damaged or lost in the course of tests and trials or which is, or has in the course of tests or trials been, shown to be unhealthy or other-wise unsuitable.

(5) Anything required to be given, produced or delivered in accordance with this rule shall be given, produced or delivered to the Secretary of the Committee at such place as and when required.

(6) An applicant, making an application, shall afford to the Committee such facilities for the inspection or examination of seed, crop stand, plants, plant material and trial plots as and when may be required.

6. Refusal for registration.—The Committee shall refuse an application for registration of a variety if—

- (i) it appears that the application is incomplete and the data required about agronomic traits has not been provided with the application ;
- (ii) the applicant has not provided the National Registration Agency with the breeder's seed, reproductive or propagating material of the new variety for crop variety registration trials ;
- (iii) the detailed description of the variety with distinguishing characteristics, according to the prescribed descriptors has not been provided with the application ; or
- (iv) it appears that the new variety does not conform with the requirements of Schedule 2.

7. Conditions for grant of registration.—The following are the conditions for grant of registration of a variety, namely :—

- (i) Whatever may be the origin, artificial or natural, local or exotic, the new variety must be clearly distinguishable by one or more describable and recognisable morphological characteristics or others from other varieties of the same crop. The distinguishing characteristics based on cytological, physiological and other factors shall also be used for variety identification after assessing their applicability through cyto-morphic and physio-morphic research studies accomplished by the department under locally available green house, laboratory and field conditions.
- (ii) The new variety should be superior to existing varieties in one or more characteristics, important for the crop and at least satisfactory in other major requirements.
- (iii) Before a new variety is approved for registration, provision shall be made for the maintenance and regular production of pre-basic seed by the originating Institute or breeder. The pre-basic seed shall be the sole source for the initial and recurrent increases of basic and certified categories of seed.

- (iv) The maintainer of the variety shall keep records of all the generations of that variety and shall, on demand, produce such records for inspection by the Committee or any of its members or by an officer on behalf of the Committee and shall also, if so required at any time, deliver to the Secretary/Director, National Registration Agency, sample of seed and other plant materials of the variety.
- (v) The maintainer shall, when required to do so, afford access to any person authorised under these rules for the inspection or examination of plant material, trial area or premises and permit him to take the sample of seed and plant material of the variety.

8. **Procedure for grant of registration.**—(1) The National Registration Agency shall, in accordance with the requirements of Schedule 2, test the variety submitted for registration.

(2) The crop variety registration trials shall be conducted for two or more years by adopting appropriate testing procedures or such procedures as approved by the Federal Government or the National Seed Council from time to time.

(3) A variety shall not be registered unless the breeder of the variety or a person appointed or approved by the breeder had agreed to be so indicated in the register and has undertaken to maintain the variety in accordance with the morphological and physiological characteristics of the variety as entered in the registration record of that variety.

(4) When a decision has been taken by the Committee relating to approval for registration of a variety, the National Registration Agency shall register the variety and publish *inter alia* the information covering—

- (a) brief development history ;
- (b) description of the variety ;
- (c) area of adaptability ; and
- (d) maintainer of the variety.

(5) The National Seed Registration Agency, after registration, may make arrangements for publishing the information of the variety as descriptive booklets, brochures or in leading scientific agricultural journals, and shall pass on the information to the concerned persons and institutions.

(6) The National Registration Agency shall amend annually the registration list by the addition of new varieties approved by the committee and the deletion of those deemed by the Committee to be no longer eligible for seed production.

9. **Effect of non-registration.**—No variety of the crop specified in Schedule I shall be eligible for seed production and certification in any Province of Pakistan or part thereof unless the said variety has been registered and the necessary certificate to that effect has been obtained from the National Registration Agency.

10. Denomination of new varieties.—(1) An applicant, on making the application or when so required by the National Registration Agency and within such time as may be directed, shall propose a suitable denomination for the variety which may be, after the names of Pakistani rivers, mountains, valleys, national heroes or institutions representing our culture.

(2) The denomination must enable the new variety to be identified and must be short and simple and may not consist solely of figures and it must be clearly different from all the existing variety names.

(3) Name proposed under sub-rule (1) may subsequently be changed on the request of the breeder or on suggestions of the Committee.

