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Original scientific paper

VIABILITY OF SOYBEAN SEED PRODUCED UNDER DIFFERENT AGRO-METEOROLOGICAL CONDITIONS IN VOJVODINA

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At the time of soybean seed sowing in the field, a high soil moisture, low soil and air temperatures, and crasts formation may occur, which can lead to slow germination, poor seedling establishment, and in some cases to loss of seed vigor. Due to the importance and prevalence of soybean the aim of this study was to determine the quality and seed viability of different genotypes produced at three locations in Vojvodina during 2009 and 2010. Eight soybean varieties (Afrodita, Valjevka, Balkan, Novosadjanka, Ravnica, Ana, Vojvodjanka and Venera) produced in Vrbas, Senta and Indjija during 2009 and 2010 were tested. Seed germination was

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determined using Standard laboratory test, and vigor tests (cold test, and accelerated aging test). Studied genotypes baheved differently in different years and at different localities. Genotype Venera achieved high germination values in all applied tests in 2009, while genotype Afrodita had high values of the tested parameter when conventional laboratory test was applied, and the lowest values were recorded when vigor tests were applied. Values obtained in 2010 when all tests were applied were above the prescribed minimum. Locality of Vrbas proved to be more favorable for seed production in relation to localities of Indjija and Senta due to better rainfall distribution.

Key words: soybean, seed germination, seed vigor

INTRODUCTION

Areas under soybean in our country has been increasing constantly. Soybean is an important crop because its seeds contain high concentrations of protein and oil. Most of the commercially grown soybean cultivars contain about 40% protein and 20% oil. More recently soybeans have been bred to increase seed yield and oil content because it was mainly used for the oil refine for human consumption, whilst protein meal was used as a source of high quality protein for animal husbandry (TAŠKI-AJDUKOVIĆ *et al.*, 2008). Ecological conditions during production and harvest have a significant impact on yield, protein and oil content, and the quality of seed and its viability (BALEŠEVIĆ-TUBIĆ *et al.*, 2001; AVILA *et al.*, 2003; ĐORĐEVIĆ *et al.,* 2005). Introduction of modern agricultural production made producers aware of the significance of high quality seed capable of fast and uniform germination under different environmental conditions. At the time of sowing in the field, a high soil moisture, low soil and air temperatures, and crasts formation may occur, which can lead to slow germination, poor seedling establishment, and in some cases to loss of seed vigor. Conditions of production especially the amount and distribution of rainfall during formation and seed filling also influence the seed viability. Seed viability or vigor is the sum of those properties that influence germination and establishment of healthy and strong seedlings under different environmental conditions (ISTA, 2010).

Determination of seed quality and its vigor points out to those seed lots that can be placed on the market, and therefore it is of great importance to thoroughly examine methods and tests that are used for testing of seed quality, seed lot quality, i.e. seed vigor (MILOŠEVIĆ *et al.,* 2010). Standard laboratory method and vigor tests are used for seed vigor determination. Methods and tests must be reliable and repeatable to enable comparisons of the results (MILOŠEVIĆ *et al*., 2007).

Soybean is grown both under favorable and stress conditions. Production under stress conditions requires genotypes, which are adaptive and have pronounced positive reaction to environmental condition. Determination of this interaction can be done by applying appropriate multivariation method. Among multivariation methods used during last several years, the most significant and the most often used is AMMI model (method of main effects and multiple interaction).

Due to the significance and distribution of soybean, the aim of this study was to determine the quality and vigor of seed of different genotypes produced at three localities in Vojvodina during 2009 and 2010.

MATERIALS AND METHODS

The seed was produced in 2009 and 2010 in Vrbas (45°34'10"' N, 19°38'16" E), Senta (45°55'23"' N, 20°04'23" E), and Inđija (45°02'34"' N, 20°04'27" E). Eight commercial varieties from different maturity groups were included in the trial (Afrodita and Valjevka from maturity group O; Balkan, Novosađanka, Ravnica and Ana from maturity group I; Vojvođanka and Venera from maturity group II).

Germination was determined under laboratory conditions after harvest by applying Standard laboratory method, and seed viability by applying two vigor tests: Accelerated aging test and Cold test in the Laboratory for seed testing, Institute of field and vegetable crops, Novi Sad.

Standard germination method was used to test 4 x 100 seeds. The testing medium was wet sand, and incubation period at temp. of 25°C lasted 8 days After that period the seed germination was determined.

