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Concerning the competition for occupation of the academic popsition "Professor" in the scientific specialty "Crop science", announced in the SG *No* 93 of 26.11. 2019 with candidate Hristofor Kirchev Kirchev at the Agricultural University, Plovdiv.

Reviewer: ***Prof. Radka Veleva Ivanova,*** **PhD,** *professional field 6.1 „Crop science", scientific specialty „Crop science",* appointed from the Rector of the Agricultural university as a member of the Scientific Jury with Order *No. RD- 16-17/14.01.2020 г .*

In the competition for "Professor", announced for the needs of the department "Crop science" at the Agricultural University, Plovdiv, participates only one candidate - Assoc. prof. Hristofor Kirchev, PhD.

The competition documents have been prepared in accordance with the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria, and the rules of the Agricultural University, Plovdiv.

1. General information on the career and thematic development of the applicant.

Assoc. prof. was born on 30.05.1968 in Dobrich. In 199 he graduated "Agronomy" at Higher Agricultural Institute – Plovdiv, now Agricultural University. After that until 1994 he worked as an Agronomist in an Agricultural Cooperative "Gaia" in the village of Dubovik, Dobrich region. From 1994 to 1996 he was a teacher at the Agricultural College "T. Rachinski", General Toshevo. After winning a competition in 1996, he was appointed at the Dobrudzha Agricultural Institute - General Toshevo, as a research associate During the period 2002 - 2005, he is a regular PhD student at the Department of "Crop Science". In 2006 after successfully defended he obtained the educational and scientific degree of "Doctor" in the scientific specialty "Crop Production" From 2006 to 2012 assoc. prof. Kirchev passed academic positions: assistant - 2006, Chief assistant - 2009 , and from 2012 he is an Associate professor at the Department of „Crop science". Since 2012, until now he is Assistant Professor in the same department. As a student he also graduated from "Pedagogy at the Free Faculty of Agricultural University – Plovdiv. Assoc. Prof. Kirchev knows excellent, English and Russian, and good Spanish. His pedagogical activity is related to the teaching of crop discipline in diferent specialties to "Bachelor" and "Master" degree of

Bulgarian and foreign students, training of graduates and PhD students. His research activity is related to conducting field experiments, publishing.

2. General description of the materials presented.

In the competition for academic position "Professor" Assoc. Prof. Hristofor Kirchev participated with a total of 132 scientific publications, grouped as follows:

- **Scientific publications in connection with the educational and scientific degree "Doctor"** – 50 points, collected by:
- **Indicator Г8** - *Scientific publications submitted in non-refereed peer-reviewed journals or in edited collective volumes, by the Law for the Development of the Academic Staff of Republic Bulgaria and the Regulations of the Agricultural University* - **9,** *witch respond to* 30,6 points, at 30 *points required.*
- **Scientific publications in connection with academic position "Assosiate Professor" – 59**

Minimum points required by groups of indicators for academic position "Assosiate Professor":

- **Indicator *A1*** - Dissertation work for obtaining the educational and scientific degree of "Doctor"- 50 *points.*
- **Indicator B4** - *Publications and reports submitted in referenced and indexed issues in the world-famous scientific information databases – 10, which respond to 191 points, at 100 points required.*
- **Indicator Г8** - *Scientific publications submitted in non-refereed peer-reviewed journals or in edited collective volumes – 49 - 200,3 points, at 200 points required.*

The candidate fully responds to national minimum scientometric requirements for occupation of the academic positions "Doctor" and "Associate Professor" - non-peer-reviewed.

- **Scientific publications with which the candidate participates in the current competition for the occupation of the academic position "Professor" – 46**

Minimum points required by groups of indicators for academic position "Professor":

- **Indicator B3** - *Monograph - 1 - 100 points;*
- **Indicator G7** - *Papers and reports submitted in referenced and indexed issues in the world-famous scientific information databases - 1 - 15 points;*
- **Indicator G8** - *Scientific publications submitted in non-refereed peer-reviewed journals or in edited collective volumes - 44 - 188,6 points.*

Indicator G7 and Indicator G8 - 203.6 ***at 200 points required.***

Of the 46 publications, 31 were in English, 14 in Bulgarian, and 1 in Russian. The personal participation of the candidate in the indicated works is: single author - 8 (17.4%); first author – 13 (28.3%); second author - 11 (23.9%); third and next author - 14 (30.4%).