(4) The Committee may defer the registration proceedings if it appears to it that the name proposed under sub-rule (1)—

- (a) is the same as that of any other variety of the crop or group of crops to which the plant in respect of which the application is made belongs, or so nearly resembles the name of any such other variety that it would be likely to deceive or to cause confusion as to the identity of the variety ;
- (b) is liable to deceive or cause confusion as to the characteristics or value of the variety or as to the identity of the breeder ;
- (c) does not in other respects conform with international usage as regards a nomenclature of cultivated plants ;
- (d) is liable to give offence or is otherwise objectionable ; or
- (e) is the same, or is likely to be confused with a registered name used in respect of reproductive material of any crop or of another variety of crop to which such variety belongs.

11. Certificate of registration.—A certificate of registration of a variety shall be issued in Form B.

12. Duration of certificate of registration.—A certificate of registration issued under these rules, unless earlier suspended or cancelled, shall be in force for a period of ten years from the date of issue and may thereafter be renewed for a period not exceeding five years. For plants such as horticultural fruit trees and their root stocks the period of validity can further be extended for another period not exceeding five years :

Provided that if an application for renewal is made before the expiry of the period of validity of a certificate, the certificate shall continue in force until a decision is reached on such application :

Provided further that, if in the opinion of the Committee it is necessary to do so, it may provisionally register a new variety for a period of two years.

13. **Cancellation of registration of a variety.**—The Committee shall, at any time, cancel the registration of a variety if—

- (a) it appears that the variety does not conform with the requirements of Schedule 2 as regards its distinctness, uniformity and stability, to the extent that such matters were taken into account when the variety was first registered or that it does not conform with the requirements of the said Schedule as regards its value for cultivation and use ;
- (b) false information was given to the Committee before the variety was registered, being the information which was material to the decision in such registration ;
- (c) the scale of the variety is such that the retention of its registration is unreasonable, due regard being paid, *inter alia*, to the length of time during which the variety has been entered in the registration list ;
- (d) the cultivation, in Pakistan, of the variety is likely to affect adversely the health of any person, animal or plant ;
- (e) the variety concerned is no longer being maintained by the maintainer(s) indicated in the registration list as responsible for its maintenance ; or
- (f) the maintainer(s) of the variety fails to comply in a material respect with the requirements of these rules.

14. **Registration and publication of lists.**—(1) The National Registration Agency shall, for the purpose of these rules, prepare and publish the official lists of registered varieties of the crops specified in Schedule 1 and any additions therein or omissions therefrom shall be made in the said lists as and when required.

(2) The lists of varieties published under sub-rule (1) shall also contain—

- (a) the breeder(s) name, parentage and pedigree of the varieties and developing institution : provided that the formula of a hybrid variety shall not be published if the breeder so requests ;
- (b) the crop to which the variety belongs ;
- (c) breeding history of the variety, covering the names, parentage, pedigree and breeding method : etc.
- (d) an indication of the morphological, physiological and other characteristics of the variety ;
- (e) particulars of the maintainer of the variety ;
- (f) areas of adaptability ;
- (g) the date of registration of the variety ; and the date of renewal ; and
- (h) the date of expiry of such registration.

15. Entertainment of applications, etc.—(1) Any time after the publication of the registered variety lists, the Committee may—

- (i) entertain applications from persons seeking additions to, corrections in, or removal from, any such list subject to the succeeding provisions of these rules ; or
- (ii) in relation to varieties which have been entered in the registered list, make such additions as appear to it to be desirable.

(2) The National Registration Agency shall publish in the official list any addition to, correction in, or removal from, a registered variety list.

16. Appeal.—Any person aggrieved by any decision of the Committee may prefer an appeal to the National Seed Council and the decision of the Council shall be final.

17. Dealings in seed of a variety.—(1) No person shall offer or offer for sale or sell seed of any notified variety of a crop specified in Schedule 1 except under the denomination given in the list for that variety.

(2) No person shall advertise seed of any notified variety of a crop specified in Schedule 1 before the procedure laid down in rule 11 has been completed and except under the name approved for that variety by the Committee.

(3) Sub-rules (1) and (2) shall not apply to a sale or offer for sale of seed where—

- (a) the seed is used or to be used for research or experiments : or
- (b) the seed is to be used for a purpose other than seed.

