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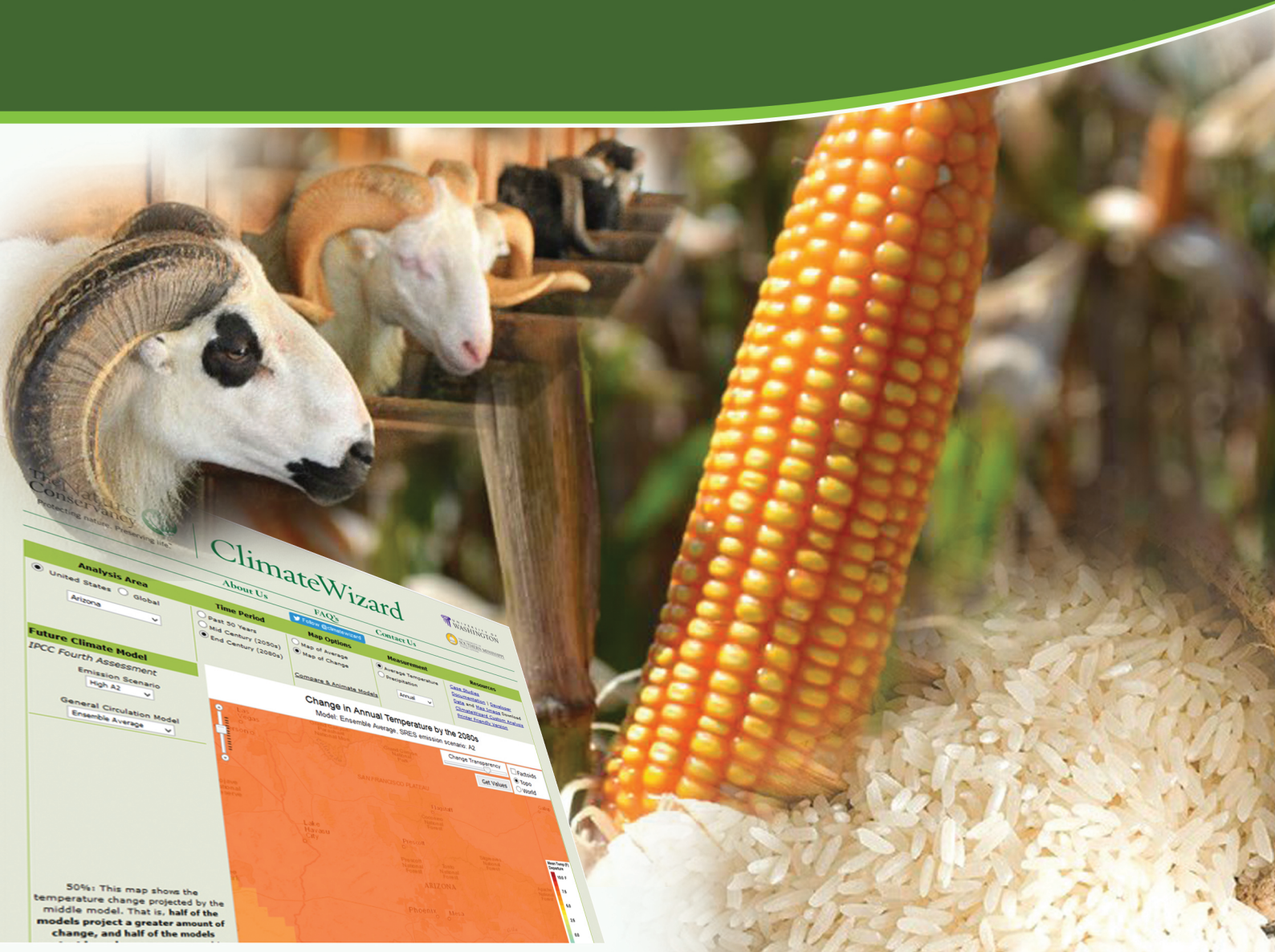

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KATA PENGANTAR

Jurnal Informatika Pertanian vol. 26 nomer 1 ini merupakan versi cetak dari edisi pertama yang diterbitkan secara on-line. Dalam edisi ini diterbitkan 6 artikel hasil penelitian.

Artikel pertama terkait dengan pemanfaatan Pigmen Karoten dan Xantofil Mikroalga *phorphyridium Crunetum* sebagai antioksidan pada domba. Meskipun meggunakan metode statistika yang sederhana, penelitian ini mampu menujukkan bahwa pemberian pigmen karoten maupun xantofil terhadap sel darah merah domba yang mengalami stres oksidatif dapat menurunkan kadar *malondialdehyde* dan meningkatkan aktivitas *superoxide dismutase*.

Artikel kedua menganalisis curahan kerja rumah tangga petani pada usaha tani. Analisis dilakukan dengan menggunakan model regresi linear berganda dan pendugaan parameter dilakukan dengan metode kuadrat terkecil dua tahap. Hasil analisis menunjukkan kegiatan nonpertanian berperan penting bagi perekonomian perdesaan, terutama terhadap rumah tangga petani padi.

