



REVIEW

by Prof. **Shteliyana Hristova Kalinova**, PhD at Agricultural University - Plovdiv; field of higher education: Agricultural Sciences and Veterinary Medicine; professional field: 6.2. Plant Protection (Herbology), appointed as a Chairman of the Scientific Jury by Order № RD-16-148/28.02.2022, signed by the Rector of the Agricultural University, regarding the competition for "Associate Professor" in the scientific specialty Plant Protection (Herbology), announced in SG № 110/24.12.2021 with only one candidate **Mariyan Yanev Yanev**

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

Mariyan Yanev Yanev was born on September 16, 1985 in the town of Svilengrad. He graduated specialty Plant Protection in the Agricultural University of Plovdiv with a bachelor's degree in 2008. He obtained a master's degree to the same specialty in 2009. Since 2008 to the end of 2011 the candidate has worked as an agronomist for the company "Chance92" Ltd., in the town of Karnobat. Since 2012, Mariyan Yanev has been a full-time doctoral student at the Department of Agriculture and Herbology at the Agricultural University of Plovdiv. In 2016, after successfully defending a dissertation on the topic: "Survey of the distribution at the tobacco of species from genus (*Phelipanche* (*Orobanch*) spp.) and study for new possibilities for control of the parasite", acquires ESD "Doctor" in professional field 6.2 Plant Protection, scientific specialty Plant Protection (Herbology).

2. General description of the presented materials

Mariyan Yanev participated in the competition for associate professor with a total of 39 works, grouped as follows:

- Scientific publications in the nomenclature specialty - 39 issues, of which:
- Publications related to the doctoral dissertation - 4 issues, which are not subject to review;
- Publications with impact factor - 3 issues;
- Publications in referred and peer-reviewed scientific journals - 25 issues;
- Publications in non-referred journals with scientific review, in edited collective volumes and in conference proceedings - 7 issues.

Mariyan Yanev's personal participation is illustrated by the fact that of these 35 works, in 1 issue he is the sole author, in 1 of them he is the first author, in 16 - is the second, and in the remaining 17 - is the third and next author.

It is worth noting that in 2021 the publishing house *Intel Entrance* Ltd. published a book entitled "Survey of the distribution at the tobacco of species from genus (*Phelipanche* (*Orobanche*) spp.) and study for new possibilities for control of the parasite" by Mariyan Yanev on the basis of a defense dissertation for the award of educational and scientific degree "Doctor".

- ❖ Training manuals - 1 issue (co-author).
- ❖ To prepare the review, 35 scientific papers are subject to analysis.

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

Mariyan Yanev participates in two research projects funded by the Centre of Research, Technology Transfer and Protection of Intellectual Property Rights at the AU- Plovdiv. The first one is in the period 2017-2019, and the second in the period 2018-2020. In the period 2015-2020, he participated in two implementation projects at the University - "Herbitur" and "Maize - Queen of the Field". Since 2015 he has been participating in determine the biological efficacy of herbicides at the Center for Biological Testing of Plant Protection Products at the Agricultural University-Plovdiv.

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

Assistant Prof. Mariyan Yanev, PhD has more than 5 years and 7 months of experience as a lecturer. Its total workload for conducting exercises for students of different specialties in the Educational Qualification Degree "Bachelor" and in the Educational Qualification Degree "Master" for the last five years (2016-2021) is **2239.2 hours**. As an Assist.Prof. Mariyan Yanev teaches the disciplines Agriculture, Herbology, Weed Control Systems in spring field crops, Phytosanitary monitoring and expertise to students full-time and part-time education of almost all specialties at AU-Plovdiv. He also teaches in several master's courses. He is a supervisor of over 10 successfully defended graduates. Mariyan Yanev has been an academic head of several courses full-time students majoring Agronomy - Field Breeding.

