Резюмета от научни трудове

1.

Biotechnology in Animal Husbandry 26 (spec.issue), p 41-49, 2010
Publisher: Institute for Animal Husbandry, Belgrade-Zemun

ISSN 1450-9156
UDC 633.17

BREEDING OF SORGHUM-SUDANGRASS HYBRIDS FOR GREEN MASS PRODUCTIVITY

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Original scientific paper

Abstract: The results of tests of selected sorghum-Sudangrass hybrids in Agricultural Institute-Shumen, Bulgaria, conducted in 2005-2008, have been presented. The significant differences in the agro-climatic factors of the years of our study allow reliable assessment of the productive potential and the adaptability of the sorghum-Sudangrass hybrids in conditions of extreme deviations from the norm. The results confirm the high productive potential of the hybrids in conditions of more often extreme deviations from the agro-climatic norms. The total dry matter yield of tow swaths in flower stage is from 20 to 30 t ha^{-1}. The green yield in late milk stage varies depending on the soil's water reserve – from 40 to 80 t ha^{-1}, with dry matter of 30-50%. Effective breeding of segregating populations of F_2-F_3 progenies for isolation of genotypes with improved productivity indices, and for enrichment of the gene-pool of pollinators for creation of new sorghum-Sudangrass hybrids, was realized.

2.

Discourse Journal of Agriculture and Food Sciences
www.resjournals.org/JAFS
ISSN: 2346-7002
Vol. 2(5): 149-151, May, 2014

Initial development and growth of biomass and dry matter in Sudan grass and Sorghum x Sudan grass Hybrids

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Abstract

The growth of biomass and the accumulation of dry matter in the initial 5-6 leaves phase of development of Sudangrass and Sorghum x Sudan grass hybrids have been studied by the test carried out during the period 2010 and 2011 in the experimental field of the Agricultural Institute – Shumen. Biometrical analysis have been established the parameters of growth and accumulation of dry matter, as well as the intensity of shoots development.The rainfalls quantities and the temperature sums are the basic factor for the biomass accumulation in Sudangrass and Sorghum x Sudangrass hybrids. There is a significant correlation between the intensity of shooting and the biomass accumulation. The number of the developed shoots is strongly dependent on the agro-climatic conditions. The parameters of biomass and dry matter accumulation are manifested on different levels in dependence of the genotype, as with the Sorghum x Sudangrass hybrids the high productivity is combined with intensive dry matter accumulation.

3.

INNSPUB

International Journal of Agronomy and Agricultural Research (IJAAR)
ISSN: 2223-7054 (Print) 2225-3610 (Online)
http://www.innspub.net
Vol. 6, No. 3, p. 132-138, 2015

RESEARCH PAPER OPEN ACCESS

Results of fodder and semi-sugar beet breeding in Bulgaria

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Plant Breeding Department, Agricultural Institute, Shumen, Bulgaria

Article published on March 21, 2015

Key words: Root yield, Dry matter, Inheritance, Heterosis

Abstract

They have been discussed the results of tests of fodder beet origins and their semi-sugar beet hybrids, carried out in 2003-2013. The character of inheritance of the quantitative traits root yield and dry matter content has been established. The variability of the parental characteristics and the differences in the agroclimatic conditions during the vegetation affect the degree of heterosis manifestation in the semi-sugar beet hybrids. Various high productivity fodder beet origins are available, which do not fall back the already certified commercial varieties. Their heritage factors dominate in their hybrids with male sterile sugar beet lines. All the semi-sugar beet hybrids realize proven heterosis in the dry matter yield from a unit of area, no matter the climatic conditions of the vegetation, and meet the requirements of the modern intensive technologies of growing.

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4.

INNSPUB

International Journal of Agronomy and Agricultural Research (IJAAR)
ISSN: 2223-7054 (Print) 2225-3610 (Online)
http://www.innspub.net
Vol. 8, No. 2, p. 19-24, 2016

RESEARCH PAPER OPEN ACCESS

Resistance to powdery mildew and Cercospora leaf spot of multigerm dihaploid sugar beet lines and its inheritance in their hybrids

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Plant Breeding Department, Agricultural Institute, Shumen, Bulgaria

Article published on February 18, 2016

Key words: Sugar beet, Powdery mildew, *Cercospora* leaf spot, Resistance, Inheritance.

Abstract

The induced haploidy through *in vitro gynogenesis* in sugar beet is effective method for the selection of valuable gene recombinations determining the expression of efficient traits of that crop. Ten years test results for the resistance to powdery mildew and *Cercospora* leaf spot of stabilized multigerm dihaploid sugar beet lines and their hybrid combinations are being reported. The performance of the tested material proves, that the multigerm dihaploid pollinators are differentiated recombinant lines with favorable combinations of genetic material, including genes responsible for the high resistance to the agents of powdery mildew and *Cercospora* leaf spot fungal diseases. The higher resistance of the dihaploid multigerm pollinators dominates in their diploid hybrid combinations. The heritage factors for higher resistance to both diseases of the maternal component dominate in the tested triploid hybrids. There are good prospects of using these pollinators in the hybrid breeding schemes.

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5.

