REVIEW

by **Prof. Maya Dincheva Dimitrova, Ph.D.** from the Agricultural University - Plovdiv, appointed as a member of the scientific jury by Order RD-16-50/22.01.2021 signet by the Rector of Agricultural University – Plovdiv
concerning the materials submitted for participation in a competition for the academic position "**Associate Professor**" in the field of higher education 6. Agricultural Sciences and Veterinary Medicine; professional field 6.2. Plant protection, Scientific specialty: Plant protection (Herbology)

1. General data about the career and thematic development of the candidate

In the competition for "Associate Professor" in the scientific specialty Plant Protection (Herbology), announced in the State Gazette, issue 98 of 17.11.2020 and on the website of the Agricultural University /AU/ for the needs of the Department of Agriculture and Herbology at the Faculty of Agriculture, as a candidate Participating **Chief Assistant Profesor Dr. Anyo Yordanov Mitkov**, lecturer at AU.

Ch. Assistant Profesor Dr. Anyo Mitkov was born on October 19, 1980 in the town of Pazardzhik. He received his higher education at the Agricultural University, Plovdiv. He graduated as a bachelor - agronomist, majoring in Plant Protection in 2003, and then continued his education in a master's degree in Agricultural Phytopharmacy, which he graduated in 2004. Since 2005 he has been a full-time PhD student at the Department of Agriculture and Herbology .

In 2007 he successfully passed the exam for assistant in the Department of Agriculture and Herbology at the same university. He was successively "Senior Assistant" and "Chief Assistant" in 2010 and 2011, respectively.

In 2012, after successfully defending a dissertation on *"Biological efficacy and physiological evaluation of foliar herbicides in major winter cereals",* he obtained the degree "Doctor" (PhD) in the scientific specialty "Plant Protection" (Herbology).

2. General description of the submitted production:

In the competition for "Associate Professor", Ch. Assistant Profesor Dr. Anyo Mitkov participated with a total production of **39 papers,** grouped as follows:

Scientific publications in the nomenclature specialty - **35 issues**, of which:

- Publications related to the doctoral dissertation - **6 issues that are not subject to review;**
- Publications with impact factor - **2 issues**
- Publications in peer-reviewed and peer-reviewed scientific journals - **20 issues;**
- Publications in conference proceedings - **7 issues;**

The personal participation of Ch. Assistent Profesor Dr. Anyo Mitkov in these 29 works is illustrated by the fact that 2 are independent, in 14 - first, in 5 - second, and in the remaining 8 is the third and subsequent author. Those in which he is the first author are 48% of his total production (14 copies), as well as individual articles, which represent 7%, give me reason to appreciate the participation of the candidate in this competition.

- Textbooks - 1 issue (co-author)
- Study guides - 1 issue (co-author)
- Teaching aids - 1 issue (co-author).
- Book - 1 issue, written on the basis of a defensive dissertation for the award of educational and scientific degree "Doctor".

33 pieces are subject to analysis for the preparation of the review.

3. Main directions in the research work of the candidate. Demonstrated skills or talents for conducting research (project management, attracted external funding, etc.).

During the period 2010-2014, the applicant participated in a research project (DDWU 02/82), funded by the Research Fund of the Ministry of Education and Science on *"Comprehensive evaluation of new herbicides for weed control in major field crops"*, as well as in 2 university projects at the research center at the Agricultural University.

He has participated in a large number of implementation projects at the Research Center of the Agricultural University: "Corn - Queen of the Fields" and "Herbitur". He is the head of an implementation contract with external financing (№ 7/2016).

During the period 2015-2019 he participated in the implementation of field trials for biological efficacy of herbicides at the Center for Biological Testing of Plant Protection Products at the Agricultural University.

4. Assessment of the pedagogical preparation and activity of the candidate. His role in the training of young scientists.

Ch. Assistant Profesor Dr. Anyo Mitkov has a teaching experience of a total of 13 years and 10 months. Its total workload in the Bachelor's and Master's degrees for the last 5 years (2015-2020) is **2271.2 hours.**

As an assistant in the Department of Agriculture and Herbology, he teaches the disciplines of Herbology, Agriculture, Ecological Crops, full-time and part-time education in all specialties at the University of Plovdiv.

Conducts a lecture course in the discipline of General Agriculture, for bachelor students majoring in Plant Protection, distance learning, as well as exercises in the discipline Phytosanitary, Monitoring and Expertise in master's courses Plant Protection, Management in Plant Protection and Plant medicine.