Analisis dalam penelitian agroklimat seringkali menggunakan data time series panjang dan beragam serta melibatkan model-model simulasi yang kompleks. Untuk dapat menghasilkan informasi dengan cepat, tepat, dan akurat dibutuhkan perangkat lunak (*software*) komputer. Penggunaan *open source software* (OSS) akan mengatasi masalah keterbatasan biaya untuk membeli *software* berlisensi. Artikel ketiga dalam edisi ini membahas pemanfaatan OSS pengolah data dan statistik yaitu perangkat "R" dalam penelitian agroklimat.

Dalam pembentukan padi hibrida, prediksi daya gabung dan heterosis merupakan hal yang sangat penting. Penggunaan model linear untuk percobaan yang dirancang secara khusus sangat membantu dalam memprediksi daya gabung dan heterosis tersebut. Artikel keempat pada edisi ini membahas hasil pendugaan daya gabung dan heterosis tersebut dengan melakukan analisis ragam terhadap model linear tersebut.

Artikel kelima terkait dengan penggunaan sistem dinamik dalam menganalisis ketersediaan jagung nasional. Pendekatan sistem dinamik ini merupakan alternatif dari penggunaan statistika dalam penarikan kesimpulan. Hasil analisis menunjukan Indonesia belum mencapai swasembada jagung dan memerlukan kebijakan yang komprehensif untuk mencapai tujuan tersebut.

Artikel terakhir dalam edisi ini adalah penggunaan rancangan petak terbagi dalam perbaikan metode produksi benih hibrida. Aplikasi asam giberalik dan rasio tetua yang tepat diharapkan dapat meningkatkan produksi benih hibrida.

Semoga artikel yang disajikan pada edisi ini bermanfaat bagi kemajuan ilmu pertanian di Indonesia.

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The Ability of Pigments Carotene and Xantophyll Porphyridium cruentum as Antioxidant on Sheep Red Blood Cells

Ni Wayan Sri Agustini

Juni 2017. Vol 26 No. 1.p 1-12

ABSTRACT

Xanthophyll and carotene is a carotenoid group that has potential as an antioxidant and has been reported carotenoids can be synthesized by microalgae P. cruentum. This study aimed to test the potential carotene and xantofil of P. cruentum as an antioxidant, by measuring of malondialdehyde (MDA) and superoxide dismutase (SOD) on sheep red blood cells by oxidative stress. Measurement of MDA using the thiobarbituric acid reactive substance (TBARS) which is based on the reaction between two molecules of TBA with one molecule under acidic conditions. SOD activity measurements with Adenochrom Assay method that is based on the ability of SOD inhibits autooxidation of epinephrine under alkaline conditions. Concentration of carotene used is 0.6; 6; 60 mg/mL and a positive control (vitamin E), while the concentration of xantophyl was 0.8; 8; 80 mg/mL and a positive control (vitamin C).The results showed that MDA levels in sheep red blood cells given carotene pigment were 0.78 ± 0.02 nmol/ml (0.6 µg/mL); 0.34 ± 0.04 nmol/mL (6 µg/mL); 0.15 ± 0.04 (60 µg/mL), and those given xantophyll pigment were 0.64 ± 0.04 nmol/mL (0.8 µg/ml); 0.6 ± 0.06 nmol/mL (8 µg/mL); 0.52 ± 0.04 nmol/mL (80 µg/mL).While the activity of SOD on sheep red blood cells given carotene pigment are 31.53 ± 1.98 unit/mL (0.6 µg/mL); 39.16 ± 1.2 (6 µg/mL); 48.1 ± 0.46 unit/mL (60 µg/mL) and given xantophyll pigment of 29.17 ± 1.2 unit/mL (0.8 µg/ml); 37.32 ± 0.79 unit/mL (8 µg/mL); 42.58 ± 1.2 unit/mL (80 µg/mL). The result of statistical test using SPSS 16 concluded that use of carotene and xantophyllin sheep red blood cell that were given oxidative stress can decrease MDA level and increase the activity of SOD. This proves that carotene and xantophyll pigments of P. cruentumhave the ability as antioxidant.

Keywords : sheep, antioxidant, carotenoid, malondialdehyde, P. cruentum

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Time Allocation Analysis of Rice Farm and Its Impact of Household Farmers Income

Femmi Norfahmi, Nunung Kusnadi, Rita Nurmalina, Ratna Winandi

Juni 2017. Vol 26 No. 1.p 13-22

ABSTRACT

Farmers' household in the village involve in many activities both farming and non-farming activities. This involvement affect the time allocation for farming, which in turn will have impacts to the household income. Therefore, there is a need to study the time allocation pattern of farmers, non-farming job opportunities and other factors that affect the working time allocation, income and farmers' household expenditures. The research question are: (1) how the work flow patterns in the allocation of household farmers in rice production area and why rice productivity is low? (2) whether job opportunities in non farm business influence the flow of work in farming and what factors affect the flow of work, household income and farmers expenditure?. The purpose of this study is to analyze the factors that affect the working time allocation, income, and expenditure of farmers in the rice production area. The research was conducted in Sigi, Central Sulawesi Province on December 2015 – Pebruary 2016, using cross sectional data in the household based economic approach applying a model of simultaneous equations. The results showed that non-farm activities have played important roles in the rural economy, especially domestic rice farmer household. They are not only contribute to household income but also in to working time allocation. In terms of the working time allocation, farmesr do more non-farm activities than paddy farming activities. Male household members'working time allocation is the highest activities compared to the female household members in the farm or non farm. Meanwhile, in terms of income, the contribution to farmers' income from non-farm is greater than from farm. Food consumption is the highest expenditure in the farmer household.