ISSN: 0975-833X

Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 8, Issue, 05, pp.31002-31006, May, 2016

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

ASSESSMENT OF THE EFFECTIVENESS OF BIOMASS ACCUMULATION IN SUDANGRASS, SORGHUM x SUDANGRASS HYBRIDS AND SWEET SORGHUM FORMS

Tzvetan Kikindonov, *Kalin Slanev, Georgi Kikindonov and Stanimir Enchev

Agricultural Institute-Shumen

ARTICLE INFO

Article History:
Received 20th February, 2016
Received in revised form
05th March, 2016
Accepted 21st April, 2016
Published online 20th May, 2016

Key words:

Sorghum,
Sudangrass,
Hybrids,
Breeding,
Productivity

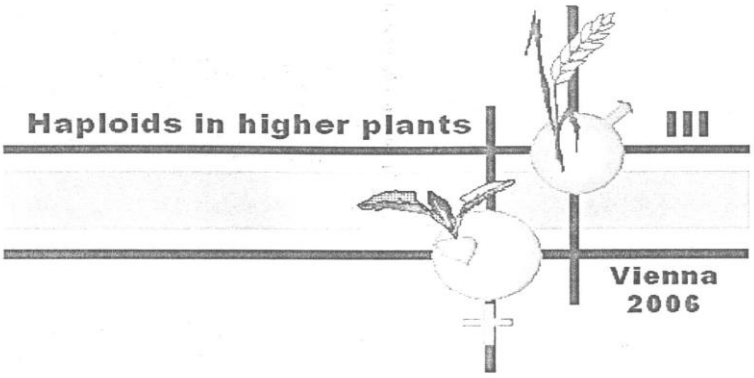
ABSTRACT

The increasing tendency of deviations from the agro-climatic norms forces the search of alternative forage crops. The great variety of grain and sweet sorghum forms, sudangrass and their hybrids of the breeding program of Agricultural Institute – Shumen is a good basis for selection of adapted to the actual conditions genotypes, allowing harvest of green mass in different stages of the crops' development during vegetation. The many years studies – breeding and technological, of the sudangrass, sorghum x sudangrass hybrids and sweet sorghum forms allows summarizing the field test results of Standard varieties and materials bred in the Institute for productivity of green and dry mass. It has been studied the genotype and the agro-climatic conditions' influence on the productive potential of Standard varieties, populations and sorghum x sudangrass hybrids. Assessment is made for the effectiveness of harvesting the tested origins in four stages of development – brooming, flowering, milky-wax and technological maturity of seeds. The application of different schemes of harvesting diversifies the sources of green mass as rich forage for production of silage, haylage and hay.

6.

The International Conference

"Haploids in Higher Plants III"



Programme and Abstracts

Vienna-Austria, February 12-15, 2006

Use of Induced Haploidy for Improvement of Fodder Beet Diversity

Tzvetan Kikindonov, Yordanka Slavova, Georgi Kikindonov, Ely Zaiova

The gynogenesis *in vitro* is basic method for obtainment of beet haploids. The development of isolated in vitro ovules from original fodder pollinators and their hybrids with sugar beet is a possibility for rapid creation of dihaploid fodder beet. The method of gynogenesis *in vitro* has been applied for fodder beet in the Agricultural Institute-Shoumen, Bulgaria, during the period 2000-2005. The variable initial material, included in the research, makes it possible to determine the influence of the genotype on the development of *in vitro* isolated ovules. A higher degree of developed regenerants and calli is registered for the diploid and hybrid forms. Origins with high gynogenesis frequency have been identified – up to 86.3% with a mean of 25.8% of development. The correlation between the development of unpollinated ovules and immature embryos from original fodder pollinators and their crosses with sugar beet male steriles varies, depending on the ploidy level of the parental genotypes. The degree of spontaneous and induced diploidization has been studied. The effect of induced doubling by colhicine treatment increases to 43.5% with the use of higher concentrations in the initial stages of haploid development. The manifestation of recessive factors and the higher mutability on haploid and dihaploid level increases the effect of selection of resistant to diseases, bolting and abiotic stress forms with optimum biotypes.

7.

Journal of Mountain Agriculture on the Balkans, vol. 11, 3, 2008, (503-511)
Research Institute of Mountain Stockbreeding and Agriculture, Troyan

ПРОДУКТИВНОСТ НА ПРОИЗХОДИ СОРГО ЗА ЗЕЛЕНА МАСА

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GREEN MASS PRODUCTIVITY OF SORGHUM ORIGINS

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Agricultural Institute – Shumen

РЕЗЮМЕ

През периода 2004 – 2007г. са изпитани 24 различни форми сорго за продуктивност на зелена маса при цъфтеж и млечно-восъчна зрялост.

Суданката и соргосуданковите хибриди са с висок потенциал за продуктивен и многократен подраст – от 6502 до 11569 kg/da зелена маса средно от тригодишно изпитване. Висока е продуктивността при реколтиране в млечно-восъчна зрялост на изпитаните произходи – от 4586 до 7745 kg/da.

Резултатите от изпитването за продуктивност на зелена маса са реално потвърждение за потенциала на различните форми сорго и в екстремни условия да осигуряват стабилен добив на зелен фураж.

SUMMARY

Twenty four different sorghum forms have been tested for green mass productivity during the flowering and milky-wax ripeness phases in the period 2004 – 2007.

The sudan-grass and the sorghum-sudanensis hybrids are with high potential for productive and multiple grow up – from 6502 to 11569 kg/da green mass mean of the three years testing.

The productivity in milky-wax ripeness of the tested origins of sorghum is high – from 4586 to 7745 kg/da.

The results of the tests for green mass productivity are real confirmation of the potential of the different sorghum forms even in extreme weather conditions to ensure stable yield of green forage.

8.