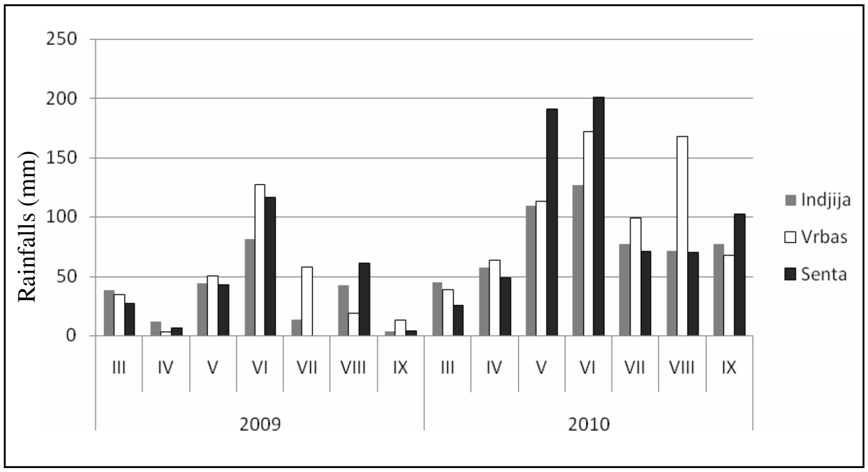
Accelerated aging test was used according to ISTA rules (2009). Four replications of 50 seeds were placed in a water bath at 41°C, and relative humidity of 100%. The seed was exposed to these conditions for 96h. After that period the seed was germinated under optimal conditions in the sand at 25°C. Upon incubation period of 8 days the seed germination was determined.

HEMPTON and TE KRONY (1995) procedure was used to run the Cold test. Four replications of 100 seeds, and a mixture of soil and sand (2:1) were used. The seed was first exposed to temp. of 5-10° for 7 days, and after that the samples were placed in a germination chamber at 25°C. Seed germination was determined after 4 days.

Obtained results were statistically processed using model of analysis of variance (AMMI), and statistical program SAS.

RESULTS AND DISCUSSION

Seed germination is the basic parameter of the seed quality, which depends to a great extent on biotic and abiotic factors. Significant influence on yield and seed quality is exerted by the lack of water during pod formation, filling and maturation of seed, and in our country that happens in late July, August and September. Duration of seed filling influences its chemical composition, and other traits significant for seed viability. Concentration of protein and starch in the seed maturation phase is intensive under optimum soil moisture condition, which positively influences germination and vigor of seed, reaching the maximum at phisiological maturity (SUN *et. al*., 2007). Amount of rainfall in 2009 was smaller compared to 2010 at all studied localities (Graph 1). Greater amount of rainfall was found at locality Vrbas compared to localieties of Senta and Indjija.



Graph. 1 – Amount of rainfalls during 2009 and 2010 vegetation period

Table 1. Mean values and analysis of variance of AMMI Model for seed germination obtained by applied Standard laboratory test in 2009 and 2010

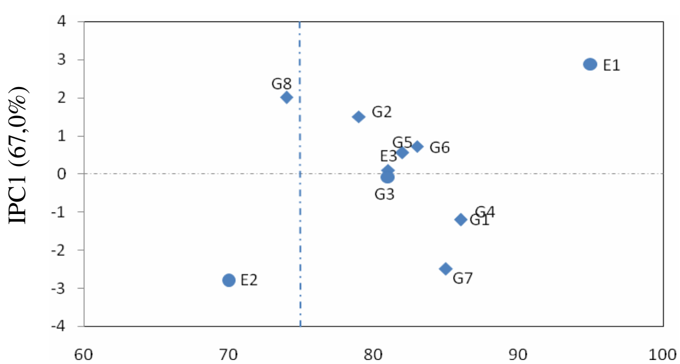
	2009								2010							
	Afrodita (G1)	**Balkan (G2)**	**Ravnica (G3)**	**Novosadjanka (G4)**	**Ana (G5)**	**Vojvodjanka (G6)**	**Venera (G7)**	**Valjevka (G8)**	**Afrodita (G1)**	**Balkan (G2)**	**Ravnica (G3)**	**Novosadjanka (G4)**	**Ana (G5)**	**Vojvodjanka (G6)**	**Venera (G7)**	**Valjevka (G8)**
Vrbas (E1)	80	78	79	83	78	81	90	77	82	93	84	88	83	95	92	94
Senta (E2)	80	63	69	79	71	70	77	54	89	89	95	93	96	94	93	91
Indjija (E3)	98	96	94	97	99	99	88	91	88	94	94	90	96	98	90	92
Mean	86	79	81	86	82	83	85	74	86	92	91	91	91	95	92	92