He is a co-author of 1 textbook, 1 manuals and 1 textbook related to his professional field.

He is the leader of 21 successfully defended graduates (7 with a master's degree and 14 with a bachelor's degree).

5. Significance of the obtained results, proved by citations, publications in prestigious journals, awards, membership in international and national scientific bodies, etc.

The biological efficacy and selectivity of soil and foliar herbicides in different doses and combinations on weed associations in wheat, barley, oats, oilseed rape, corn, sunflower and pumpkins have been studied, as well as their impact on growth, development, yield and quality of production in these crops. The obtained results give grounds for formulating recommendations for the practice.

Citation and referencing of scientific research

The number of noticed citations is 6, as 4 of them are in editions abroad and 2 in Bulgarian editions in English.

He is a member of 2 international organizations - European Weed Research Society (EWRS), Weed Science Society of America (WSSA).

6. Significance of contributions to science and practice. Motivated answer to the question to what extent the candidate has a clearly defined profile of the research work.

The main areas in which Dr. Anyo Mitkov works are in the field of herbological science. In general, studies are aimed at establishing the distribution of economically important weed species, studies on the efficacy and selectivity of various herbicides in major field crops and their impact on yield and quality of production, as well as studies related to the application of

herbicides and preparations for foliar feeding, taking into account the selectivity and phytotoxic effect on cultivated plants.

The candidate has in-depth knowledge and a clearly defined profile of the research work.

As the most significant merits of the research developments of Ch. Assistant Professor Dr. Anyo Mitkov I could point out the following:

Cereals

- It has been proven that one of the most common and dangerous species of weeds in wheat crops - *Bromus arvensis L.* is controlled by the herbicide Palace 75 VG (*pyroxulam*). A manifestation of antagonism was found in the mixing of the two products - Maton 600 EC and Palace 75 VG.
- The herbicide Derby super VG (*florasulam* + *aminopyralide*) has been shown to be more effective against the weed species *Galium aparine, Papaver rhoeas* and *Cirsium arvense* than Laren 60 VP and Widmaster 464 SL in wheat.
- For the first time in Bulgaria it was found that the herbicide Secator OD, applied in a registered dose of 0.1 l/ha has unsatisfactory biological efficacy against *Papaver rhoeas*. The addition of 2.0 kg/ha of ammonium nitrate to the preparation increases its efficiency against this weed by 5% and by 10% compared to the *Cirsium arvense*, as statistically proven to increase the yield compared to the use of the product alone.
- The growth and development of barley and oats is delayed due to the negative effect of the herbicides Palace 75 VG (*piroxulam*) and Husar max VG (*iodosulfuron* + *mesosulfuron*), applied in doses of 20, 40 and 80 g/da on the photosynthetic process in plants.
- Tank mixtures from Ergon VG + Puma Super 7.5 EV; Ergon VG + Topic 080 EC and Ergon VG + Axial 050 EC have excellent physical mixability and efficiency against deciduous and cereal weeds.

Winter oilseed rape

- It has been established that all *imazamox*-containing herbicides registered in Bulgaria have the highest efficacy against the root parasite *Phelipanche ramoza (L) Pomel* when applied in spring to rapeseed.
- A very good effect of Butizan 400 SC against *Festuca* has been proven, as well as of the herbicide Cleranda, in the "Clearfield" technology. The herbicides Stratus Ultra, Fusilade Forte and Agil do not control this weed species.
- It was found that the herbicide Mustang SK - 60 ml/dka has a high efficiency against self-seeding of Clearfield rapeseed (93%) and consumer

(95%). The herbicides metsulfuron, tribenuron, thifensulfuron do not show the effect of self-seeding of rapeseed (Clearfield technology), regardless of the application dose and the phase of the crop.

➢ Galera 334 SL (*clopyralid + picloram)* in doses of 35 and 70 ml/dka, and Galera super (*aminopyralid + clopyralid + picloram)* in doses of 20 and 40 ml/dka are successfully controlled deciduous species, typical of spring oilseed rape. To control mixed weeding of deciduous and cereal weeds, they can be mixed in tank mixes with the anti-grain herbicides Stratus Ultra and Galant Super.

Sunflower

➢ It has been shown that in case of mixed weeding of sunflower crops, it is expedient to apply the herbicide Express 50 SG (*tribenuron-methyl*) separately and not in combination with "*baluricides*". The addition of Lactofol B foliar fertilizer to the tank mixture of Express 50 SG and Galant Super (*haloxyfop*) performs a partial antidote effect, reducing the visible signs of phytotoxicity.