Journal of Mountain Agriculture on the Balkans, vol. 12, 3, 2009, (488-497)
Research Institute of Mountain Stockbreeding and Agriculture, Troyan

ПРОДУКТИВНОСТ НА КРЪМНИ ПРОИЗХОДИ И ПОЛУЗАХАРНИ ХИБРИДИ ЦВЕКЛО

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PRODUCTIVITY OF FODDER BEET ORIGINS AND SEMI-SUGAR BEET HYBRIDS

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РЕЗЮМЕ

През периода 2004-2008 г. в опитните полета на Земеделски институт-Шумен са изпитани 4 кръмни произхода и техни хибриди с две едноплодни МС линии захарно цвекло. Резултатите от изпитването показват, че са селекционирани разнообразни по своите характеристики кръмни материали с много добри продуктивни и качествени показатели. Използуването им като опрашители в кръстоски с едносеменни МС линии захарно цвекло позволява съчетаване на високия добив на кръмното цвекло с ценните стопански качества на захарното цвекло в хибридите. Вследствие на значително по-високото съдържание на сухо вещество в кореноплодите на полузахарните хибриди те реализират доказано по-висок добив на сухо вещество от единица площ в сравнение със съответните кръмни произходи. С най-висока продуктивност – по добив на кореноплоди и добив на сухо вещество от 1 da, са изпитаните триплоидни полузахарни хибриди на кръмния произход SKR, които напълно отговарят на изискванията на

SUMMARY

During 2004-2008 in the experimental fields of the Agricultural Institute-Shumen have been tested 4 fodder beet origins and their hybrids with two monogerm MS sugar beet lines.

The results of the tests show, that there have been selected and stabilized various in their characteristics fodder beet materials with very good productive and qualitative indices.

Their use as pollinators in crosses with monogerm MS lines of sugar beet allows the combination of the high yield of the fodder beet with the valuable economical qualities of sugar beet in the hybrids.

As a result of the significantly higher dry matter content in the roots of the semi-sugar beet hybrids they realize proven higher yield of dry matter from an unit of area in comparison with the relevant fodder beet origins.

With the highest productivity –root yield and dry matter yield per da, are the tested triploid semi-sugar beet hybrids of the fodder beet origin SKR, which meet

време всички селекционни учреждения, свързани с цвеклото, работят по създаването на полузахарни хибриди цвекло (Van Bockstaele, 1990). Тези хибриди съчетават високия добив кореноплоди на кръмното цвекло (Badawi et al., 2002) и положителните стопански качества на захарното цвекло – едноплодност, повишено съдържание на сухо вещество, повишена устойчивост към болести, изравненост на кореноплодите по форма и разположение в почвата, пригодност за механизирано прибиране и съхранение (Фомичев, 1997; Orlov and Yatsenko, 1999).

Целта на настоящото изследване бе да се извършат сравнителни тестове за продуктивност на кръмни произходи цвекло и техни полузахарни хибриди, при прилагането на интензивни технологии на отглеждане.

Together with breeding traditional high yield fodder beet forms in recent times all the breeding institutions dealing with beets, work on the creation of semi-sugar beet hybrids (Van Bockstaele, 1990).

These hybrids combine the high root yield of the fodder beet (Badawi et al., 2002) with the positive economic qualities of the sugar beet – monogermity, increased dry matter content, increased resistance to diseases, uniformity of roots in form and positioning in the ground, fitness to mechanized harvesting and conservation (Фомичев, 1997; Orlov and Yatsenko. 1999).

The aim of the present work is to review some results of our long term comparative tests of the productivity of fodder beet origins and their semi-sugar beet hybrids applying intensive technologies of growing.

9.

Journal of Mountain Agriculture on the Balkans, vol. 12, 5, 2009, (971-979)
Research Institute of Mountain Stockbreeding and Agriculture, Troyan

ВЛИЯНИЕ НА СОРТА И ГЪСТОТАТА НА ПОСЕВА ВЪРХУ ПРОДУКТИВНОСТТА НА СОРГО

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EFFECT OF THE VARIETY AND THE SOWING RATE ON THE PRODUCTIVITY OF SORGHUM

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РЕЗЮМЕ

Проучено е влиянието на вътредовата гъстота на посева при сортове сорго с различна ранозрелост върху продуктивността на зърно.

В условията на екстремно засушаване през 2007 и 2008 г. увеличаването на гъстотата до 35000-40000 раст./da за ранните сортове увеличава продуктивността на зърно с подходяща влажност за ранна жътва.

Използването на по-богат набор от разнообразни по продължителност на вегетацията сортове е условие за получаване на стабилни добиви при зачестилите отклонения от климатичните норми.

SUMMARY

It has been studied the influence of the in-row density of the sowing for sorghum varieties with different early ripeness on the productivity of grain.

In the conditions of extreme drought during 2007 and 2008 the increase of sowing rate to 35000-40000 plants per 1 da for the early varieties increases the grain productivity with appropriate for early harvest humidity.

The use of a richer range of various in the vegetation length varieties is a term for the receipt of stable yields in the often appearing diversions of the climatic norms.

10.

GENETICS and BREEDING
2010, Volume 39, Number 1-2

Heterosis effect in semi-sugar beet hybrids

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ABSTRACT. The economical qualities of sugar and fodder beet parental components and their semi-sugar beet hybrids have been tested during 2001-2008 at the Agricultural Institute Shumen. The variety of the parental characteristics and the differences in the agroclimatic conditions during the vegetation reflect in the degree of the heterosis manifestation in the semi-sugar beet hybrids. The triploid semi-sugar beet hybrids have the highest root yield heterosis values while the heterosis effect in the dry matter content is stronger for the diploid hybrids. All the tested semi-sugar beet hybrids have positive values of the heterosis effect on the dry matter yield from a unit of area towards the parents and the Standard. The triploid semi-sugar beet hybrids of the fodder beet pollinator SKR manifest the higher competitive heterosis effect, no matter the quantity of the rainfalls. With this they meet the requirements of the modern intensive growing technologies.

11.