- Popular science articles – 3; Textbooks – 2; Exercise guides – 3

To prepare the statement, **46 scientific works** are subject to analysis.

3. Main directions of the applicant's research work. Demonstrated research leadership skills or assets (project management, external funding involved, etc.)

The bigger part of assoc. prof. Kirchev's research is related to the testing of different units of agricultural crop cultivation. In a number of studies have been tested Bulgarian and foreign varieties of field crops in different regions of the country. Various methods have been tested for increasing the productivity and quality of the production obtained, by regulating the amount of mineral fertilizers, treatment with leaf fertilizers, growth regulators, biostimulants ect. Possibilities for optimizing irrigation regimes for soybean, maize and sunflower have been sought.

The majority of publications are related to problems culture related triticale - *17 publications* (37%) , and wheat - 11 *publications* (24%).

4. Assessment of the candidate's pedagogical preparation and activity. His role in the training of young scientific

Assoc. Prof. Kirchev has 13 years of teaching experience in working with students, masters and doctoral students at the Agricultural University – Plovdiv. According to the attached certificate from AU-Plovdiv the direct academic load of Assoc. Prof. Kirchev for the period 2014 - 2019 is 2953,8 hours in exercises, which corresponds to 590,76 hours for each academic year. In this reference not presented the hours of the lessons with the doctoral students. During this period Assoc. Prof. Kirchev teaches lectures, exercises and practices in the discipline of " Crop science", with full-time and part-time education to "Bachelor" and "Master" degree students in Bulgarian and foreign languages. For this purpose Assoc. Prof. Kirchev develops 5 training programs. A syllabus in English has been developed for Erasmus students „Cereal and legume crops" . Prof. Kirchev is the supervisor of three successfully defended PhD students. Currently, he is the supervisor of four other PhD students. Assoc. Prof. Kirchev participates in 4 educational projects, 3 of which are national and 2 international. For ease of reference of study work to the students as a co-author Assoc. Prof. Kirchev participated in the writing of two published university textbooks (2013 и 2019 г.), an Exercise guides (2019 г.) on „Crops sciences and two a practical guide, "Cereal crops" - (2017), "Legume crops" (2017), for foreign students. To facilitate academic work of students, as a

co-author Assoc. Prof. Kirchev participated in the writing of two published university textbooks (2013 и 2019 г.), an Exercise guides (2019 г.) of „Crops sciences", and two a practical guide, "Cereal crops" - (2017), "Legume crops" (2017), for foreign students.

Total for indicator E the candidate collects the sum of 215,2 poinds, *at 100 points required.*

- **Indicator E16**, supervisor of successfully defended doctoral students- 80 poinds;
- **Indicator E18 и E19**, participation in projects- 85 poinds;
- **Indicator E22 и E23**, participation in textbooks and study guides – 50,2 poinds.

Under the supervision, after his habilitation have been successfully defended 23 students- 13 "Bachelor" degree and 10 "Master" degree. The materials presented at the competition on the pedagogical work of Assoc. Prof. Kirchev, prove his serious activity over the years. Therefore, he is respected by his students and his colleagues as a lecturer with significant contributions to the teaching of agricultural science.

5.The significance of the results obtained, proven with citations, publications in prestigious journals, participation in conferences and more.

The importance of the results of the research of Assoc. Prof. Kirchev and his recognition among the scientific community is shown by the number of citations in Bulgarian and foreign publications. According to the list presented by Assoc. Prof. Kirchev, the total number of citations is 43, of them 28, in publications and reports submitted in referenced and indexed issues in the world-famous scientific information databases (Scopus and Web of Science). In total the indicators D13 and D15 the candidate collects the sum of 495 points, with required 100 points, for professor and 50 for associate professor. Of the citations provided, 15 are from Bulgarian authors and 28, from foreign authors. A positive side in promoting the results of his research activities is the participation in 12 national and 9 international scientific forums.

6. Significance of contributions for science and practice, insofar as the candidate has a clearly defined scientific- research profile.

The scientific production presented by Assoc. Prof. Kirchev corresponds to the nomenclature specialty 6.1 „Crops sciences". The significant contributions of the candidate, which I accept, can be grouped as follows:

I. Scientific - theoretical contributions

1.The regression equations for the triticale varieties are deduced by which the theoretical grain yield and the additional nitrogen obtained from each kilogram are calculated. An economic model is presented, which establishes the yield of triticale grain, which maximizes profits depending on current prices and nitrogen fertilizer rates. The results can be used to prepare a detailed economic analysis and to establish economically justifiable nitrogen fertilizer rates for triticale. (publications 34,1, 19).