Source variations	**df**	**2009**		**2010**	
		SS (%)	**P**	**SS (%)**	**P**
Genotypes	7	11,6	0,000	35,8	0,000
Environments	2	76,6	0,000	20,9	0,001
GxE	14	11,8	0,000	43,3	0,000
IPC1	8	67,0	0,000	85,4	0,000
IPC2	6	33,0	0,000	14,6	0,075
Error	63				

Applied ANOVA revealed significantly great influence of the locality on seed germination (76,6%) determined by Standard laboratory test, especially in 2009, while in 2010 that influence was 20,9%, and the influence of genotype was 35,8% (Table 1). Influence of G x E was also significant in both years of investigation. With further explanataion of the interaction two major components (IPC1 and IPC2) were singled out. On the basis of IPC1 values the AMMI1 biplot is formed, showing a part of interaction contained in the first multiplied component in relation to the main effects of the genotype and environment. It`s very reliable in the results interpretation, since the percentage of the explained variation interaction together with the main effect exceeds 90% (YAN and HUNT, 2003). Highly significance of the first major component IPC1 was obtained in both years of investigation (in 2009 - 67,0%, and in 2010 - 85,4%). The rest of IPC 2 variation was significantly smaller showing that the tested parameter was also influenced by other factors in both years at chosen localities.

Results from AMMI 1 biplot showed that most of the varieties differed both in the main effect (genotype and locality) and in the interaction. Ravnica, Ana and Vojvodjanka were the genotypes that showed good stability and a small effect of interaction at all sites in 2009 (Graph 2). These varieties had germination exceeding 75%, which is the minimum acceptable value for placing seed on the market (Rule on quality of seed of agricultural plants, 1987). The greatest effect of interaction on the positive side of the axis (IPC 1) was recorded in genotype Valjevka with seed germination below 74%. Negative IPC1 scores for the greatest effect of interaction were observed in genotype Venera with high seed germination (85%).

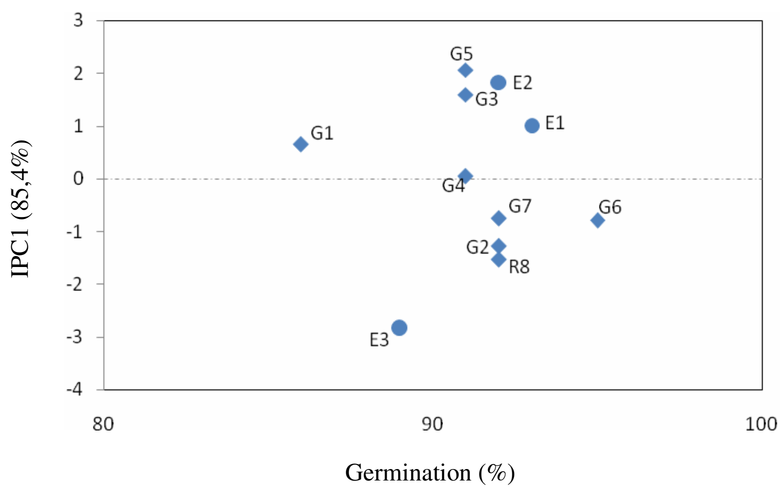
The greatest test parameter values were obtained for genotypes Afrodita (86%) and Novosadjanka (86%). At the locality of Vrbas genotypes exibited high interaction effect of environmental factors, and the greatest test parameter values were obtained. At the locality of Senta the high interaction effect was obsrved, but the germination was below the prescribed minimum.



Graph 2 - AMMI1 graph for seed germination determined by Standard laboratory test (2009)

Germination of seed produced in 2010 was greater than the values obtained in 2009. All tested genotypes had high germination values ranging from 86% to 95%, which was significantly above the minimum value prescribed by the Rule (Graph 3). Genotype Novosadjanka showed the best stability, and genotype Ana had the highest interaction effect. The lowest germination values (89%) were obtained at the locality of Indjija, and it has the highest interaction score. Localities of Vrbas and Senta did not differ in an average value of the tested parameter, except that the locality of Senta lied further away from the line of stability. At all tested localities genotype Afrodita had the lowest germination value (86% on average), and genotype Vojvodjanka the highest (95%).