GENETICS and BREEDING
2010, Volume 39, Number 1-2

Inheritance of the root yield and dry matter content in semi-sugar beet hybrids

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ABSTRACT. The estimation of parental components and semi-sugar beet hybrids between them during 2001-2008 allowed characterization of the inheritance of root yield quantitative traits and dry matter content under the hybrids in different agroclimatic conditions. In years of water deficiency during vegetation the root yield of the fodder beet pollinators was inherited with over dominantly in their semi-sugar beet hybrids. The significantly higher root yield of the pollinators dominates in the semi-sugar beet hybrids under conditiond of over-norm vegetation rainfalls. Incomplete dominance of the lower dry matter content in the roots of the fodder beet parents is the characteristic way of inheritance in the semi-sugar beet hybrids in conditions of over-norm vegetation rainfalls. The vegetation drought caused disturbances in the mechanisms of inheritance, and in some triploid hybrids dominance in the higher dry matter content of the maternal component was detected. The participation of the fodder beet pollinator carrying two genomes in the triploid semi-sugar beet hybrids yielded dominance of its hereditary factors in them.

12.

GENETICS and BREEDING

2010, Volume 39, Number 1-2

Variability of traits in pollinators and hybrds of grain sorghum

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ABSTRACT. The frequent extreme deviations from the climatic norm entail cultivation of sorghum as an alternative forage crop in Bulgaria. In this investigation data of an assessment of the morphological uniformity of the selected at the Agricultural Institute — Shumen pollinators of grain sorghum and their hybrids with MS lines mere assessed.The selected pollinators differ in the estimated morphological traits affecting the variability of their hybrids with different MS lines.The hybrids are of morphological uniformity, near to that of the Standard varieties, which makes them useful for tests and introduction in agricultural practice.

13.

Journal of Mountain Agriculture on the Balkans, vol. 14, 4, 2011, (696-706)
Research Institute of Mountain Stockbreeding and Agriculture, Troyan

ВЛИЯНИЕ НА СОРТА И ГЪСТОТАТА НА ПОСЕВА ВЪРХУ ПРОДУКТИВНОСТТА НА СОРГОСУДАНКОВИ ХИБРИДИ ВЪВ ФАЗА МЛЕЧНО-ВОСЪЧНА ЗРЕЛОСТ

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EFFECT OF THE VARIETY AND THE SOWING DENSITY ON THE PRODUCTIVITY OF SORGHUM X SUDANGRASS HYBRIDS IN MILKY-WAX MATURITY STAGE

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Agricultural Institute – Shumen

РЕЗЮМЕ

Проучено е влиянието на вътредовата гъстота на посева при различни сортове сорго-суданкови хибриди върху продуктивността на зелена маса в млечно-восъчна зрелост за производство на силаж.

В условията на засушаване през 2008 и 2009 год. по-гъстите посеви формират по-висок добив, като разпределението на валежите е от съществено значение за по-благоприятната структура на добива.

Изпитаните сортове и хибриди са с висок продуктивен потенциал за стабилни добиви при зачестилите отклонения от климатичните норми.

SUMMARY

It is studied the effect of the sowing density in the rows of different varieties of sorghum x sudangrass hybrids on the green mass productivity in milky-wax maturity stage for production of silage.

In the conditions of drought during 2008 and 2009 the sowings with higher density form higher yields, and the distribution of rainfalls is of significant importance for the more favorable structure of the yield.

The tested varieties and hybrids have a high productive potential for stable yields in the conditions of more often appearing deviations from the climatic norms.

14.

Journal of Mountain Agriculture on the Balkans, vol. 14, 3, 2011, (564-575)
Research Institute of Mountain Stockbreeding and Agriculture Troyan

ПРОДУКТИВНОСТ НА НОВИЯ СОРТ СУДАНКА „ЕНДЖЕ-1"

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PRODUCTIVITY OF THE NEW SUDANGRASS VARIETY ENDJE-1

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РЕЗЮМЕ

Представени са резултатите от изпитванията на суданкови произходи, проведени през 2007-2010 г. в опитните полета на Земеделски институт - Шумен и на ИАСАС. Значителните разлики в агроклиматични фактори в годините на нашето изследване позволяват надеждна оценка на продуктивния потенциал и на адаптивността на новия сорт «Ендже-1» в условия на изключителни отклонения от нормата.

Резултатите потвърждават високо продуктивния потенциал на новия сорт в условията на по-чести екстремни отклонения от агро-климатичните норми. По време на изпитванията на ИАСАС на 4 пункта в страната, през 2007 г. бе реализиран среден добив зелена маса 61.8 t/ha, а през 2008 г. – 71.7 t/ha, със сравнително висок добив суха маса. В нашите изпитвания през 2009-2010 г. добивът на зелена маса от два откоса във фаза цъфтеж на «Ендже-1» бе 60 – 76.7 t/ha. От три откоса във фаза на изметляване новият сорт реализира общ добив зелена маса от 98.9 t/ha., както и добив суха маса от 33.6 t/ha.

Установено е, че новият сорт суданка „Ендже-1» не отстъпва по

SUMMARY

The results of tests of sudangrass varieties, conducted in 2007-2010 on the experimental fields of Agricultural Institute – Shumen and of IASAS, have been presented.

The significant differences in the agro-climatic factors of the years of our study allow reliable assessment of the productive potential and the adaptability of Endje-1 in conditions of extreme deviations from the norm.

The results confirm the high productive potential of the new variety in conditions of more often going extreme deviations from the agro-climatic norms. In the tests of IASAS on 4 locations in the country, in 2007 is realized an average green mass yield of 61.8 t/ha, and in 2008 – 71.7 t/ha, with relatively high dry mass yield.

In our tests during 2009-2010 the green mass yield from two swaths in flowering stage of Endje-1 is 60 – 76.7 t/ha.

From three swaths in the stage of brooming the new variety realizes a total green mass yield of 98.9 t/ha, and dry mass yield of 33.6 t/ha.

The conclusion is that the new sudangrass variety Endje-1 does not fall

15.

