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ACHIEVEMENTS AND PROBLEMS IN THE WEED CONTROL IN BARLEY (*Hordeum vulgare* L.)

Mitko GEORGIEV, Grozi DELCHEV

Trakia University, 6000, Stara Zagora, Bulgaria

Corresponding author email: mgeorgiev@uni-sz.bg

Abstract

Stated in the literature review gives an idea that many issues are published contrasting views due primarily to the different conditions under which they have conducted experiments and the biological particularities of barley. A serious problem is a resistance and compensatory processes in the weeds. Many authors exported data, which indicate that the barley is different from the common wheat in reaction to some of herbicides, herbicide combinations and reservoir herbicidal mixtures. In the literature there is growing consensus, that periodically have to be make a new mapping of crops and to seek new solutions to chemical control with the changing weed associations.

Key words: barley, herbicides, weed, yield.l. LIX, 294-297.21.

2. AGRICULTURAL SCIENCE AND TECHNOLOGY, VOL. 9, No 3, pp 185 - 189, 2017
DOI: 10.15547/ast.2017.03.033

Achievements and problems in the weed control in grain sorghum (*Sorghum Bicolor Moench*.)

Gr. Delchev*, M. Georgiev

Abstract.

Chemical control has emerged as the most efficient method of weed control. Herbicides combinations and tank mixtures of herbicides with adjuvants, fertilizers, growth regulators, fungicides, insecticides are more effective than when applied alone on sorghum crops. Their combined use often leads to high synergistic effect on yield. The use of herbicide antidotes for the treatment of seeds in sorghum is a safe way to overcome its high sensitivity to many herbicides. Data regarding herbicide for chemical control of annual graminaceous weeds in sorghum crops are quite scarce even worldwide. Problem is the persistence of some herbicides used in the predecessors on succeeding crops, which is directly related to the weather conditions during their degradation. Most of the information on sorghum relates to the conventional technology for weed control. There is no information about the new Concep technology in grain sorghum. A serious problem is also the volunteers of the Clearfield and Express sun sunflower. They have resistance to herbicides different from that of conventional sunflower hybrids. There is no information yet in scientific literature on control of these volunteers.

Keywords: sorghum, herbicides, weeds control, grain yield, grain quality

3. CZU: 553.065:633.11

HYDROTHERMIC COEFFICIENTS OF COMMON WHEAT

Stoyanova A., Georgiev M.

Department of Crop, Faculty of Agriculture, Trakia University,

Stara Zagora, Bulgaria

e-mail: toni_1219@abv.bg

Abstract:

The main objective is to determine the hydrothermal coefficients and to study the influence of agro-climatic factors of common wheat. The experience is taken in the field of study of the Faculty of Agriculture, Trakia University, Bulgaria. The analysis of the data shows that the hydrothermal coefficients calculated by Selianinov range from 2.06-4.80 for over-humidification and from 0.00 to 0.47 at drought. The hydrothermal coefficients determined by Ivanov are in the range of 2.22-3.37 in case of over-wetting and with drought of 0.04 to 0.27. Common wheat variety Diamant is characterized by coefficient of variation 9 %.

Key words: Common wheat, varieties, agrotechnical factors, resources, productivity, temperatures.

Original scientific paper

Оригиналан научни рад

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4. Assessing the Impact of Fertilization on Wheat Protein and Energy Nutrition

Antoniya Stoyanova¹, Gancho Ganchev¹, Velika Kuneva², Mitko Georgiev¹

¹Trakia University, Faculty of Agriculture, Stara Zagora, Bulgaria

²Agricultural University, Plovdiv, Bulgaria

Abstract:

The present research aims at assessing the influence of leaf fertilizers on the two common wheat varieties. Study results show that the crude protein content ranges from 128.50-143.94 g/kg DM in the Enola variety and from 115.93 to 127.34 g/kg DM in the Illico variety. The introduction of Wuxal Grano slurry increased the crude protein content by 9.1 and 12.0 % relative to the control. The applied leaf fertilizers do not affect the contents of FUM, FUG and PDI. As a result of the correlation analysis, a very high correlation ($r = 0.947-0.993$) was found between CP and PDI for both common wheat varieties.