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

The significance of the results obtained from the research in which Mariyan Yanev participates is proved mostly by their citation by researchers abroad and in Bulgaria. The total number of noticed citations of publications in which the candidate is a co-author is 7 and 6 of them are in foreign publications, of which 2 with impact factor and 1 citation is in a Bulgarian scientific journal, referenced in the Web of Science. Mariyan Yanev is a member of the Union of Scientists in Bulgaria; member of RSTU of the specialists in agriculture - Plovdiv; member of the European Weed Research Society (EWRS) and member of the Weed Science Society of

America (WSSA). He participated in two EWRS working groups in 2017 and 2019 in Thessaloniki, Greece. He studied at the Erasmus + program at Mansoura University, Mansoura, Egypt.

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

The main directions in which Assist. Prof. Dr. Mariyan Yanev works are in the field of herbological science. His research focuses on the ecology and control of parasitic weed species, allelopathic manifestations of parasitic weeds, tracking the dynamics of weed associations in major field crops, tracing the impact of herbicides on soil microflora. Also they are related to the biological effectiveness of a large number of herbicides in wheat, maize, sunflower, oilseed rape and other crops.

As the most significant merits of the research work of Dr. Yanev I point out the following:

SCIENTIFIC AND APPLIED CONTRIBUTIONS

Related to the ecology and control of parasitic weeds

The development of *Orobanche cumana* Wallr was followed under different environmental conditions. It has been noticed that in Northeastern and Southwestern Bulgaria the predominant race of the sunflower parasite is "H", and in Southeastern Bulgaria it is race "E".

The biological efficacy and selectivity of imazamox-containing herbicides at different doses and timing of application to control of *Orobanche cumana* Wallr were studied. Changes in yield, absolute and hectoliter mass of the Lucia CLP hybrid as a result of the parasite control system have been identified.

The development of *Phelipanche ramosa* (L.) Pomel on oilseed rape was observed.

The biological efficacy and selectivity of imazamox-containing herbicides at different doses and timing of application for the control of *Phelipanche ramosa* (L.) Pomel in oilseed rape, hybrid PT 228 CL were studied. Changes in height of plants, seed yield per plant, absolute mass and seed oil content as a result of the parasite control system were investigated.

Associated with allelopathic manifestations of parasitic weeds

Aqueous extracts of *Cuscuta epithymum* L., *Cuscuta campestris* Yuncker, *Phelipanche ramosa* (L.) Pomel, *Phelipanche mutellii* (Schultz) Reuter and *Phelipanche* spp. in concentrations from 0.4% w/v to 12.8% w/v in geometric progression have a relatively high inhibitory effect on the germination of seeds of *Lactuca sativa* L., variety "Great Lakes".

It was found that the degree of inhibition of parasitic species of weeds of the family *Convolvulaceae* varies from 6.24 to 100.0%, and for species of the family *Orobanchaceae* from 42.1 to 100.0%.

Parasitic species of weeds of the family *Orobanchaceae* (*Ph. ramosa*, *Ph. mutelii* and *Ph. spp.*) have been shown to have a significantly stronger allelopathic effect compared to the applied concentrations of aqueous extracts of species of the family *Convolvulaceae* (*Cuscuta epithymum*) and *Cuscuta campestris*).

Related to weed associations in field crops

It has been confirmed that the weed associations of wheat and oilseed rape is dominated by species from the group of early spring, winter-spring and ephemeral weeds.

It has been confirmed that maize weed associations predominate species from the group of late spring and early spring weeds.

It has been confirmed that the weed associations of sunflower are dominated by species from the group of early spring and late spring weeds.

It has been confirmed that in the weed associations of chickpeas there are species from the group of late spring, winter-spring, root-shoot weeds, as well as stem parasites.

The harmfulness of the weed associations in wheat, Enola variety and Avenue variety for the region of Plovdiv, Kubrat and General Toshevo has been established.

The harmfulness of weed associations in oilseed rape, hybrids PX 100 CL, PX 111 CL, PT 228 CL, PT 200 CL for the agro-ecological conditions of the Plovdiv and Yambol regions has been established.

The harmfulness of weed associations in maize, hybrids Kneja-613, Florence, P1114, P9241, P9900, P0023 for agro-ecological conditions in Plovdiv and Knezha has been established.