Conservation of Population of *Spiraea crenata* (Rosaceae) in Bulgaria Applying Methods for Micropropagation

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Spiraea crenata is one of the rarest plant species in Bulgarian flora. It is included in the Bulgarian Biodiversity Act, the Red List of Bulgarian vascular plants and the Red Book of Bulgaria as 'Critically Endangered'. The species grows on dry, stony, calcareous places and is a typical element of the relic Ponto-Sarmatic deciduous thickets. The only known population in Bulgaria is along Kamenitsa River, Kanyona locality, 2 km from Kaspichan railway station, Shumen district. It covers a small area (*ca.* 0.25 ha), and consists of only 33 shrubs flowering every year. Trimming of shrubs along to the railway line, grazing, pollution with pesticides in the area, low seed reproduction and adherence to specific habitat are the main threats.

A procedure for proclamation of a protected site 'Kanyona' for preservation of the population of *Spiraea crenata* in the framework of the project 'A pilot network of small protected sites for plant species in Bulgaria using the Plant Micro-reserve model' supported by the EU's financial instrument for environmental and nature conservation LIFE is started. In order to increase the numbers of individuals and to improve the state of the population an investigation on the capacities of micro-propagation of *Spiraea crenata in vitro* and *in vivo* is carried out in the period 2009-2011. The optimal period for development of plants – the phase of buds formation, appropriate for detaching of apical meristem is defined. Conditions for sterilization and cultivation of explants for effective direct regeneration are optimized. Modifications of substrates according to Lepoavre's and Murashige & Skoog's protocol are used. As a result an effective method for propagation of *Spiraea crenata* is developed.

In the spring of 2012 fifteen plantlets were planted out into the only known population of the species in Bulgaria. Ten individuals are kept in the *ex situ* collection of IBER-BAS, whereas the remaining ones are growing in the glasshouse of AI, Shumen.

The study is financially supported by the project LIFE08NAT/BG/279 'A pilot network of small protected sites for plant species in Bulgaria using the Plant Micro-reserve model'.

16.

Macedonian Journal of Animal Science, Vol. **2**, No. 1, pp. 59–61 (2011)
In print ISSN 1857 – 6907
On line ISSN 1857 – 7709
UDC: 633.412 (497.2)
Short communication

078
Received: July 20, 2009
Accepted: November 17, 2009

PRESLAV VARIETY – NEW ACHIEVEMENT OF THE BULGARIAN FODDER BEET BREEDING

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The aim of the publication is to acknowledge the scientific community and the agrarian business with the morphological and productive qualities of the new fodder beet variety Preslav. It is preliminary tested in the experimental fields of the Agricultural Institute – Shumen (2000–2003) in non-irrigation conditions on carbonic black soil. It is compared with the group standard of the semi-sugar beet hybrid Pliska and the fodder beet variety Tamara (Germany) in the three years trials of IASAS and certified in 2008. During the period of testing the mean exceeding over the group standard of the dry matter yield of Preslav is 9.2%. Characteristic for the root is the fading tail part of the root. The root form is conical. The variety Preslav is a multigerm population and the dry matter content in the roots is 8.6 to 16%.

17.

Scientific Papers. Series A. Agronomy, Vol. LVI, 2013
ISSN 2285-5785; ISSN CD-ROM 2285-5793; ISSN Online 2285-5807; ISSN-L 2285-5785

DYNAMICS OF BIOMASS GROWTH AND DRY MATTER ACCUMULATION IN SUDANGRASS AND SORGHUM X SUDANGRASS HYBRIDS

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Abstract

It has been studied the growth of biomass and the dry matter accumulation during the stages of brooming, flowering, milky-wax maturity and technical maturity of Sudangrass and Sorghum x Sudangrass hybrids. The tests were performed in the Agricultural Institute – Shumen, Bulgaria during 2010 and 2011. The parameters of development and the intensity of dry matter accumulation were determined by biometrical analysis.
The vegetation rainfalls have the biggest effect on the productivity of the Sudangrass and its hybrids. The development of Sorghum and Sudangrass is strongly affected by the vegetation temperature sum.Theshortened vegetations due to the extreme agroclimatic deviations are compensated by intensive dry matter accumulation.
The parameters of biomass and dry matter accumulation are manifested with different levels depending on the genotype, as with the Sorghum x Sudangrass hybrids the high productivity is combined with intensive dry matter accumulation.

18.

Scientific Papers. Series A. Agronomy, Vol. LVI, 2013
ISSN 2285-5785; ISSN CD-ROM 2285-5793; ISSN Online 2285-5807; ISSN-L 2285-5785

ANALYSIS OF THE GREEN MASS YIELD'S STRUCTURE OF SUDANGRASS AND SORGHUM X SUDANGRASS HYBRIDS

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Abstract

Analysis of the green mass yield's components of Sudangrass and Sorghum x Sudangrass hybrids was made, the yield obtained by mowing in brooming and flowering stages during 2010-2011.The results of the tests confirm the high productivity potential of the sorghum-sudangrass hybrids in conditions of optimum soil's water reserve and temperatures during the vegetation. The sorghum-sudangrass hybrids show excellent adaptive potential in conditions of more often going extreme deviations from the agro-climatic norms. The total and the relative productivity in the separate swaths does not differ substantially in the brooming and the flowering stages. The lack of enough moisture reflects most significantly on the productivity in the later swaths and on the intensity of dry matter accumulation. The agroclimatic conditions do not affect the favourable leaf part in the green mass.

19.