Key words: common wheat, fertilization, protein feed, energy nutrition

5. Dry Matter Content And Organic Acids In Tomatoes, Greenhouse Grown Under Different Manuring And Irrigation Modes

Stoyanova A., P. Veleva, E. Valkova, G. Pevicharova, M. Georgiev, N. Valchev

Abstract:

The experimental work was carried out during the period 2016-2017 in Bulgaria. Subject of research are tomato Vitelio cultivar, greenhouse grown at three levels of manuring and different irrigation regimes. The purpose of this study is to research the effect of applying three manuring

schemes on irrigation with an optimal irrigation regime (M) and a controlled water deficit, with 75% and 50% of the irrigation rate being applied to dry matter and organic acids. From the presented distributions of the tested quality parameters of greenhouse tomatoes, it can be seen that the dry matter and titrimetric organic acids ratios are close to normal, and for the ascorbic acid indicator there are larger variations in the base values. The data is eligible for the sampling representatively requirements. Significant levels of $p < 0.05$ were obtained for the three researched indicators, i. E. the results of multi-variate dispersion analysis could be used in order to develop strategies for irrigation and manuring of tomatoes to reduce environmental risk. Considering the quality indicator: ascorbic acid a decrease in the quantities has been registered with an increase in the manuring norms. The analysis of the results found that when increasing fertilizer levels, the content of ascorbic acid decreased, i.e., there is an increase in the cost of tomato production and a decrease in the quality of tomatoes.

Key words: Tomatoes, irrigation, fertilization, dry matter, organic acids, ascorbic acid.

6. NARDI FUNDULEA, ROMANIA

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STUDY ON THE ACTION OF FOLIAR HERBICIDES AND HERBICIDE COMBINATIONS FOR CONTROL OF WHEAT (*Triticum aestivum* L.) WEEDS

Mitko Georgiev¹, Antonia Stoyanova¹, Velika Kuneva², Grozi Delchev¹,
Rodica Sturzu ^{3*}, Cristina Meluca³, Jeni Mădălina Cojocaru³

Abstract:

The action of some foliar herbicides and herbicide combinations for control of common wheat (*Triticum aestivum* L.) weeds was studied. To that end against the background of soil applied Stomp 330EK New at a dose of 5 l/ha the herbicides Axial 050EK, Granstar 75DF, Derby Super WG, Sekator OD, Lintur 70WG, and the tank mixtures of Axial with the other herbicides applied in the tillering phenophase of the crop were studied. The species composition and density of weeds was assessed using the quantitative method prior to treatment and after herbicide treatment on days 5, 15 and 30, by constant metering. The herbicide Lintur 70WG and its combination with Axial 050EK had the fastest initial effect. The highest herbicidal effect (99.5%) against annual

monocotyledon and dicotyledon weeds showed the combination of Derby Super WG 33 g/ha + Axial 050EK - 900 ml/ha. Very good was the effect of the other herbicidal mixtures between anti-broadleaf herbicides and the graminaceous herbicide Axial 050. All applied herbicides and herbicide mixtures showed a very good after-action on weeds.

Keywords: common wheat, weeds, herbicides, herbicide effect.

7. Bulgarian Journal of Agricultural Science, 26 (No 1) 2020, 148–156

Influence of some herbicides and herbicide combinations on the structural elements of yield and some quality indicators in common wheat grain

Mitko Georgiev

Trakia University, Faculty of Agriculture, Stara Zagora 6000, Bulgaria

E-mail: mgeorgiev74@gmail.com

Abstract:

During the period 2009-2012 a field experiment with common wheat cultivar Diamond was conducted. The effect of five leaf herbicides and one soil herbicide and some combinations between them was studied at the main structural elements of the yield: plant height, productive tillers per plant, spike length, number of spikelets per spike, number of grains per spike, grain weight per spike. Some qualitative yield indicators were also determined: weight of 1000 grains and hektoliter weight.