18. Files of registered variety.—(1) The National Registration Agency shall maintain a file for each registered variety.

(2) The file shall include the application and botanical description of the variety and summary of the facts relying on which the variety was approved for registration.

(3) The file shall be available for inspection by any person who is able to satisfy the Chairman or Secretary of the Committee that his particular interest in the plant variety is such that its production to him is justified :

Provided that in case of a hybrid or synthetic variety where knowledge of hereditary source is necessary for an understanding of the variety and the breeder has so requested, particulars of those sources shall not be disclosed to any other person.

FORM-A

[See rule 5(1)]

GOVERNMENT OF PAKISTAN

NATIONAL REGISTRATION AGENCY

MINISTRY OF FOOD, AGRICULTURE AND COOPERATIVES

APPLICATION FOR VARIETY REGISTRATION

1.1 Name of applicant (s) _____

1.2 Address _____

2.1 Name of breeder(s) (if different from 1) _____

2.2 Address _____

2.3 Has the breeder consented to this application Yes/No.

N.B.—Such consent must be in writing and may be required to be produced to the National Registration Agency.

3.1 Institute where the variety has been developed _____

3.2 Sector _____ Public/private

4. Crop _____

5. Species _____

6. Proposed denomination of the variety _____

7. Temporary designation of the variety _____

8. It is requested to please state whether the following has been provided with the application : (please also see the attached instructions).

8.1 Adaptability studies of the variety Yes/No

8.2 Morphological description of the variety Yes/No

8.3 Distinguishing characteristics of the variety Yes/No

8.4 Documents in support of this application Yes/No

8.5 Plant variety maintenance and seed renewal system Yes/No

8.6 Method to reconstitute the variety if a particular cycle of reproduction of multiplication is specified. Yes/No

8.7 Sample of seed Yes/No

8.8 Specimen of plant material Yes/No

9. Has the variety been included in an official list outside Pakistan
if yes, then give (for each country) :

(i) Name of country

(ii) Year of inclusion

(iii) Title of inclusion

10. I/We declare that to the best of my/our knowledge and belief the variety
is distinct, uniform and stable as required by the Seed Act, 1976, and the
statements made in this application are correct.

Signature of Applicant(s)

Seal

Date :

INSTRUCTIONS FOR FILLING OF FORM A

The breeders are requested to please apply for plant variety registration and assessment of distinctness, uniformity and stability of a particular variety only after it has been selected on the basis of a wide range of tests and has proved to have sufficient agronomic merits over the existing commercial varieties of the same crop. The original copy of the application, the seed samples, specimens of plant material and other documents, etc., are to be addressed to—

The Director,

National Seed Registration Department,

Shamsabad, Murree Road,

RAWALPINDI (Pakistan).

The details for some of the requirements, noted in Form A are given below whereas the other items are self-explanatory :—

4. 'Crop' means a class of plant varieties for which a section of plant variety registration list is in force, e.g. wheat, cotton, rice and potato. (The crops for which registration is required are listed in Schedule 1 of the Seed Registration Rules, 1987).
5. Standardized botanical name consisting of genus and species name, e.g., *Oryza sativa* for rice, *Gossypium hirsutum* for American cotton etc.

6. The proposed denomination must enable the variety to be identified and must be short and simple and may not consist solely of figures. The denomination must not be liable to mislead or to cause confusion or resemble any of the existing variety names.
7. 'Temporary designation' means the designation given to a certain line/strain since its selection as a variety and being used in the varietal tests and referred to for the origin, pedigree, etc.
- 8.1. Adaptability studies include a brief account of the performance of the variety for more than one year in the proposed area of adaptability. They cover all agronomic studies in comparison with the existing commercial varieties of the area and include yield performance, tolerance of hazards e.g. drought, heat and resistance to diseases, insects pests, etc.
- 8.2. Morphological description includes pedigree and breeding history of the variety, variety description and other information required according to the prescribed variety descriptors.

Information regarding pedigree and breeding history includes the importance of the variety and the circumstances which lead to its development. It also includes some details of the parental materials, varieties, lines, nurseries, crosses, etc., and the breeding method used. Details of subsequent stages of selection and testing on the research centre and in the area of adaptability. Indicate the state of uniformity and stability as observed during different stages of selection and multiplication.