The harmfulness of weed associations in sunflower, hybrids ES Candimis CL Plus, PR64 LE25, P64 LL125, Lucia CLP, SY Bacardi CLP, SY Diamantis CL for the agro-ecological conditions of Plovdiv and Sliven region has been established.

The harmfulness of weed associations in chickpeas, variety Plovdiv 8 has been established.

Related to the effect of herbicides on soil microbiological activity

The influence of some dinitroaniline and amide herbicides on trophic groups of soil microorganisms at the population level has been established.

Dimethenamid-P+pendimethalin and benfluralin have been shown to have an inhibitory effect on the quantitative development of actinomycetes, and metazachlor and s-metolachlor have a stimulating effect.

Inhibition of the numerical development of ammonifying and immobilizing mineral nitrogen microorganisms has been proven after the introduction of metazachlor and s-metolachlor into the soil without disturbing the mineral nutrition of tobacco.

The period for adaptation of trophic groups of microorganisms after the application of various herbicides has been established.

It has been found that the use of isoxaflutol in high doses leads to an increase in the amount of nitrogen-fixing bacteria and a decrease in the total number of microorganisms.

Related to the influence of herbicides on plant anatomy

Morphological and anatomical changes in tobacco plants have been identified after isoxaflutole use.

The morphological manifestations of phytotoxicity from the administration of isoxaflutol are chlorosis and necrosis of the leaves, preceded by growth inhibition.

Structural and anatomical changes are associated with a reduced number of stomata on both the upper and lower epidermis.

Also atrophy of the protective cells of the stomata and reduction in the thickness of the assimilation parenchyma.

Associated with weed control options for wheat

The biological efficacy and selectivity of herbicides have been established: metsulfuron-methyl+thifensulfuron-methyl; tribenuron-methyl+thifensulfuron-methyl; fenoxaprop-P-ethyl; clodinafop; pinoxaden; amidosulfuron+iodosulfuron; tritosulfuron+florasulam; florasulam+aminopyralid-potassium; 2.4 D ester; pyroxulam, mesosulfuron+iodosulfuron; metsulfuron-methyl+tribenuron-methyl+florasulam, metsulfuron-methyl+tribenuron-methyl+fluroxipir; thifensulfuron-methyl+fluroxipir; fluroxipir+florasulam; fluroxipir; 2.4 D ester+florasulam; halauxifene-methyl+florasulam; tribenuron-methyl in wheat.

For the first time in experiments conducted in our country, the biological efficacy of Ergon VG was established.

At a dose of 7 g/da it is effective against *Papaver rhoeas* L., *Sinapis arvensis* L., *Descurainia sophia* L., *Delphinium consolida* L. and *Agrostemma githago* L.

At higher doses of 8 and 9 g/da the preparation is effective against *Galium aparine* L. and *Cirsium arvense* L.

Ergon VG is selective for wheat, applied even in a double dose.

The effect of some herbicides on wheat yield has been statistically proven.

The influence of tribenuron-methyl, iodosulfuron+amidosulfuron, phenoxaprop-P-ethyl and pinoxaden on the structural elements of wheat yield, Avenue variety, has been established.

Related to the ability to control weeds in oilseed rape

The biological efficacy and selectivity of herbicides have been established: metazachlor; metazachlor+dimethenamid-P, cycloxdim; propakizafop; fluazifop-P-butyl; ethametsulfuron-methyl; clopyralid+picloram+aminopyralide; bifenox; clopyralid; imazamox+metazachlor; and other imazamox-containing rapeseed products.

The effect of imazamox-containing herbicides on plant height, number of branches per plant, number of fruits per plant, length of central rapeseed fruit and biological rapeseed yield, PT 200 CL hybrid, was established.

Related to the ability to control weeds in maize

The biological efficacy and selectivity of herbicides have been established: nicosulfuron; fluroxipir; florasulam; mesotrione; isoxaflutol+terbuthylazine; isoxaflutol+ticarbazone-methyl; mesotrione+s-metolachlor+terbuthylazine; mesotrione+nicosulfuron; mesotrione+nicosulfuron+rimsulfuron; dicamba+nicosulfuron+rimsulfuron; tembotrione+ thienicarbazone-methyl; mesotrione+terbuthylazine; mesotrione+terbuthylazine+clomazone; s-metolachlor + terbuthylazine in maize.