The highest plants (88.9 cm) were observed in the variant with the manual weeding control. The largest number of productivity spikes was in the variant with Stomp New 330 EC (630.8 pcs/m²). The longest classes (9.37 cm) were in the variant with wheat plants treated with Secator OD. The highest number of spikelets per spike (19.28) was observed in the plants treated with Stomp New 330 EC. The highest number of grains per spike (33.8 pcs), the largest grain weight per spike (1.45 g) and the highest weight of 1000 grains (43.15 g) were observed for the combination of Granstar 75 DF + Axial 050 EC. The hektoliter weight of the grain is highest in the variant treated alone with Granstar 75 DF.

Keywords: wheat; herbicides; elements of yield; grain quality; indicators

8. AGRICULTURAL SCIENCE AND TECHNOLOGY, VOL. 12, No 2, pp 153-156, 2020

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Spectral analysis as an extra method to soil type discrimination

M. Todorova^{1*}, S. Atanassova², M. Georgiev¹, L. Pleshkuza¹

1. Department of Crop production, Faculty of Agriculture, Trakia University, 6000 Stara Zagora, Bulgaria,

2. Department of Biochemistry, Microbiology and Physics, Faculty of Agriculture, Trakia University, 6000 Stara Zagora, Bulgaria

Abstract: The purpose of the study was to test near infrared soil spectra as an extra method for three soil types (Fluvisols, Vertisols and Solonchaks) discrimination from different regions of South Bulgaria. The diffuse reflectance spectra of 177 soil samples (from the 0-20cm layers): 50 samples of Fluvisols soil type, 78 samples of Vertisols soil type and 48 samples of Solonchaks soil type were obtained using a Spectrum NIRQuest (OceanOptics, Inc.) working within the range from 900 to 1700 nm. Soft independent modelling of class analogy (SIMCA) was performed to classify samples according to their taxonomic classes. The results obtained showed that the soil samples are separated accurately according to their soil type based on their spectral information. All this could be used in the future studies related to the application of the NIRS method as a qualitative or quantitative method for soil analysis and also for the purposes of precision farming.

Keywords: SIMCA method, NIRS, soil type, spectral information, soil classification

9. Journal of Mountain Agriculture on the Balkans, 2020, 23 (5), 75-88
Research Institute of Mountain Stockbreeding and Agriculture, Troyan
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Study of Productivity and Stability of Yield of Common Wheat Varieties

Antoniya Stoyanova*, Mitko Georgiev, Stanislava Atanasova, Ferihan Emurlova, Roksana Mineva

Faculty of Agriculture, Trakya University, 6000 Stara Zagora, Bulgaria
*E-mail: toni_1219@abv.bg

SUMMARY

The creation and introduction of common wheat varieties with high genetic potential for productivity and grain quality is related to the study of the ecological plasticity of individual varieties over the years with different stress of meteorological factors. The aim of the present study is to evaluate the productivity of seven varieties of common wheat and to determine the most echnologically valuable of them in terms of yield stability. The experimental field study was conducted in the experimental field of the Department of Plant Breeding, Faculty of Agriculture at the Trakia University - Stara Zagora, in the period 2017-2019. The object of the study are the following varieties of common wheat: "Ingenio", "Dalara", "Moyson", "Falado", "Gabrio", "Pibrac" and "Factor". The relationship between the studied factors „Pibrac“ и „Factor“. and the influence on the studied variants was established and evaluated through the analysis of variance. The variants of stability (σ_i^2 and S_i^2 according to Shukla), 75 ecovalence (W_i according to Wricke) and 2 stability criterion (YS_i according to Kang) were calculated. The varieties 'Falado' (7104.9 kg/ha) and 'Gabrio' (7014.3 kg/ha) have the highest productivity. The ecological plasticity and the genotype of the varieties provide an excess of the indicator by 44.7 and 42.9%, respectively,

compared to the "Factor" variety. Kang's generalized stability criterion YSi, taking into account both stability and yield value, gives negative ratings for the varieties: "Factor" (-10), "Pibrac" (-9) and "Moyson" (-1). The varieties Dalara (8+), Falado (2+) and Gabrio (1+) receive a high complex assessment of technological stability of yields.