Morphological description according to the prescribed descriptor. Additional description of leading characteristics of the seed and plants as the variety passes through seedling, flowering and maturity stages may be given separately.

- 8.3. 'Distinguishing characteristics of the variety'. Please describe in detail the leading morphological|physiological characteristics of the variety enabling it to distinguish clearly from all other existing commercial varieties and most similar comparable varieties of the same crop.

To compare and distinguish the variety from other varieties send specimens of plant material, seed samples, photographs or diagrams clearly indicating the distinctness and novelty.

Statistical data for numerically expressed parameters may also be given.

The frequency of occurrence and detailed description of the variants, if present, must be given.

This section may also include all other characteristics that have not been included in the prescribed form or were difficult to express

numerically or describe accurately. The characteristics that are difficult to describe accurately or appearing at particular growth stages or different varieties can be compared, *e.g.*, plant colour, anthocyanin colouration, seed fuzziness, seed colour, disease reaction, etc.

- 8.4. 'Documents' include evidence supporting identity of the plant variety and how to distinguish it from other varieties of the same crop, *e.g.*, data comparisons, plant and plant part pictures, charts, illustrations, diagrams, graphs, the statements made regarding agronomic value and adaptability of the variety, *e.g.*, yield comparisons, insects pests and disease resistance, earliness, tolerance of hazards, lodging and production management.
- 8.5. 'Variety maintenance and seed renewal system' means the specific system adopted to maintain pure seed stocks of the variety, true to its registration and to produce and make available for further multiplication the pre-basic seed to the seed agencies or as required.
9. 'Official variety list outside Pakistan' means list of plant varieties registered or protected in other countries outside Pakistan.

FORM-B

(See rule 11)

GOVERNMENT OF PAKISTAN

NATIONAL REGISTRATION AGENCY

MINISTRY OF FOOD, AGRICULTURE AND COOPERATIVES

CERTIFICATE OF VARIETY REGISTRATION

Certified that the following variety is hereby registered under the Seed Act, 1976 :—

Variety Registration No.	_____
Name of Variety	_____
Crop	_____
Species	_____
Name of Breeder(s)	_____
Maintainer(s) and institutions	_____
Name of agent/importer (in case of imported variety only).	_____
Maintaining institute	_____

1. This registration shall be valid for a period of ten years unless extended or earlier suspended or cancelled.

2. This registration is subject to the conditions specified in the Seed Act, 1976, and the Seed (Registration) Rules, 1987.

3. This registration should not imply approval for release of the plant variety for which the procedure laid down in the Seed Act, 1976, should be followed.

Date of issue :
(seal).

*Secretary,
Federal Seed Registration Committee.*

SCHEDULE-1

[See rules 9, 14 and 17 (1) (2) and (3)]

CROPS ELIGIBLE FOR VARIETY REGISTRATION

PART-I---AGRICULTURAL CROPS

Plants conforming with the characteristics of the cultivated varieties of the following crops :—

1. Alfalfa, lucerne	Medicago spp.
2. Bajra, Napier grass, Millets.	Pennisetum spp.
3. Barley	Hordeum spp.
4. Beans	Lathyrus spp. Phaseolus spp. Vicia spp.
5. Berseem, clovers	Trifolium spp.
6. Cabbages, cauliflower, Turnip, Rape and Mustard	Brassica spp.
7. Carrot	Daucus carota
8. Castor	Ricinus communis
9. Cotton	Gossypium spp.
10. Chickpea	Cicer arietinum
11. Cucurbits, melons, Squashes, Gourds and Loofah. etc.	Benincasa spp. Citrullus spp. Cucumis spp. Cucurbita spp. Lagenaria spp. Luffa spp. and Momor- dica spp. etc.