In the above mentioned studies a positive effect of greater amount of rainfall on soybean seed germination was observed in 2010. The positive effect of irrigation on soybean seed germination was confirmed by MAKSIMOVIĆ *et al.* (2004) and VUJAKOVIĆ et al. (2008a). The seed quality depends on genotype, and may also be affected by ecological condition (TAŠKI-AJDUKOVIĆ *et al*., 2010) which was also confirmed by studies mentioned in this paper.



Graph 3.AMMI1 graph for seed germination determined by application of Standard laboratory test (2010)

Accelerated aging test is one of the most often used tests for vigor testing today, first of all because it showed good correlation with the field emergence (LOVATO *et al*., 2001). ISTA standardized this test in 2010 for soybean seed. For seed germination determined by accelerated aging test in 2009, the results showed that the locality as the source of variation had the greatest influence in relation to genotype and interaction (Tab. 2). Further parsing of the interaction showed high significance of IPC1 component, which explained interaction with 77,23%.

Approximately the same impact of locality (42,05%), and interaction G x E (46,77%) on the tested parameter was observed in 2010. First component (IPC1) explained 64,61% of the interactions.

Table 2. Mean values and AMMI analysis of variance for seed germination obtained by application of Accelerated aging tests in 2009 and 2010

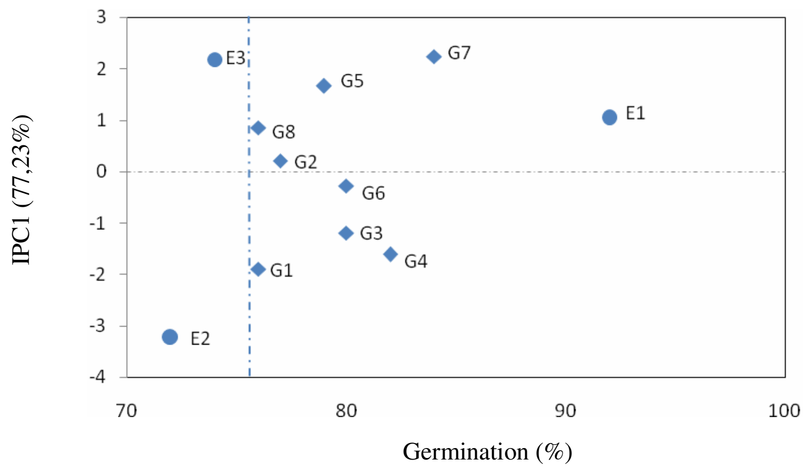
	2009								2010							
	Afrodita (G1)	**Balkan (G2)**	**Ravnica (G3)**	**Novosadjanka (G4)**	**Ana (G5)**	**Vojvodjanka (G6)**	**Venera (G7)**	**Valjevka (G8)**	**Afrodita (G1)**	**Balkan (G2)**	**Ravnica (G3)**	**Novosadjanka (G4)**	**Ana (G5)**	**Vojvodjanka (G6)**	**Venera (G7)**	**Valjevka (G8)**
Vrbas (E1)	86	89	92	91	93	97	97	93	88	95	90	93	95	93	92	93
Senta (E2)	75	69	76	80	66	72	70	65	91	91	91	91	88	87	89	94
Indjija (E3)	67	73	72	75	77	70	87	70	89	87	85	88	86	92	90	85
Mean	76	77	80	82	79	80	84	76	89	91	89	91	89	91	90	90

Source Variation		**df**	**2009**		**2010**	
			SS (%)	**P**	**SS (%)**	**P**
Genotypes		7	8,09	0,000	11,18	0,171
Environments		2	78,72	0,000	42,05	0,000
GxE		14	13,19	0,000	46,77	0,000
	IPC1	8	77,23	0,000	64,61	0,000
	IPC2	6	22,77	0,000	35,39	0,001
Error		63				

On the basis of the distance from the zero value of IPC axis, it can be observed that the effect of interaction was the least expressed in genotypes Balkan, Vojvodjanka and Valjevka (Graph 4). Mean germination values of the mentioned genotypes ranged between 76 and 80%.

