

In Seed Standardization Achievements and Problems

Mukhabat Turabhodjaeva^{1*}, Shukhrat Kozubaev², Gies Abduvakhidov³, Dilmurod Rasulov⁴
^{1*,2,3,4}Scientific-research institute of agrotechnologies of cotton selection, seed breeding and cultivation

¹Corresponding Email: ^{1*}mukhabbat1942@mail.ru

Abstract: It is known that the standardization of agricultural products, including seeds, cannot be carried out without taking into account the changes taking place in the world. To enter the international market, seed standardization should be guided by the requirements of the International Seed Testing Association (ISTA).

Taking into account the conducted studies, as well as the requirements of international rules in the standards for varietal and sowing qualities of cotton seeds, a number of standards were developed in the prescribed manner and approved. This covered, first of all: terms and definitions, germination, batch sizes of raw and seed for sampling working samples, as well as the definition of the substrate to determine the germination energy and germination of cotton seeds.

To date, the issues of studying and approving standards for the express method for determining germination, residual infection with seed pathogens, mechanical damage, etc. remain relevant.

Keywords: agricultural products, seeds, seed analysis, standard, seed viability, mechanical damage to seeds, terms and definitions, seed breeding.

1. Introduction

Deep socio-economic reforms are being carried out in the country under the leadership of the President of the Republic of Uzbekistan. These reforms have widely covered all sectors of the national economy, including agriculture. In order to improve the quality of manufactured products, it is necessary to review and amend many regulatory documents. In this regard, according to the Decree No. PF-6240 of June 2, 2021 of the President of the Republic of Uzbekistan "On Fundamental Improvement of State Administration in the Field of Technical Regulation", Order No. 188 of the Cabinet of Ministers of November 30, 2021, and the plan approved by the heads of the Institute of Standards of Uzbekistan, cotton selection, seed production and "Navurugnazorat" Technical Committee under the Scientific Research Institute of Agrotechnology of Cultivation conducts planned work and regularly coordinates with interested organizations.

It is known that the work on improving the standards should be based on the changes observed in the field of seed breeding in the world. This, in turn, requires continuous improvement of testing methods, equipping testing laboratories with modern equipment, and paying special attention to training and retraining of specialists, especially technical personnel.

In order to enter the international market of agricultural products, it has been repeatedly emphasized that local standards and methods of seed analysis should be adapted to the requirements of ISTA (International Seed Testing Association). Taking into account the scientific data obtained in the past years, as well as international requirements, several standards on the yield and planting quality of seed were developed and approved. For example, the current Uz DSt 642 "Seed cotton. Amendments to the "Technical conditions" standard have been developed and adopted, which correspond to the international system of quality in terms of their main parameters. Technical conditions for low-hair seeds were improved and included in the UzDSt 663 standard. At the same time, the standard requirements for fertility, pollution, mechanical damage, hairiness and moisture were determined, and if they are lower, it was determined that the seed cannot be used and transferred to the technical seed. In this case, the updating and unification of regulatory requirements is consistent with international standards. All this served as a basis for further improvement of the OZ DSt 663-2017 standard and later for its approval at the Institute of Standards.

2. Materials and Methods

National methods of seed analysis are studied by comparing the differences between the International Seed Quality Association (ISTA) regulations. It is very important to identify opportunities for direct application of some cases of seed analysis based on international regulations.

The main tasks of the international organization ISTA are to develop and publish and disseminate information to the seed buyer, to analyze and document the seeds entering the international market, and to promote their implementation in the assessment of seed quality. [A.A. Abduvaliev, 2006y]..

The methods of analysis and seed documentation specified in these regulations are mandatory in the implementation of mutual trade between the participants of the International Seed Testing Association (ISTA) member countries. In other words, these rules are the international standard in the analysis of seed quality [R.Egamberdiev et al., 2010y].

Conducted research made it possible to make scientifically based changes to the normative requirements based on the current requirements of the work carried out in various soil-climatic conditions, seed production and agriculture in general. This made it possible to carefully prepare seed materials, to use it more effectively, to adjust the quality of the seed to its real price, and to introduce new varieties [M. Turabhodjaeva et al., 2012], [Sh. Kozubaev et al., 2018],

It is known that the seed quality of crops is influenced to a certain extent by a number of factors - soil fertility, fertilizer and water level, as well as agrotechnical activities, as well as the storage period of seeds. The conducted studies showed that the recovery process of field fertility in the next generations was positively manifested. [Sh. Sharipov et al., 2019].

According to the analysis of the legislation of other countries, for example, the seed certification system in EU member countries such as Germany, the Netherlands, and Latvia has a mandatory description, starting from the area where agricultural crops are planted, soil control, planting quality, sampling of seed bunches, planting quality approval and includes issuing certificates to seed groups [O. Soatov, 2017].

Q. Adilov [2018] in his article shows that the total level of harmonization of national standards with international standards does not exceed 12.3 percent, including about 9.2 percent of the 3400 current standards for agricultural and food products.

UzDSt 1110:2006 "Cotton genetics, selection, seed breeding, seed science and production of cultivated seed" was adopted to provide geneticists, breeders, seed breeders with uniform terms and definitions for use in all types of documents. "Terms and definitions" standard was approved, and in turn, some terms and definitions accepted by ISTA and UPOV international organizations were used and approved by the "Standards" institute. [Sh. Kozubaev et al., 2007y].