AGRICULTURAL SCIENCE AND TECHNOLOGY, VOL. 5, No 1, pp 50 - 52, 2013

Influence of the variety and sowing rate on the green mass productivity of Sudan grass and Sorghum x Sudan grass hybrids

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Abstract. *The influence of the in-row sowing rate for different varieties of Sudan grass and Sorghum x Sudan grass hybrids on the green mass productiveness in brooming stage was studied in 2010–2011. In significantly differing agro-climatic conditions of the two years the denser sowings form higher yield of green and dry mass, and the rainfalls distribution has a significant importance for the more favorable yield structure. The tested varieties and hybrids have high productive potential for stable yields of green mass in conditions of extreme deviations from the agro-climatic norms.*

20.

AGRICULTURAL SCIENCE AND TECHNOLOGY, VOL. 5, No 1, pp 22 - 24, 2013

Assessment of initial material for stevia (*Stevia rebaudiana B.*) breeding

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Abstract. *There is an increased interest in growing stevia (Stevia rebaudiana Bertoni) as a source of natural, non-caloric sweeteners in recent years. In the 1980's, in the former Sugar beet Institute near Shumen our researches on the introduction and growth of stevia have been carried and the optimal technological conditions and in vitro propagation methods have been established. In the present research some results are given of the assessment of origins made in 2011 as initial material for breeding. The productiveness of fresh mass of the whole plants, dry matter after drying, yield as a ratio between dry leaves weight and the fresh mass, the height, the number of shoots or nodes and the percentage of plants with visible signs of Alternaria and Fusarium diseases have been measured.*

21.

Аграрен университет – Пловдив *АГРАРНИ НАУКИ* *Година VII* *Брой 18* *2015*

РЕЗУЛТАТИ ОТ СЕЛЕКЦИЯТА НА СУДАНКА, СОРГО-СУДАНКОВИ ХИБРИДИ И ЗАХАРНО СОРГО ЗА ПРОДУКТИВНОСТ НА ЗЕЛЕНА МАСА
RESULTS OF BREEDING SUDANGRASS, SORGHUM-SUDANGRASS HYBRIDS AND SWEET SORGHUM FOR GREEN MASS PRODUCTIVITY

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Tzvetan Kikindonov*, Kalin Slanev, Stanimir Enchev, Georgi Kikindonov

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Agricultural Institute – Shumen

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Abstract

The increasing tendency of extreme deviations from the agro-climatic norms has enforced the search of alternative forage crops. Sorghum and sudangrass show high productive potential for the accumulation of green and dry mass under the conditions of water and temperature stress.

Effective breeding of segregating populations of F_2-F_5 progenies for the isolation of genotypes with improved productivity indices and for the enrichment of the gene-pool of pollinators for the creation of new sorghum x sudangrass hybrids has been realized. As a result the sudangrass variety *Endje* was bred and certified.

The influence of the genotype and the agro-climatic conditions on the productive potential of standard varieties such as *Verkor, Susu, Super Sweet, Endje* and *Yantar* was studied as well as on populations and sorghum x sudangrass hybrids, part of the breeding program of the Agricultural Institute – Shumen.

The great variety of grain and sweet sorghum forms, sudangrass and their hybrids of the breeding program of Agricultural Institute – Shumen widens the basis for selection of genotypes adapted to the actual conditions, allowing the harvest of green mass at different stages of the crop development during vegetation.

22.

AGRICULTURAL SCIENCE AND TECHNOLOGY, VOL. 8, No 2, pp 107 - 110, 2016
DOI: 10.15547/ast.2016.02.018

Genetics and Breeding

Economical qualities of crosses between doubled haploid sugar beet lines

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(Manuscript received 14 May 2016; accepted for publication 23 June 2016)

Abstract. *The gynogenesis of isolated in vitro ovules is a basic method for the receipt of haploid plants and doubled haploid forms of sugar beet. The application of the induced haploidy is an excellent possibility for enrichment of the sugar beet gene fund and allows accelerated creation of highly homozygous and genetically stable lines. Ten years field tests were conducted on the experimental fields of Agricultural Institute – Shumen to study the practical value of dihaploid monogerm and multigerm lines for the hybrid breeding of sugar beet. All the tested dihaploid lines formed higher root yields than their initial lines, maintained by classical methods. The monogerm dihaploid 150-4 and the multigerm tetrahaploid 48 combined that with proven higher sugar content. The diploid hybrids of the monogerm dihaploid 150-4 and the multigerm dihaploid 58 lines realized the highest white sugar yields, significantly higher than the yield of the Standard varieties. The triploid hybrids of the monogerm dihaploid lines 54-4 and 150-4 and of the multigerm tetrahaploid 55 pollinator gave the highest white sugar yields, and could be presented to the State Agency for tests and certification as new Bulgarian sugar beet varieties.*

23.

Journal of Mountain Agriculture on the Balkans, vol. 19, 4, 2016, (211-219)
Research Institute of Mountain Stockbreeding and Agriculture, Troyan

Стела – първият български сорт стевия (*Stevia rebaudiana* B.)

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Stela – the first Bulgarian variety of stevia (*Stevia rebaudiana* B.)

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Agricultural Institute of Shumen, 9700 Shumen, Bulgaria

РЕЗЮМЕ

Новият сорт от растението стевия (*Stevia rebaudiana* B.) е диплоидна популация от линията С-204. Сортът е изпитван през периода 2013-2015г. в системата на ИАСАС и е утвърден със заповед № РД 12-5/07.04.2016г. на Министъра на земеделието и храните на Р. България. „Стела" представлява изправен много стъблен храст с 2-6 основни стъбла и разклонения до трети порядък. Височината на растенията варира от 60 до 90 cm. Формата на храста е пирамидално цилиндрична. Листата са интензивно зелени, спираловидно разположени. Проведените изследвания в Земеделски институт - Шумен показват, че добивът на суха маса листа е над 250 kg/da и общото съдържание на сладки вещества – 11-13 g/100g .