The effect of some herbicides on maize yield has been statistically proven.

It was found that the highest yield of corn, hybrid P9900 was obtained at the highest crop density - 69,000 plants/ha, compared to 40,000, 46,000, 56,000 plants/ha.

The use of isoxaflutol+2,4-D amine salt was found; dimethenamid-P+s-metolachlor+terbuthylazine+mesotrione; s-metolachlor+terbuthylazine+2,4-Diethylhexyl ester; s-metolachlor+nicosulfuron+mesotrione; s-metolachlor+terbuthylazine+prosulfuron+dicamba; s-metolachlor+nicosulfuron; s-metolachlor+prosulfuron; 2,4-D amine salt+nicosulfuron; s-metolachlor+prosulfuron+dicamba in maize leads to an increase in the profit from the herbicide variants compared to the profit obtained from the economic control.

The greatest benefit is from the use of the herbicidal combination s-metolachlor with nicosulfuron.

Related to the possibilities of weed control in sunflower

The biological efficacy and selectivity of herbicides have been established: imazamox; diflufenican; tribenuron-methyl; flumioxazine; s-metolachlor + terbuthylazine; dimethenamid-P in sunflower.

The effect of some herbicides on sunflower yield has been statistically proven.

Diflufenican, used in combination with the biostimulant Amalgerol and foliar fertilizers KTS and High-phos, has been shown to increase the yield and oil content of sunflower seeds.

Related to the ability to control of weeds in other crops

The selectivity of soil herbicides has been established: s-metolachlor; pendimethalin; dimethenamid-P in pumpkin (*Cucurbita pepo* L.), hybrid "Prince" F1.

The biological efficacy and selectivity of herbicides have been established: dimethenamid-P; pendimethalin; linuron; imazamox; imazamox+bentazone; bentazone; cycloxdim for chickpeas, variety Plovdiv 8.

7. Critical remarks and recommendations

1. A small number of stylistic and factual inaccuracies have been admitted, which do not affect my overall positive assessment of precision and academic ethics in presenting the documents.
2. I recommend the candidate to initiate research projects with a large profile of research, for which he has ideas, experience and potential.
3. To publish independently more often results from own research.
4. To devote time and diligence to improving spoken English, which will open him even wider horizons.

8. Personal impressions and opinion of the reviewer

I know Mariyan Yanev from 2012, when he successfully passed the exam for a full-time doctoral student and I was appointed as a scientific supervisor of his dissertation. Even then, I was very impressed by his qualities: diligence, perseverance, responsibility, desiring to develop as a young scientist and later as a teacher. During these ten years he proved that he can work successfully in a team, to be responsible and demanding in his teaching work, to pass on knowledge and experience to his graduates, to be an ethical colleague. My personal impressions are supported by objective facts attached to the candidate's documents for the present procedure.

CONCLUSION

Based on the analysis of the pedagogical, scientific and scientific-applied activity of the candidate, I consider that Assist. Prof. Mariyan Yanev Yanev fully meets the requirements of the Law for Development of the Academic Staff in the Republic of Bulgaria and the Regulations of the Agricultural University for its application for participation in this competition. His active research, his creativity as a lecturer, his responsible approach as a supervisor of graduates, his participation in scientific organizations and forums in Bulgaria and abroad prove M. Yanev as a scientist and a lecturer of herbology.

All this gives me reason to appreciate his overall activity positively.

I would like to suggest to the esteemed Scientific Jury to vote positively, and the Faculty Council of the Faculty of Agronomy at the Agricultural University - Plovdiv to elect Mariyan Yanev Yanev as "Associate Professor" in the Scientific Specialty "Plant Protection" (Herbology).

03.05.22.

Plovdiv

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(Prof. Shteliyana Kalinova, PhD)