12. Eddoe, Arvi	<i>Colocasia</i> spp.
13. Egg plant	<i>Solanum melongena</i>
14. Ginger	<i>Zingiber officinale</i> .
15. Guar, cluster bean	<i>Cyamopsis tetragonolob</i>
16. Jute, hemp	<i>Corchorus</i> spp. <i>Crotalaria</i> spp.
17. Lentil, Masoor	<i>Lens culinaris</i>
18. Linseed, flax	<i>Linum</i> spp.
19. Maize, corn	<i>Zea mays</i>
20. Mash, Moong, Moth, Lobia and Cowpeas	<i>Vigna</i> spp.
21. Oats	<i>Avena</i> spp.
22. Okra	<i>Abelmoschus esculentus</i>
23. Onion, Garlic	<i>Allium</i> spp.
24. Peas	<i>Cajanus cajan</i> , <i>Pisum sativum</i> .
25. Peanut, groundnut	<i>Arachis hypogaea</i>
26. Pepper	<i>Capsicum</i> spp.
27. Potato	<i>Solanum tuberosum</i>
28. Radish	<i>Raphanus</i> spp.
29. Rice	<i>Oryza sativa</i>
30. Safflower	<i>Carthamus tinctorius</i>
31. Sesame	<i>Sesamum indicum</i>
32. Sorghum, sudan grass	<i>Sorghum</i> spp.
33. Soyabean	<i>Glycine max</i>
34. Spinach	<i>Spinacia oleracea</i>
35. Sugarbeet, beet root	<i>Beta</i> spp.
36. Sugarcane	<i>Saccharum officinarum</i>
37. Sunflower	<i>Helianthus annuus</i>
38. Sweet potato	<i>Ipomoea batatas</i>

39. Tomato	Lycopersicon esculentum
40. Triticale	Triticosecale spp.
41. Wheat	Triticum spp.
42. Tobacco	Nicotiana spp.

SCHEDULE-2

[See rules 5 (3) and 8 (1)]

REQUIREMENTS FOR REGISTRATION OF A VARIETY

PART I

Distinctness

1. The new variety must be defined and clearly distinguishable from other existing commercial varieties of the crop by one or more morphological or physiological characteristics and such characteristics must be capable of precise description and recognition.

Uniformity (also expressed as homogeneity).

2. Disregarding rare/occasional occurrence of variants, the variety must be sufficiently uniform as regard to its essential and distinguishable characteristics. The variants must be describable and their frequency of occurrence shall be predictable.

Stability

3. The new variety must be stable in its distinguishing characteristics and must remain true to them through successive reproductions and multiplications or at the end of each cycle where the breeder has defined a particular cycle of reproduction and multiplication.

PART II

The National Registration Agency shall conduct pre-registration checking according to the Seed Act, 1976, and the Seed (Registration) Rules, 1987 and shall adopt the following plant variety registration procedures :—

Eligibility

Only those crop varieties shall be considered eligible for pre-registration checking which fulfil the requirements of section 2 (u) of the Seed Act, 1976, and are superior to existing varieties in one or more characteristics important for the crop and at least satisfactory in other major requirements.

Determining suitability for registration as a variety

This involves the assessment of the variety for distinctness, uniformity and stability. For this purpose crop variety registration trials shall be laid out.—

To assess the distinctness, uniformity and stability of a candidate variety, crop variety registration trials will be established. If a variety shows marked lack of uniformity or proves difficult to distinguish from other varieties, the breeder will be consulted.

The plant variety registration trials shall be conducted under normal growth conditions. The trials shall be sown at recommended optimum time of planting.

No special treatment shall be given to the crop except what is recommended for the production of a normal seed crop.

The trials shall be replicated and the number of replications at each site shall not be less than two.

The minimum duration of crop variety registration trials shall be two growing seasons.

The trials shall be laid out in such a way as to make it possible to remove plants or parts of plants at any time, up to maturity, for measurements necessary for laboratory studies without affecting the normal growth and development of the crop.

The seed and seedling studies will be undertaken in the seed testing laboratory, growth chamber or green house.

The criteria used for assessing distinctness, uniformity and stability of varieties will be the subject of continuing research with particular emphasis on the determination of characteristics which are least effected by environment and those which can be determined under controlled environmental conditions.

Requirements for crop variety registration trials

A breeder working in a crop scheduled in the Seed (Registration) Rules, 1987, who considers that a new variety in the final stages of testing has merit over existing varieties and has attained sufficient distinctness and homogeneity shall deliver to the National Registration Agency the following information and material for pre-registration checking :—

1. Application for the registration of the new variety. This involves completion of the prescribed form.
2. Morphological characteristics of the variety. The breeder shall supply a detailed description of the variety according to the stabilized crop variety descriptors and classifying the variety as closely as possible in relation to similar varieties to facilitate testing.
3. Data regarding economic value shall also be required because according to the procedures set out by the National Seed Council only those varieties can be registered which need promotion for cultivation.