Ключови думи: стевия, диплоид, сорт, добив

SUMMARY

The new variety of the stevia plant (*Stevia rebaudiana* B.) is a diploid population of the C-204 line. The variety is tested during the period between 2013 and 2015 in the system of IASAS and was approved by Ordinance № RD 12-5/07.04.2016 by the minister of Agriculture and Foods of the Republic of Bulgaria. Stella is a multi-stem upright bush with 2-6 main stems and branches to the third order. The height of the plants varies from 60 to 90cm. The shape of the bush is cylindrical pyramid. The leaves are intensely green and spirally arranged. The studies carried out in Shumen Agricultural Institute have shown that the yield of dry mass leaves is over 250 kg/da and the total content of sugary substances – 11-13 g/100g.

Key words: stevia, diploid, variety, yield

24.

НАЦИОНАЛЕН ЦЕНТЪР ЗА АГРАРНИ НАУКИ
NATIONAL CENTRE FOR AGRARIAN SCIENCES
РАСТЕНИЕВЪДНИ НАУКИ, **42**, 212-217
PLANT SCIENCE, **42**, 212-217
София, 2005, Sofia

2

ИЗПИТВАНЕ НА СОРТОВЕ, ХИБРИДИ И ИНДИВИДУАЛНИ КРЪСТОСКИ ОТ СОРГО ЗА ЗЪРНО

ЦВЕТАН КИКИНДОНОВ, СИМЕОН КРЪСТЕВ, КАЛИН СЛАНЕВ
Земеделски институт, 9700 Шумен

Резюме: *Благодарение на високата си сухоустойчивост и пластичност соргото за зърно е с повишено стопанско значение при зачестилите екстремни засушавания. В Земеделския институт в Шумен, в рамките на проект за селекция на сорго, са изпитани широк набор от сортове и хибриди и са оценени индивидуалните кръстоски на фертилни произходи с мъжкостерилни линии. При подходящ набор от хибриди и правилна агротехника се получават високи добиви фуражно зърно. Оценката на кръстоските позволява отбора на опрашители и създаването на хибриди на мъжкостерилна основа.*
Ключови думи: *сорго, хибриди, добиви, оценка*

25.

НАЦИОНАЛЕН ЦЕНТЪР ЗА АГРАРНИ НАУКИ
NATIONAL CENTRE FOR AGRARIAN SCIENCES
РАСТЕНИЕВЪДНИ НАУКИ, **42**, 231-234
PLANT SCIENCE, **42**, 231-234
София, 2005, Sofia

ПОДОБРЯВАНЕ НА СТОПАНСКИТЕ КАЧЕСТВА НА ПРОИЗХОДИ КРЪМНО ЦВЕКЛО

ГЕОРГИ КИКИНДОНОВ, ЦВЕТАН КИКИНДОНОВ
Земеделски институт, 9700 Шумен

Резюме: *Съвременните сортове кръмно цвекло са хибриди на кръмни опрашители с мъжкостерилни линии захарно цвекло. Ниският процент сухо вещество и формата и разположението в земята на кореноплодите, които възпрепятстват механизираното им прибиране, ограничава самостоятелното използване на кръмни форми.*
Използувани са схеми на хибридизация с опрашители захарно цвекло и индивидуален отбор за повишаване на съдържанието на сухото вещество и подобряване формата на кореноплодите. В резултат са отбрани кръмни форми с оптимален баланс за добив на кореноплоди и сухо вещество, близки до тези на стандартния полузахарен сорт "Плиска" и с опростена схема на възпроизводство
Ключови думи: кръмно цвекло, сухо вещество, полузахарни хибриди

26.

НАЦИОНАЛЕН ЦЕНТЪР ЗА АГРАРНИ НАУКИ
NATIONAL CENTRE FOR AGRARIAN SCIENCES
РАСТЕНИЕВЪДНИ НАУКИ, **43**, 189–192
PLANT SCIENCE, **43**, 189–192
София, 2006, Sofia

НОВ СОРТ ЗАХАРНО ЦВЕКЛО – КОМ

ГЕОРГИ КИКИНДОНОВ, ЦВЕТАН КИКИНДОНОВ
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Резюме: *Новият сорт захарно цвекло Ком е едносеменен триплоиден хибрид, получен при кръстоска на диплоидна едносеменна линия 9337 с тетраплоидния многосеменен опрашител М 985. Семената са с добра лабораторна и полска кълняемост. Характерни за сорта са дружното поникване и бързият темп на развитие в началото на вегетацията.*
Формира по-висок от стандартния добив кореноплоди – 5471 kg/da през години с наднормени вегетационни валежи и 4664 kg/da през годините с воден дефицит (2000 – 2001 г.). Стабилно високият добив е съчетан с отлични качествени показатели – значително по-висока захарност и по-ниско съдържание на разтворима пепел от тези на груповия стандарт от районирани сортове, и по-висок рандеман. В резултат на това, добивът на бяла захар от единица площ от новия сорт Ком е значително по-висок от добива на стандартните сортове през годините на изпитването и достига до 647 kg/da в тестовете на ИАСАС на поливни условия.
Сортът проявява висока устойчивост към церкоспороза, устойчив е към брашнеста мана, фомоза, вирусна жълтеница и загниване на кореноплодите.
Ключови думи: *захарно цвекло, хибрид, рандеман, добив на бяла захар*

27.