2. The plasticity and stability of the yields were studied for different triticale and oats varieties, depending on nitrogen fertilization rates.

- ✓ Almost all triticale varieties exhibit high environmental stability at the highest nitrogen fertilization rate, except for the Zaryad variety. Rye triticale varieties are more stable in grain yield than wheat. In the case of oats, the Bulgarian variety Dunav 1 shows a strong variation in yield over the years, unlike the Italian Primula and Sonar *(publications 32, 13).*

3. In tracking phenological development of two soybean varieties in the Plovdiv area, genotypic differences in their development are observed after the beginning of bean formation. Mira variety has a shorter growing season than Biser *(publications 28,37).*

- ✓ It has been established that, in the cultivation of triticale in the regions of Plovdiv and Chirpan, differences in the interphase periods of all varieties of triticale in both regions are observed after the end of the breeding phase *(publications 6,8).*
- ✓ It has been found that when comparing common wheat (T. aestivum) with einkorn wheat (*T. monococcum*) and khorasan wheat (T. turanicum) their growing season is longer than common wheat (T. aestivum). The ancient wheat has higher tiller appearance but it has a lower productive tillering than common wheat and grain yield. Nitrogen fertilization has little effect on the yield of ancient wheat *(publications 16,11).*

4. In a study of the influence of some agro-technical factors on the structure of triticale plants, it was found that in the stage of full maturity, the share of straw is highest, followed by grain and glumes. Nitrogen fertilization has a strong influence on the length of the triticale class , while the differences between the varieties are insignificant. Leaf fertilization with Lactofol increases the number of grains in the class by 6,5 % . In the stage of full maturity, the proportion of triticale grains grown after precursor weat was 6,3 % less then thet of sunflower precursor *(publications 7, 5,2).*

II. Scientific and applied contributions:

1.The triticale cultivars Colorit and Accord had higher productivity under the agro-ecological conditions in the region of Dobrudzha, than those in Trakia. In the Chirpan region, the highest yields are obtained from the Boomerang and Attila varietieS, and in the region of Plovdiv the varieties, Accord and Attila *(publications 40,15, 4).*

2. It was found that regardless of the region of growing the highest grain yields are obtained by fertilizing with $N_{12}P_6K_6$ *(publication 40).*

- ✓ The varieties AD7291 Rakita, Zaryad, Sadovets and Rojen grown at fertilization levels of N_0, N_6, N_{12} и N_{18} kg/da give the lowest yields in the non-fertilized variants. Grain yields increase with increasing fertilizer rate. Rye type varieties had highest productivity potential, than wheat *(publication 22).*
- ✓ Increasing the nitrogen fertilization rate leads to an increase in the crude protein content of the triticale grain. Rye type triticale varieties have a higher protein content *(publication 27).*
- ✓ When comparing of two Spanish varieties, Senatrit and Trujillo with the Bulgarian Rakita grown at fertilization levels N0, N8 and N16 kg/da, it is found that the Senatrit variety is with higher productivity than the others at zero variants, while Rakita and Trujillo show their productive potential at high levels of nitrogen fertilization *(publication 12).*

3. Treatment of Boomerang, Attila, Colorit and Respect varieties with leaf fertilizer Lactofol has been found to increase grain yield, but differences with untreated variants are unproven *(publication 4).*

- ✓ The influence of the growth regulators Salvit, Trisalvit and Tritimil on the productivity of triticale cultivar Musala was studied. The highest grain yield was found to be obtained by treating the plants in the phase of tillering with Trisalvit (100 ml/da) *(publication 33).*

4. The productivity and quality of wheat varieties cultivated in different agro-ecological regions of the country is followed.

- ✓ It was found that under the conditions of Dobrudja, the highest grain yield was obtained from the Karat variety, followed by Albena and Enola. The test weight of the studied varieties is close, the mass of 1000 grains and the yield of wet gluten are highest in the Albena variety (50.7 g and 28.0%) and lowest in the Enola variety, (46, 51 g and 26.3%) *(publication 18).*
- ✓ Of the Sadovo 772, Enola, Diamond, Todora and Yunak varieties studied in the agro-environmental conditions of southeastern Bulgaria, the highest grain yield is obtained from the Todora variety, which on average exceeds Sadovo 772 by 13.6% *(publication 38).*