Key words: common wheat, varieties, productivity, stability

10. Bulgarian Journal of Agricultural Science, 26 (Suppl. 1) 2020, 19-29 19

Influence of different doses of mineral fertilizer and the controlled water deficit on the antioxidants parameters in tomatoes (*Solanum lycopersicum* L.) irrigated with a drip irrigation system

Antoniya Stoyanova^{1*}, Petya Veleva², Elica Valkova³ and Mitko Georgiev¹

¹ Trakia University, Faculty of Agriculture, Department of Plant Breeding, Stara Zagora 6000, Bulgaria

² Trakia University, Faculty of Agriculture, Department of Agricultural Engineering, Stara Zagora 6000, Bulgaria

³ Trakia University, Faculty of Agriculture, Department of Microbiology, Biochemistry and Physics, Stara Zagora 6000, Bulgaria

*Corresponding author email: toni_1219@abv.bg

Abstract:

The main objective of this study is to analyze the mutual influence of different irrigation schemes and fertilization rates on the greenhouse tomato yield, and the irrigation water usage efficiency for a period of three years (2016-2018). Different irrigation schemes have been examined, achieved by reducing the irrigation depth at different levels. Fertilization plays an important role in the technological process with different rates. This experiment was focused on the effect of both factors (the fertilization rate and the irrigation regime) on the main quality parameters of the greenhouse tomatoes. Multivariate data analysis was applied to process the data, including Scheffe and Dunnett's tests (depending on the Levene's test of equality of variances) were used to find the significant differences ($P < 0.05$) between the control variant and all other irrigation and fertilization schemes based on the investigated quality parameters (Dry matter, %; Ascorbic acid, mg%; Titrable organic acids, %; General dyes, mg%; Lycopene, mg% and β - carotene, mg%) in greenhouse-grown tomatoes. The analysis showed a medium to a high correlation ($R^2 = 0.988, 0.990, \text{ and } 0.062$ for the three investigated years) between Dry matter content and the two investigated factors (the fertilization rate and the irrigation depth) and a very strong correlation ($R^2 = 0.999, \text{ and } 1.000$) between Ascorbic acids and both factors of influence for the first two years and a weak correlation ($R^2 = 0.287$) for the third experimental year. A weak to moderate correlation between Titrable organic acids ($R^2 = 0.414, 0.669, \text{ and } 0.079$), β - carotene ($R^2 = 0.252, 0.673, \text{ and } 0.471$), and both influencing factors were found, and a moderate correlation between General dyes ($R^2 = 0.532, 0.815, \text{ and } 0.590$), Lycopene ($R^2 = 0.685, 0.796 \text{ and } 0.643$), and the variants of irrigation and fertilization for the three experimental years.

Keywords: antioxidants; fertilization; greenhouse tomato; irrigation regime

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ASSESSMENT OF YIELD AND WATER USE EFFICIENCY OF DRIP-IRRIGATED COTTON (*Gossypium hirsutum* L.)

Antoniya STOYANOVA¹, Mitko GEORGIEV¹, Svetlin IVANOV¹, Ferihan EMURLOVA¹,
Dimitar VASILEV²

1-Trakia University, Faculty of Agriculture, Stara Zagora 6000, Bulgaria

2-Konstantin Preslavsky University of Shumen, 115 Universitetska Street, Shumen 9700, Bulgaria

Abstract: Climate change raises the question of demand for more economical ways to use irrigation water. Against the background of different levels of fertilization, cotton varieties have been tested. The experiment was performed under irrigated and non-irrigated conditions. The experiment was performed in the experimental field of the Trakia University, Stara Zagora during the period 2018-2020. Cotton productivity has been established under non-irrigated and irrigated conditions. The analysis of the results shows that the naturally colored variety Isabel, when realizing irrigations, on average for the period forms a yield 39.9% higher than the non-irrigated one. Under irrigated conditions, the Darmi variety increased productivity by 34.3%. An increase of 27.9% was registered for the Helios variety. The Isabel variety has the highest values of the irrigation water efficiency coefficient (0.88-1.11). Against the background of different levels of fertilization, the Darmi variety forms an efficiency coefficient from 0.9 to 1.03. Helios variety is responsive to irrigation, but on average for the three-year period stands out with the lowest values of efficient use of water resources (0.53 – 0.95).