СЕЛСКОСТОПАНСКА АКАДЕМИЯ
AGRICULTURAL ACADEMY
РАСТЕНИЕВЪДНИ НАУКИ, **45**, 189–192
PLANT SCIENCE, **45**, 189–192
София, 2008, Sofia

2

ХИБРИД 56 – НОВ СОРТ ПОЛУЗАХАРНО ЦВЕКЛО

ГЕОРГИ КИКИНДОНОВ, ЦВЕТАН КИКИНДОНОВ
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Резюме: *Новият сорт полузахарно цвекло Хибрид 56 е едносеменен триплоиден хибрид, получен при кръстоска на дихаплоидна едносеменна линия 19–66 с тетраплоидния многосеменен кръмен опрашител SKR. Хибридът притежава високия добив кореноплоди на кръмното цвекло и положителните стопански качества на захарното цвекло – едноплодност, повишено съдържание на сухо вещество, устойчивост към стрелкуване и болести, изравненост на кореноплодите по форма и разположение в почвата.*
Формира по-висок от стандартния добив кореноплоди – 5038 kg/da в години със силно изразен воден дефицит, а през години с нормални вегетационни валежи – 6578 kg/da. Стабилно високият добив е съчетан със значително повишено съдържание на сухо вещество. Добивът на сухо вещество от единица площ от Хибрид 56 е значително по-висок от добива на стандартните сортове през годините на изпитването – 922 kg/da, и достига 1156 kg/da в тестовете на ИАСАС на поливни условия.

28.

СЕЛСКОСТОПАНСКА АКАДЕМИЯ
AGRICULTURAL ACADEMY
РАСТЕНИЕВЪДНИ НАУКИ, 45, 573–576
PLANT SCIENCE, 45, 573–576
София, 2008, Sofia

САША – НОВ СОРТ КРЪМНО ЦВЕКЛО

ЦВЕТАН КИКИНДОНОВ*, ГЕОРГИ КИКИНДОНОВ, ИЛИЯ УЧКУНОВ, КУЛКА УЧКУНОВА
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Резюме: Новият сорт кръмно цвекло „Саша" е многоплоден тетраплоид, създаден след индивидуален отбор в кръмния произход SKR. Притежава висока продуктивност при повишено съдържание на сухо вещество. Характеризира се с много добра изравненост на кореноплодите по цвят, форма и разположение в почвата. Сортът не стрелкува през първата година от вегетацията и е със сравнително добра устойчивост към гъбните болести брашнеста мана и церкоспороза, устойчив е към гниене – позволява добро съхранение и изхранване на животните през есенно-зимния период. Саша формира по-висок от стандартния добив кореноплоди – от 52,340 t/ha в години със силно изразен воден дефицит, до 108,590 t/ha през години с достатъчно вегетационни валежи. Стабилно високият добив е съчетан със значително повишено съдържание на сухо вещество. Добивът на сухо вещество от единица площ от „Саша" е по-висок от добива на стандартните сортове през годините на изпитването – 10,706 t/ha. С тези си характеристики новият сорт Саша отговаря напълно на изискванията на интензивните технологии за отглеждане и пълноценно хранене на селскостопанските животни.

29.

СЕЛСКОСТОПАНСКА АКАДЕМИЯ
AGRICULTURAL ACADEMY
РАСТЕНИЕВЪДНИ НАУКИ, 45, 531–534
PLANT SCIENCE, 45, 531–534
София, 2008, Sofia

ПРОДУКТИВНОСТ И ХИМИЧЕН СЪСТАВ НА ЗЪРНОТО ПРИ СОРТОВЕ СОРГО

ЦВЕТАН КИКИНДОНОВ*, КАЛИН СЛАНЕВ
Земеделски институт, 9700 Шумен

Резюме: Проучени са продуктивността и химичният състав на зърното от сортове сорго за зърно. Изпитването е проведено в Земеделския институт в Шумен през периода 2002–2006 г. В него са включени 16 сорта с различни срокове на узряване. Със стабилна продуктивност се проявяват средноранните Verdon, Queras, Sevanes и EGS 241 (Tramontane). При условия на обилни валежи и удължена вегетация се проявява високият продуктивен потенциал на късните сортове Bianko, Tx 96254, Alba и Gold. Съдържанието на суров протеин е от 8,32% за 110 IR 218 до 10,98 за Bianko. Изпитваните сортове и хибриди сорго са с добри хранителни качества на зърното и дават стабилни при различни климатични условия добиви.

30.

СЕЛСКОСТОПАНСКА АКАДЕМИЯ
AGRICULTURAL ACADEMY
РАСТЕНИЕВЪДНИ НАУКИ, **45**, 140–143
PLANT SCIENCE, **45**, 140–143
София, 2008, Sofia

ОЦЕНКА НА СЕЛЕКЦИОННИ ФОРМИ ЦВЕКЛО ПО РЕАКЦИЯТА ИМ КЪМ НЯКОИ ПРИЧИНИТЕЛИ НА БОЛЕСТИ

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Резюме: *През периода 1998–2004 г. в опитното поле на Земеделския институт, Шумен е извършена оценка на селекционни форми цвекло към брашнеста мана, церкоспороза, фомоза, кореново гниене и жълтеница. Оценкта е извършена при полски условия на изкуствен инфекциозен фон за церкоспороза и фомоза и при естествено развитие за причинителите на брашнеста мана, жълтеница и кореново гниене. За целта са заложени опити по блоковия метод, в 4 повторения. Отчитането е извършено по прилагани в института скали (Върбанов, 1985).*
В изпитването са включени индивидуални самоопрашени потомства от 3 диплоидни и 3 тетраплоидни опрашители, 14 сорта и хибриди захарно цвекло. От кръмното цвекло са изпитани 3 хибрида и един сорт.
Установено беше че, най-добра устойчивост към церкоспороза са проявили линиите захарно цвекло – 46 R и 43А 3; най-добра устойчивост към брашнеста мана са проявили материалите захарно цвекло сорт Раднево и Хибрид ИК-1252, като проявяват устойчивост и към фомоза; от селекционните материали кръмно цвекло с най-добра устойчивост към болести е сорт Тамара, а Хибрид 5б е с проявена устойчивост към брашнеста мана.