Own DSt 663-2017 "Seed cotton. Technical conditions", Own DSt 1080:2017 "Seed cotton and seed. Sampling methods", standards were developed and improved based on international requirements. [Sh. Kozubaev et al., 2007y], [M. Turabhodzhaeva et al., 2017y]. Own DSt 1128:2017 "Seed seed. "Methods for Fertility Determination" standard was developed in 2006 and is used to issue a certificate of conformity to seeds planted in production, but based on the production requirements, instead of 2017 Uz DSt 1128:2006, the abbreviation, used normative documents were harmonized according to international requirements and the necessary changes were made. entered. [Sh. Kozubaev et al., 2017].

3. Results And Discussion

Own DSt 1128:2006 "Seed seed. The following terms were used to amend the standard "Methods for determination of susceptibility":

- seed control unit, normal grown seed, abnormally grown seed, ungerminated seed, rotten seed, moldy seed, hard seed, rotten seed, hard and low seed according to GOST 20290;
- point sample, generalized sample, working sample, subprobe according to Own DSt 1080;
- seed germination, hairy seed, dehaired seed and batch according to OZ DSt 581;
- low hair seed according to OZ DSt 663, and the following terms and their corresponding definitions are used:
- normal sprouted plants: plants that have the ability to develop normally in good, favorable, soil-climatic conditions;
- abnormally sprouted plants: plants that are defective, damaged or not able to develop as a full plant under favorable soil-climate conditions according to the normative documents of the established procedure for determination of fertility;
- infection: Disease-spreading organisms that have the ability to cause disease and putrefaction symptoms in living material (for example, in the structure of tumors);
- primary infection: disease organism moving in the seed itself;
- secondary infection: A disease organism spread from another seed or tumor.

Seed growth on roll filter and corrugated paper For each subsample, 2 long strips of filter paper measuring 9 x (205±5) cm were prepared. For seeding, 2 long strips of filter paper measuring 9 x (1001) cm were prepared for each subsample, and 100 subsample micropiles were placed on the filter paper with the wider side. The second

filter paper moistened on the subsample was closed and rolled into a roll, then the roll was moistened until the paper was saturated and placed in a thermostat that determines seed germination at $\pm 25^{\circ}\text{C}$, and germination was calculated in 3-6 days

For normal sprouts: the root system is well developed and the primary root is long and thin, often covered with root hairs and ends with a thin tip, a second root appears during the test; growth axis is well developed; fleshy, hemispherical with two seed pods; primary leaf; includes plants with an undamaged upper bud or upper branch.

In malformations: one or more of the following defects are present

- the first root is late in growth, stringy, thick, absent, damaged, broken at the end, elongated, twisted, seed coat is bent, poor heteropism, clear, rotted as a result of the first infection;
- seed coat (50% rule) swollen or distorted, pinched, cracked or otherwise damaged, separated or absent, discolored, necrotic, clear, rotted as a result of the first infection; including malformed tumors.

Non-germinated seeds: - hard seeds that are not able to absorb water during the germination test under the specified conditions; -swollen seed, seeds that have the ability to absorb water during the germination test under the specified conditions, but whose further development is delayed; - seeds that do not show signs of tumor development, are often moldy or rotten, colorless, especially soft dead seeds.



FIGURE 1. The process of determining the fertility of seeds of agricultural crops in laboratory conditions



FIGURE 2. Agricultural crops seeds in the field the process of determining fertility

However, there are still issues in cotton standardization that require urgent resolution. The following can be considered the most relevant:

- development of a manual on x-ray topographic analysis of seeds for express analysis;
- clarification of standards for mechanical damage of seeds.

It should also be noted that the problem of determining whether seeds are infected with various disease-causing pathogens or whether they are healthy has not been developed either at the initial stage of seed preparation or after chemical treatment.

It should be noted that the standard norms for mechanical damage of seeds are controversial issues. In the UzDSt 663-2017 standard, the norms of mechanical damage of seeds are specified: maximum 7% for hairy seeds, maximum 8% for less hairy and depilated seeds, but in our research, mechanically damaged seeds of 8, 12, 15% were found in the laboratory and Normal germination was achieved in seeds with up to 12% damage when planted under field conditions.

It should be noted here that the international standards do not standardize mechanical damage, only recommend a maximum of -12%, and this recommendation is divided into 3 parts. These are slow, medium and strong damaged seeds.

Necessary documents were prepared in order to make changes to the State Standard of Own DSt 663:2017 based on the obtained results, to receive opinions from relevant organizations.

4. Conclusion

Taking into account the above, it can be concluded as follows:

1. Own DSt 663:2017 "Seeds. It is necessary to introduce amendments to the state standard "Technical conditions" and introduce a new standard in cotton seed production for registration and certification of planted seeds.
- 2 Own DSt "Seed cotton and seed. It is necessary to develop a standard draft of conducting arbitration analysis, approve it and apply it to production.
3. The standard UzDSt 1110:2017 "Cotton genetics, selection, seed breeding, seed science and production of cultivated seeds. Terms and definitions" should be supplemented with new terms and definitions and published in Latin.

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