4. The National Registration Agency shall receive a specific quantity of breeders seed or appropriate propagating material of the new crop variety for crop variety registration trials as and when required.

The seed submitted each year should have been obtained from the crop in the preceeding growing season.

The purity of the seed supplied should be of pre-basic level and in no case should it be less than 99 per cent.

The seed sample must possess its normal natural appearance and should not be rain-soaked, damaged or discoloured.

The seed supplied must not have received treatment with any chemical except on prior authorization from the National Registration Agency. in case it has been treated then it shall be required to provide full details of the treatment.

Plant variety sources

Varieties from the following sources may be accepted for pre-registration checking :—

1. *Public sector.*—All agricultural research institutes and organizations responsible for variety development, that is,—
 - (i) Federal Agricultural Research Organizations/Institutes. e.g., Pakistan Central Cotton Committee and Pakistan Atomic Energy Commission.
 - (ii) Provincial agricultural research institutes. This includes all multi-disciplinary and mono-commodity research institutes and stations.
 - (iii) Agricultural Universities.
2. *Private sector.*—Only those private sector seed agencies which have been granted permission by the Federal Government to produce, procure and market agricultural seeds in the country.

Observation and assessment of characteristics

Only those plant variety characteristics shall be studied which are considered to be important for distinguishing one variety from another of the same crop and which have significance for the assessment of uniformity and stability. All the characteristics must be capable of precise recognition and description.

The plant variety descriptors, stabilized in consultation with the crop breeders shall provide the capacity to accommodate any addition of useful information on the characteristics not included before.

The establishment of the description of a certain characteristics shall be subject to its state of expression at the specified stage of growth and development of the crop plants.

The crop variety description shall include all the important quantitative and qualitative characteristics which can be used for identification of a variety and distinguishing it from other varieties of the same crop.

Quantitative characteristics (or meterical characteristics)

These characteristics show continuous variation so that classification into discrete and distinct categories is not possible. These characteristics are measurable and can be specified accordingly only in terms of metrics and can have variation from one extreme to the other. When any estimations are made these characteristics are scored on a 1—9 scale where 1 represents lowest and 9 the most expression of the characteristic.

Qualitative characteristics

These characteristics which show discrete and discontinuous variation and it is possible to classify the characteristics into distinct categories.

Any plant variety submitted alongwith application for registration to the National Registration Agency under rule 5 shall be studied in the crop variety registration trials for the assessment of its distinctness, uniformity and stability in comparison with the existing adapted commercial varieties specially those which are considered to be similar to the variety under test.

According to rule 8 of the Seed (Registration) Rules, 1987, the pre-requisite for crop variety registration is that the variety must be defined and clearly distinguishable and superior to existing varieties in one or more characteristics important for the crop and satisfactory in other major requirements. Therefore the procedure for the assessment of distinctness, uniformity and stability shall cover the following points namely :—

Distinctness

The new plant variety shall be considered distinct if the distinguishing characteristics have been verified or determined in plant variety registration trials at least at one site and are clear and consistent.

The description of only those quantitative and qualitative characteristics shall be preferred which are least influenced by environmental conditions. However, the variation in the expression of morphological characteristics in the growing conditions other than the area of adaptability shall also be observed.

Distinctness shall preferably be based on morphological characteristics. In some crop varieties, other factors such as disease resistance high yielding capacity and persistence may have proved to be critical points of difference. In such cases the department shall verify the criteria given by the breeder with special reference to the pure variety stock maintenance and regular seed renewal system. The department shall further continue research studies to find appropriate method to identify and distinguish between like varieties.

Uniformity

The degree of uniformity that is attainable depends on the breeding system and differs from species to species. In a vegetatively propagated or self-pollinated crop the degree of uniformity required shall be the highest but in cross-pollinated crop varieties, it shall depend on the breeding method and subsequent maintenance. The standard adopted for uniformity will generally be related to what is achievable in the crop concerned and comparisons will be made with existing varieties. Efforts shall be made in consultation with the breeders to achieve as high a degree of uniformity as practicable. The assessment of uniformity shall also accommodate the occurrence of variants and off types or mutants, changes in the environmental and meteorological factors, mutations or other causes.