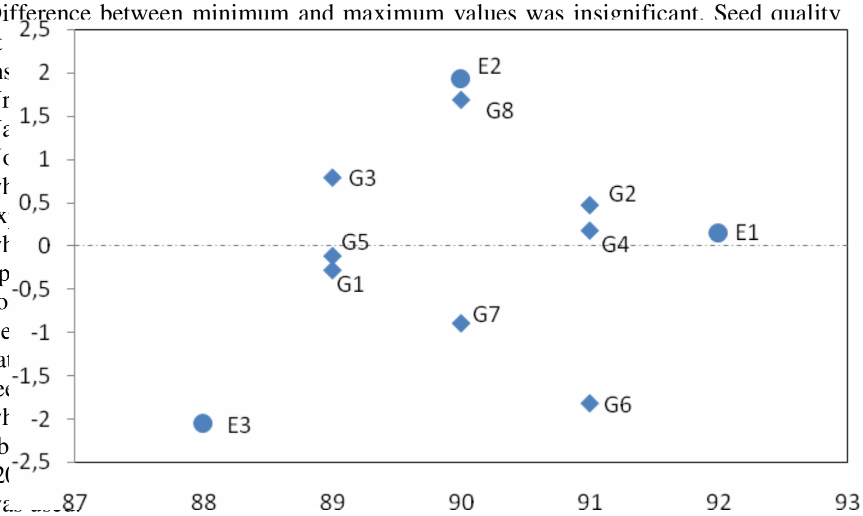
The greatest effect of interaction on the positive side of the axis (IPC1) was recorded in genotype Venera, which also had the greatest value of the tested parameter. Negative IPC1 scores for the greatest effect of interaction were observed in genotype Afrodita, which also had the lowest germination value.

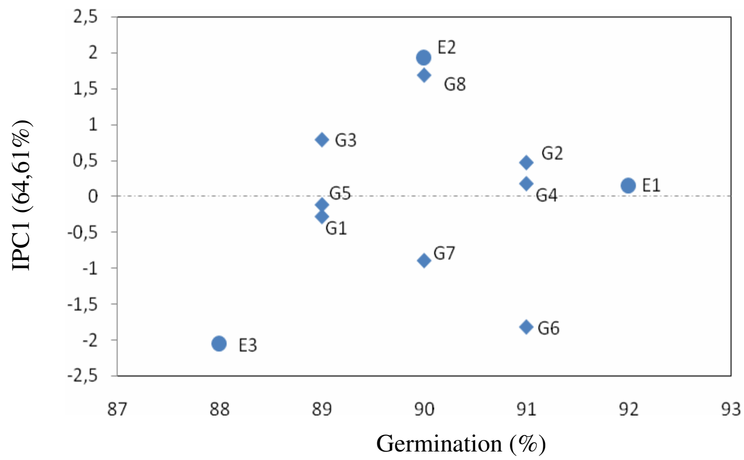
Interaction greatest effect of the genotypes was observed at the locality of Senta, where also the lowest values were obtained. Seed produced at the locality of Vrbas had greater germination value in relation to seed produced in Senta and Indjija.



Graph 4. AMMI1 graph for seed germination obtained by application of Accelerating aging test 2009

In 2010 the greatest stability of tested genotypes was observed in Afrodita, Ana, Balkan and Novosadjanka, when accelerated aging test was applied (Graph 5). Genotypes Afrodita, Balkan and Ravnica achieved the lowest germination value (89%), and genotypes Novosadjanka, Vojvodjanka and Ana the highest (91%). Difference between minimum and maximum values was insignificant. Seed quality





Graph. 5. AMMI1 graph for seed germination obtained by application of accelerated aging test 2010

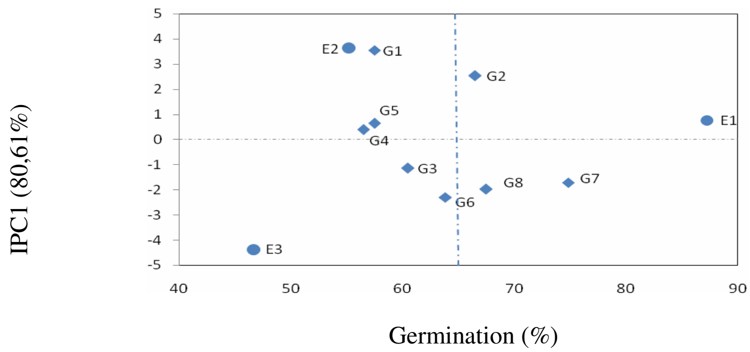
Analysis of variance showed that when cold test was applied for determination of seed germination all sources of variation expressed high significance in both years of investigation (Table 3). Proportion of additive source of variation depended on the year. Proportion of genotype in total trial variation was 9,02%, while that of the locality was 76,76% in 2009. Second year of investigation (2010) was favorable for soybean seed production, and proportion of genotype in total variation was 20,18%, and that of locality 60%. Proportion of interaction G x E in both years was approximately the same (in 2009 – 14,22%, and in 2010 -19, 78%).