Key words: cotton, fertilizing, irrigation, productivity, efficiency.

12. Scientific Papers. Series A. Agronomy, Vol. LXIV, No. 2, 2021 ISSN 2285-5785; ISSN CD-ROM 2285-5793; ISSN Online 2285-5807; ISSN-L 2285-5785

STUDY THE PRODUCTIVITY OF COMMON WHEAT VARIETIES

Antoniya STOYANOVA¹, Velika KUNEVA², Mitko GEORGIEV¹, Svetlin IVANOV¹,
Ferihan EMURLOVA¹, Dimitar VASILEV³

1-Trakia University, Faculty of Agriculture, Stara Zagora 6000, Bulgaria

2-Agricultural University of Plovdiv, Plovdiv 4000, Bulgaria

3-Konstantin Preslavsky University of Shumen, 115 Universitetska Street, Shumen 9700, Bulgaria

Corresponding author email: toni_1219@abv.bg

Abstract

The main goal in the present study is to study the adaptability and productivity of common wheat varieties. The study was conducted in 2017-2019, in the Department of Plant Breeding at the Faculty of Agriculture at the Trakia University, Stara Zagora. The object of study are the productivity and structural elements of yield in several varieties of common wheat - Ingenio, Dalara, Moison, Falado, Gabrio, Pibrak (from the variety list of Syngenta) and Factor (Bulgarian selection). According to the two-factor analysis of variance, both the influence of the two factors (conditions of the year and variety) separately and their interaction, statistically proven with a very high degree of reliability ($p \leq 0.001$) is the impact on the indicator - yield. The strongest influence on the variation of the trait is exerted by the factor year (37%), followed by the interaction between them (35%) and the factor variety (28%). In terms of the yield of wet gluten with the highest content, Dalara (30.8) stands out, on average for the period. Climate conditions have a great influence on DMG and it is expressed in the fluctuations of its values in Ingenio (from 22.9 to 32.4), in Gabrio (from 31.6 to 21.6) and in Factor (25.6- 29.0). Despite the changing environmental conditions, a small range of DMG variation was reported in Dalara (30.5 -31.0), in Moyson (27.1-28.0), in Falado (30.1-30.0), Pibrak (28.2-29.3).

Key words: variety, common wheat, yield, crude protein, yield wet gluten.

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Influence of some herbicides and herbicide combinations on the elements of yield and some quality indicators of winter barley (*Hordeum vulgare* L.) variety **Obzor**

M. Georgiev*

Department of Crop Science, Faculty of Agriculture, Trakia University, 6000 Stara Zagora, Bulgaria

Abstract.

In order to determine the impact of some herbicides and herbicide combinations on elements of yield in winter barley a field experiment was carried out under the block method, in 12 variants and 4 replicates using the herbicides: Granstar 75 DF, Derby Super WG, Secator OD; Lintur 70 WG, Stomp New 330 EC and Axial 050 EC. It has been found that the plants with the highest tiller productivity were the variants treated with Lintur 70WG and the combination of Secator OD + Axial 050 EC. The longest spikes were found in the plants treated individually with Secator OD. The largest is the number of spikes of plants treated with Stomp New 33 EC and the combination Lintur 70WG + Axial 050 EC. The herbicide combinations Granstar 75DF + Axial 050EK and Secator OD + Axial 050 EC imported into wheat seed provided the largest number of grains per spike. The largest grain weight per spike had a hand weeded control and herbicide combinations Granstar 75 DF+Axial 050 EC and Secator OD + Axial 050 EC.

Keywords: barley, elements of yield, herbicides, herbicide combinations

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