➢ The herbicides Pulsar 40 and Pulsar Plus have been found to have the highest efficacy against the root parasite *Orobanche cumana* when applied in later stages of the crop (BBCH 18-19).

➢ The single use of the herbicide Pulsar 40 *(imazamox*) at a dose of 125 ml/dka shows equal efficacy against difficult to control weeds with double application of the preparation at a dose of 80 ml/dka with 80 ml/dka of the adjuvant DESCH.

➢ It has been proven that wild hemp can reduce sunflower yields 2.5 to 3.7 times. The highest efficiency against this species and the highest yields are obtained from the triple combination - Pledge 50 VP (*flumioxazine*) + Express SG + Trend, applied twice during the vegetation.

➢ In heterozygous sunflower hybrids, the addition of Lactofol B foliar fertilizer to the tank mixture of Express 50 SG (*tribenuron-methyl*) and Galant Super (*haloxyfop*) has a partial antidote effect, reducing the visible signs of phytotoxicity obtained from the combination.

Corn

➢ For the first time a proven significant effect of the synthesized nanotor (*zinc hydroxy nitrate*) was established at the Agricultural University - Plovdiv on the accumulation of Zn in the stems and leaves of corn, which leads to a significant increase in yield and quality of corn grain for all variants. compared to control.

- The single use of the herbicide Kabadex Extra has been shown to be less effective than its combination with Das Oil against the stubborn weed species Chenopod*ium album L.* and *Xanthium strumarium L.*
- Merlin Duo (*isoxaflutol + terbuthylazine*) has been found to be 90-100% effective against weed seeds, abutilon and black dog grapes. The species *Xanthium strumarium L.* is resistant to the herbicides Arigo VG (*nicosulfuron + rimsulfuron + mesotrione*), Elumis OD (*nicosulfuron + mesotrione)* and Samson Extra 6 OD.
- It has been proven that the herbicide Nishin (*nicosulfuron*) can be applied without problems in tank mixtures with the preparations Flurostar (*fluroxypyr*), Mustang (*2.4 D + florasulam*) and Callisto (*mesotrione*) for combating mixed weeding in maize.
- *The herbicide Gardoprim Plus Gold 500 SC (s-metolachlor + terbuthylazine*) was found to be more effective against annual weeds than Stomp Nov (*pendimethalin).* The application of herbicides leads to a sharp increase in yield, respectively - by 110 kg/dka in Goal 2E, by 184 kg/dka in Stomp New and by 248 kg/dka in Gardoprim Plus Gold 500 SK.

I accept the presented reference for the contributions from the performed researches and the scientific production of the candidate.

The research conducted in the above thematic areas is a good starting point for the further development of knowledge in the field of herbological science.

7. Critical remarks and recommendations.

I would like to make some recommendations to the candidate:

1. In the future, Dr. Mitkov to focus on the publication of scientific articles in journals with impact factor (Bulgarian and foreign).
2. To prepare and publish a larger number of independent articles, for which there is potential.

8. Personal impressions of the reviewer.

I have personal impressions of the work of Dr. Anyo Mitkov for 16 years. He is a creative and demanding lecturer, able to lead graduates, to work in a team with other scientists in various research and projects. Impressive is his responsibility and self-discipline, ability to present to a wide audience.

His co-authorship in a textbook and teaching aids, his participation in a national research project, as well as the successful management of graduates characterize Dr. Mitkov as an established lecturer and scientist in the field of herbological science.

CONCLUSION

Based on the analysis of the pedagogical, scientific and scientific-applied activity of the candidate, I consider that the Ch. Assistant Professor Dr. Anyo Yordanov Mitkov, meets the requirements of Law for Development of the Academic Staff in the Republic of Bulgaria and the Regulations of the Agrarian University for its application, for the academic position "**Associate Professor" in Plant Protection (Herbology**).

All this gives me a reason to evaluate **POSITIVELY** his overall activity.

I allow myself to suggest to the esteemed Scientific Jury also to vote positively, and the Faculty Council of the Faculty of Agronomy, at the Agricultural University - Plovdiv to elect **Ch. Assistant Professor Dr. Anyo Yordanov Mitkov,** as **"Associate Professor"** in the Scientific specialty: **Plant Protection (Herbology).**

Data: 5th of March 2021
Plovdiv

REVIEWER:.....
(Prof. Maya Dimitrova, Ph.D.)