Within multi-variation part of variance, the main component IPC1 expressed high significance and it was 80,61% in 2009, and 86,78% in 2010.
Application of cold test for seed produced in 2009 in most genotypes gave values below 75%, except in Venera which was 75% (Graph 6). The greatest stability was confirmed in genotypes Novosadjanka and Ana. The most unstable genotype was Afrodita, which besides Novosadjanka and Ana had the lowest values. As in previous tests in this test, varieties grown at the locality of Vrbas also showed greatest stbility, while quality of seed produced at the localities Senta and Indjija was much less stable. Seed produced in Indjija had the lowest seed germination values on the average. Genotypes Venera and Valjevka achieved the highest seed germination values at the localities of Vrbas and Indjija. Genotypes Balkan and Venera had the highest values of the tested parameter at the locality of Senta.

Table 3.Mean value of I AMMI analysis of variance for seed germination obtained by application of cold test in 2009 and 2010.

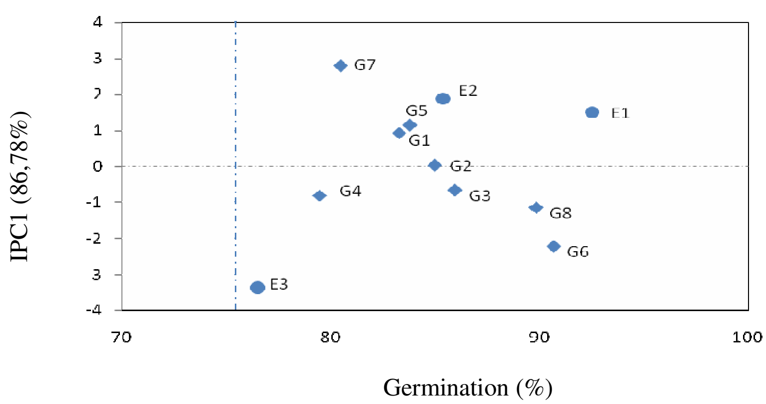
	2009								**2010**							
	Afrodita (G1)	**Balkan (G2)**	**Ravnica (G3)**	**Novosadjanka (G4)**	**Ana (G5)**	**Vojvodjanka (G6)**	**Venera (G7)**	**Valjevka (G8)**	**Afrodita (G1)**	**Balkan (G2)**	**Ravnica (G3)**	**Novosadjanka (G4)**	**Ana (G5)**	**Vojvodjanka (G6)**	**Venera (G7)**	**Valjevka (G8)**
Vrbas (E1)	86	87	80	80	92	87	94	94	92	95	93	86	97	94	90	95
Senta (E2)	62	72	51	51	46	48	64	50	67	84	86	79	84	88	89	89
Indjija (E3)	25	41	55	39	35	58	68	59	72	77	80	74	72	90	63	86
	[illegible]	57	51	57	58	64	75	68	83	85	86	80	84	91	81	90

Source Variation	**df**	**2009** SS (%)	**2009** P	**2010** SS (%)	**2010** P
Genotypes	7	9,02	0,000	20,18	0,000
Environments	2	76,76	0,000	60,00	0,000
GxE	14	14,22	0,000	19,82	0,000
IPC1	8	80,61	0,000	86,78	0,000
IPC2	6	19,39	0,000	13,22	0,001
Error	63				



Graph 6.AMMI1 graph for seed germination obtained by application of Cold test (2009)

Unlike 2009, germination values obtained in 2010 were significantly higher. In 2010 all varieties had values above 75%. The greatest stability was obtained for Genotype Balkan, while genotype Venera was the least stable (graph 7). The lowest values of the tested parameter and the greatest interaction effect was determined for locality of Indjija. At the locality of Vrbas the greatest values for seed germination were determined in genotypes Balkan and Ana, and at the locality of Senta in genotypes Venera and Valjevka. Genotyeps Vojvodjanka and Valjevka had the highest values of the tested genotypes at the locality of Indjija. Determination of seed lots for early spring sowing, the assessment of physiological damage caused by prolonged storage under adverse conditions, damage from frost or drought, and measurements of the impact of mechanical damage on germination in the cold and wet soil were done using cold test (AOSA, 2002). Negative influence of reduced rainfall was also observed in our research because significantly lower values of seed germination were obtained in 2009.