5. In a study of some qualitative index grain in Bulgarian and foreign wheat varieties (Enola, Balaton, Diamond and Andino) in the conditions of northwestern Bulgaria it is found that the highest test weight has the Enola variety and the lowest - the Diamond variety, the highest mass per 1000 grains, the Balaton variety, and the lowest Enola *(publication 3).*

6. When cultivating four Italian durum wheat varieties, under two nitrogen fertilization rates, N_6 и N_{18} kg/da in the Plovdiv area, it is found that the yields between the tested varieties have greater differences in the low fertilizer variants. At a high rates, the yields between the varieties are almost equalized *(publication 42).*

- ✓ In Chirpan conditions with continuous (systematic) mineral fertilization, the highest yields of durum wheat are obtained - with fertilization of 12 kg / da N. Growth above 12 kg / da N has a negative impact on the yield as well as on the productive tillering *(publication 20).*
- ✓ Independent of the type of cultivation (alone and broad-strip intercor with sunflower), the Sadovo 772 and Gaia 1 varieties show better in their productive capacities than the Sadovo 1 and Plovdiv. With nitrogen up to 16 kg/da N, the productivity and quality of common wheat increases. An increase above this norm is unjustified *(publication 23).*

7. It has been found that in cultivation of common wheat varieties (Vjara, Laska and Faktor) in southern Bulgaria after soybean, alfalfa and sunflower predecessor, the highest yields are obtained after legume cultures. The test weight has the highest values after the alfalfa predecessor and the sedimentation number after soybean. The highest crude protein content in the varieties Laska and Factor was obtained after a predecessor to sunflower, and in the Vera variety after soybean. *(publication 39).*

- ✓ In southeastern Bulgaria, when growing wheat and barley after sunflower a predecessor, wheat, sorghum and coriander are best suited for wheat and barley, coriander, followed by sunflower and stubble. Sorghum is an unsuitable predecessor. For both cereals, the most effective after a predecessor coriander is the fertilization rate $N_{12}P_8$, and after sunflower, N_{16} P_8. *(publications 17,31).*

8. It has been established that when growing early, mid-early and late hybrids of maize with different vegetation periods in northern and southern Bulgaria, non-irrigation conditions higher yields are obtained in northern Bulgaria. In both experiments, higher yields were obtained from late (Coventry (FAO 670) and middle-early (KHA-5383 (FAO 300-399) hybrids than early ones *(publications 41,14).*

9. For the Plovdiv region, the highest yields of coriander, Marokan varieties are obtained at a nitrogen rate of 12 kg / da and a sowing rate of 250 hp / m^2

(publication 35). For different varieties of basil grown in the same region, the highest yields were obtained at a nitrogen rate of 10 kg / da and a density of 1500 p / da *(publication 45)*.

10.In a number of experiments, the optimal irrigation regimes for soybean, maize, sunflower and rose were established *(publications 30 25, 43, 25, 21, 44*, 43, 9*)*.

11.The monograph is written on 112 pages is presented. The monograph complies with the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria. The significance and origin of triticale, the place of culture in the present and the future, the morphological and biological requirements, the varietal composition and the update of the cultivation technology are described. The book has both theoretical and practical applications for triticale farmers in the country.

7. Critical notes and recommendations

I have some recommendations for the applicant. In his future work to deepen and expand the topics of cientific experiments into more current problems related to agriculture.

8.Conclusion

Based on the analysis of the scientific and applied activity of Assoc. Prof. Hristofor Kirchev Kirchev, PhD. I believe that he meets the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Rules for its implementation and the Rules of the Agricultural University – Plovdiv for its implementation, for participation in the competition for the occupation of the academic position "Professor".

The production presented demonstrates that he is an established scientist who combines the qualities of a researcher with a very good theoretical and methodological background. His research was conducted methodologically correctly, the data obtained was analysed and summarized on a high scientific level and in accordance with the modern achievements of science on the issues under consideration. Various software and methods of mathematical processing have been used to prove the results obtained, as well as the interactions between the tested indicators.

All this gives me a reason to **POSITIVELY** evaluate his overall activity and to suggest the members of the Scientific Jury to vote positively, and the Faculty Council of the Faculty of Agronomy at the Agricultural University- Plovdiv to select Assoc. Prof. Hristofor Kirchev Kirchev, PhD for "Professor" " in the scientific specialty "Crop science".

Date: 28.02. 2020

Plovdiv

REVIEWER: .....

(Prof. Dr. R. Ivanova)