Stability

Genetic stability of a variety shall be taken as the capacity to remain true to its description without losing its distinctness and uniformity after repeated reproduction or propagation or where the breeder has defined a particular cycle of reproduction or multiplication at the end of each cycle.

It is most difficult to establish genetic stability of a variety in two years testing but the crop variety shall be considered genetically stable provided that it proves uniform and stable through two years of pre-registration testing.

The registration procedures for hybrids shall also cover, in addition to the commercial hybrid itself, the inbred lines, hereditary material or parental material, producing the commercial hybrid. The commercial hybrid and the parents, the hereditary material or inbred lines shall be studied for two growing seasons.

Crop variety description forms

Descriptive data shall be recorded as required in the crop variety descriptors stabilized in consultation with the breeders. The plant variety descriptors have been based on morphological characteristics of the plants. The other aspects important for variety identification may be the physiological and cytological characteristics which shall be included in the variety descriptors after assessing their usefulness through green house, laboratory and field research studies conducted in consultation with the plant breeders.

The growth and development stage for observing and describing a particular character and state of expression can vary from crop to crop, therefore detailed explanatory notes shall be given separately for each type of crop variety descriptors. However, in general the descriptors shall indicate :—

Pedigree and breeding history

- (a) the main purpose for which the variety has been developed, *e. g.*, high yielding, better adaptability in specific areas, resistant to disease and insects or high quality of the product, etc ;
- (b) some details of the parental materials, varieties, strains, lines, nurseries and crosses used ;
- (c) the breeding method applied ;
- (d) brief account of subsequent stages of selection and testing on the research centre and in the area of adaptability ; and

- (e) the performance of the new variety regarding uniformity and stability as observed during selection and multiplication.

Maturity duration

Number of days taken from sowing to physiological maturity, in general, the crop plants must also assume their natural colour. It shall be expressed as early, medium and late in comparison with the local adapted commercial varieties.

Seedling

For the observation of seedling characteristics, the seeds can be germinated in the laboratory using any suitable germination apparatus following the ISTA seed testing rules and procedures.

Anthocyanin coloration

This is to be recorded as absent or present and if present then the intensity as weak, medium or strong. This character is highly variable and its expression depends very much on the growth and development stage of the plant and environmental factors. Therefore the classification can only be approximate.

Stem

The length of the plant at maturity measured in centimeters from ground level to the top of spike, excluding awns in wheat, to the top of head in sunflower, and to the top of tassel in maize, etc.

Leaf

Attitude

Attitude of leaves, unless otherwise specified, to be recorded on fully developed leaves in mid-third portion of the plant as :

Erect	When the leaf blade is rectilinear.
Semi erect	When the apex of the leaf is recurved but still above the horizontal level.
Horizontal	When the leaf seems at right angle to the vertical level.
Recurved	When less than half of the leaf blade is recurved downward below the horizontal position.
Drooping	When more than half of the leaf blade is recurved downward below the horizontal position.

Senscence

This indicates the state of leaf maturity at the time of physiological maturity of the crop and recorded as :

Early	When leaves assume mature colour at the same time as that of seed.
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Medium	When the leaves remain green for 4-5 days after maturity.
Late	When the leaves remain green for a longer period after maturity.

Length and width

Length and width of the leaf, unless otherwise specified, shall be measured in mid-third of the plant and on the fully developed leaves at the longest and widest portion of the leaf.

1000 seed weight

Weight of 1000 seeds can be determined on a machine counter or by taking the weight of 10 sub-samples of 100 randomly selected seeds and expressed in grams to the number of decimal places as under :—

Weight of the working Samples (gms)						No. of Decimal places
Less than 1	..	..	..	..	..	4
1—9.999	..	..	..	..	..	3
10—99.99	..	..	..	..	..	2
100—999.9	..	..	..	..	..	1
1000— or more	..	..	..	..	..	0

Others

To include description of any characteristics not already included in the descriptor form and which may help identify the crop variety.

Variants

If it is not possible to eliminate variants then different types of describeable and predictable variants that can occur in a normal seed crop due to genotype-environmental interaction, etc., will be recorded.

Production management

A brief account of production management covering the major requirements regarding inputs and production technology practices.

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Ex-officio *Additional Secretary*.