Graph 7 - AMMI1 graph for seed germination obtained by application of cold test (2010)

CONCLUSION

On the basis of the results obtained during a two-year period of studying the impact of interaction between genotype and locality on germination and vigor of soybean seed by application of multi variation method the following conclusions can be made:

The obtained results showed highly significant participation of the main effects (genotype, locality), as well as their interactions for seed germination by application of Standard laboratory and Vigor tests.

Application of AMMI model presents a significant contribution to the selection of the best genotype and locality for seed production.

Tested genotypes behaved differently in individual years and localities. Genotype Venera was singled out by high germination values obtained in 2009 in all applied tests, while genotype Afrodita had high values of the tested parameter determined by application of Standard laboratory test, and the lowest values were obtained when vigor tests were applied. In 2010 values obtained by application of all tests were above prescribed minimum.

Locality of Vrbas proved to be favorable for seed production in relation to localities of Senta and Indjija, due to better distribution of rainfall.

Seed production of individual soybean genotype, such as Venera can be successfully done under condition of dry farming, while genotypes such as Afrodita should be produced under irrigation condition.

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REFERENCES

AOSA (2002): Seed Vigour Testing Handbook, Contribution No. (32) to the Handbook of Seed Testing Association of Official Seed Analysts, NE, USA

AVILA M. R., A. L.BRACCINI, I.SA MOTA, C.A. SCAPIM, M. C. L. BRACCINI (2003): Sowing seasons and quality of soybean seeds. Sci. Agric, *60* (2) 245-252.

BALEŠEVIĆ-TUBIĆ, S., M. HRUSTIĆ, M.MILOŠEVIĆ, M.TATIĆ, M. VUJAKOVIĆ (2001): Drought effect on soybean seed quality. Scientific Research of Field and Vegetable Crops, *35*, 383-390.

BALEŠEVIĆ-TUBIĆ, S., M. TATIĆ, V. ĐORĐEVIĆ, Z. NIKOLIĆ, V. ĐUKIĆ (2010): Seed viability of oil crops depending on storage conditions. Helia, *52*, 153-160

ĐORĐEVIĆ, V., S. BALEŠEVIĆ-TUBIĆ M. HRUSTIĆ M. VIDIĆ, M. TATIĆ (2005). Protein and oil content stability of soybean genotypes. Scientific Research of Field and Vegetable Crops, *41*, 445-450

HEMPTON, J. G., D. M. TEKRONY (1995): Handbook of Vigour Test Methods. International Seed Testing Association

ISTA (2009): International Rules for Seed Testing. International Seed Testing Association. Switzerland

ISTA (2010): International Rules for Seed Testing. International Seed Testing Association. Switzerland

LOVATO, A., E., A. NOLI, F. S. LOVATO, E. BELTRAMI, E. GRASSI (2001): Comparison between three cold test low temperatures, accelerated ageing test and field emergence on maize seed. Seed Symposium, ISTA Congres, Angers, France,

MAKSIMOVIĆ, L., B. PEJIĆ, S. MILIĆ, V. ĐUKIĆ, S. BALEŠEVIĆ-TUBIĆ, M. VUJAKOVIĆ (2004): Effect irrigation on yield, quality and evapotranspiration of soybean for seed. Vodoprivreda, *36*, 421-426.

MCDONALD, M. B. (1999): Seed deterioration. Physiology, repair and assessment. Seed Sci. and Technology, *27*, 177-237

MILOŠEVIĆ, M., D. IVANOVIĆ, M. MILIVOJEVIĆ, M.VUJAKOVIĆ (2007): Towards the standardization of seed testing, Maydica, *52*, 335-341

MILOŠEVIĆ M., M.VUJAKOVIĆ, Đ.KARAGIĆ (2010): Vigour tests as indicators of seed viability, Genetika, *42* (1) 103-118.

SCHUAB, S. R. P., A. L. BRACCINI, C. A. SCAPIM, J. B. FRANCA-NETO, D. K. MESCHEDE, M. R.AVILA (2007): germination test under water stress to evaluate soybean seed vigor. Seed Sci. and Technology, *35* (1), 187-199.

SUN, Q., J. WANG, B.SUN (2007): Advances on Seed Vigor Physiological and Genetic Mechanisms. Agricultural Sciences in China, *6* (9), 1060-1066

RULE ON SEED QUALITY TESTING OF AGRICULTURAL PLANTS (Official gazette SFRJ no. 47/87)

ŠTAJNER, D., M. KRALJEVIC-BALALIC, M. MILOSEVIC, M. VUJAKOVIC, M.ZLOKOLICA (2002): Stress resistance in seeds. Oxidation Communications *25* (4) 596-601.

TAŠKI-AJDUKOVIĆ, K., V. ĐORĐEVIĆ, M. VIDIĆ, M. VUJAKOVIĆ, M. MILOŠEVIĆ, J.MILADINOVIĆ (2008): The main seed storage proteins among high-protein soybean genotypes. Genetika, *40*, 1, 9-16

TAŠKI-AJDUKOVIĆ, K., V. DJORDJEVIĆ, M. VIDIĆ, M. VUJAKOVIĆ (2010): Subunit composition of seed storage proteins in high-protein soybean genotypes. Pesq. Agropec. Beas., *45* (7) 721-729.

VUJAKOVIĆ, M., Z. NIKOLIĆ, S. BALEŠEVIĆ-TUBIĆ, M. MILOŠEVIĆ, L. MAKSIMOVIĆ, M. IGNJATOV, D. PETROVIĆ (2008b): Effect of irrigation on soybean seed vigor. The Second Joint PSU-UNS International Conference on BioScience: Food, Agriculture and Environment, Jun 22-24, 2008, Novi Sad, Serbia, pp 61.

VUJAKOVIĆ, M., M. MILOŠEVIĆ, Z. NIKOLIĆ, K. TAŠKI-AJDUKOVIĆ, J. MILADINOVIĆ, M. IGNJATOV, V. DOKIĆ (2008a): Seed vigour in soybean production with andwithout irrigation. PTEP, *12* (1-2) 19-21.

YAN, W. and L.A. HUNT (2003): Bipliplot anal y sis of multi-en vi ron ment trial data. In: Kang MS.(Ed.) Quan ti ta tive ge net ics, genomics and plant breed ing. CAB Inter., Wallingsford, OXON, UK, 289-303.

ŽIVOTNA SPOSOBNOST SEMENA SOJE PROIZVEDE U RAZLIČTIM AGROMETEOROLOŠKIM USLOVIMA VOJVODINE

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I z v o d

U vreme setve soje, u polju, može da se javi visoka vlažnost zemljišta, niska temperatura zemljišta i vazduha i pokorica, što može da dovede do usporavanja nicanja, formiranja slabog ponika, a u nekim slučajevima do gubitka životne sposobnosti semena. Zbog značaja i rasprostranjenosti soje cilj rada je bio da se utvrdi kvalitet i životna sposobnost semena, različitih genotipova, proizvedenih na tri lokaliteta Vojvodine u toku 2009 i 2010. godine.

Ispitivanja su izvršena na 8 sorata soje (Afrodita, Valjevka, Balkan, Novosadjanka, Ravnica, Ana, Vojvodjanka i Venera) proizvedenih u Vrbasu, Senti i Indjiji u 2009 i 2010. godini. Kod svih uzoraka utvrđena je klijavost semena primenom standardnog laboratorijskog metoda i vigor testova (hladni test i test ubrzanog starenja).

Ispitivani genotipovi su se različito ponašali u pojedinim godinama i lokalitetima. Genotip Venera se izdvojio po visokim vrednostima klijavosti semena dobijenim u 2009. godini kod svih primenjenih testova, dok je genotip Afrodita imao visoke vrednosti ispitivanog parametra primenom standardnog laboratorijskog testa, a primenom vigor testova su konstatovane najniže vrednosti. U 2010. godini dobijene vrednosti, primenom svih testova, su bile iznad propisanog minimuma. Lokalitet Vrbas se pokazao kao povoljniji za semensku proizvodnju u odnosu na lokalitet Senta i Indjija, zbog boljeg rasporeda padavina.

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