Keyword : household farmers, nonfrm, rice farm, working time allocation

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"R" Open Source Software For Agroclimate Research

Yeli Sarvina

Juni 2017. Vol 26 No. 1.p 23-30

ABSTRACT

Analysis in agro-climate research often uses long and varied time series data and even involves complex simulation models. Software is required to produce information quickly, precisely, and accurately. Agro-climate research is sometime constrained by the availability proprietary software since cost of proprietary/ licensed software is relatively high. Open source software (OSS) is one solution to overcome this constrain whereas OSS can be used freely. This paper discusses the utilization of "R" for agro-climatic research that comprise of available "R" packages for agro-climate research, several studies have applied " R" and advantage of "R" over other statistics software. Nowadays, there are many agro-climate researches and studies have utilized R both for spatial and tabular analysis. R can be used for simple statistical analysis such as variance analysis for experimental research and even for complex climate model. Many "R" packages for agro-climate research have been developed. The "R" capabilities on data management, model simulation, modelling and machine learning are "R" advantages that very useful for current agro-climate research. By using "R" researchers have greater opportunity to explore the historical agro-climate data. "R" should be developed in agro-climate research with existing packages. Researchers can develop new packages from existing packages to solve agro-climate problems and agricultural issues in general.

Keywords : agro-climate, statistic, open source software

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Prediction of Combining Ability and Heterosis in The Selected Parents and Hybrids in Rice (*Oryza Sativa*.L)

Yuni Widyastuti, Nita Kartina, Indrastuti A. Rumanti, Satoto

Juni 2017. Vol 26 No. 1.p 31-40

ABSTRACT

Selection of parents based on their combining ability is an effective approach in hybrid breeding. Four CMS and four restorer lines were crossed in line x tester mating design to obtain 16 F1 hybrids rice. The 8 parental lines and 16 hybrids rice were planted in randomized complete block design with three replications at Kuningan and Muara field station of ICRR during 2012-2013. The results revealed that mean squares for GCA were significant for number of fertile spikelet per panicle, a thousand-grains weight, and 50% days of flowering. Mean squares for SCA were significant for plant height and grain yield. Parental lines exhibited the highest GCA effects for GMJ12A (line) and CRS703 (tester) for grain yield trait and revealed good potential to be used as parents for hybrid rice. Among all the crosses, GMJ6A/CRS707 and GMJ12A/CRS707 showed the greatest positive SCA effects for grain yield and had heterosis over better parent and midparent.

Keywords : GCA, heterosis, hybrid rice, line x tester, SCA

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Analysis of National Corn Availability to Become Self-sufficiency Throught Dynamic Model Approachmen

Sumarni Panikkai, Rita Nurmalina, Sri Mulatsih, Handewi Purwati

Juni 2017. Vol 26 No. 1.p 41-48

ABSTRACT

In Indonesia, corn mainly use as feeds in particular for poultry. Sustainable national corn self-sufficiency is an ideal condition for Indonesia which has the availability natural resources and supporting agro-ecological environment. The gap between supply and demand of corn is still relatively large due to the high demand of corn, especially for feed. To attain national corn self-sufficiency, the Government intervened national corn supply by implementing of the national corn self-sufficiency policy. This study aims to analyze the increase of corn extensification and productivity by dynamic system approach. Validation on the built-in model showed that the model was valid. The simulation results showed that before the implementation of corn self-sufficiency policy Indonesia was unable to achieve self-sufficiency, and, on the other hand, after the policy implementation the simulation result showed that the sustainable corn self-sufficiency is attainable. Model simulation results showed that extensification and productivity improvement strategies (combined scenario of increased extensification and productivity) were able to increase the production of corn to as many as 25.85 million tonnes through extensification increase and 26.69 million tons through productivity increase.

Keywords : corn, self-sufficiency, dynamic model

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Assesment of GA3 and Row Ratio of Parental Lines of HIPA 14 Hybrid Rice Using Split Plot Design

Indria Wahyu Mulsanti, Yuni Widyastuti, Satoto

Juni 2017. Vol 26 No. 1.p 49-56

ABSTRACT

The three lines method in hybrid rice formation has disadvantages in seed production procedure that result in low seed yield. Low levels of natural crosses (outcrossing) is one of the causes of low seed yield in hybrid seed production. GA3 application and proper plant spacing, expected to improve F1 hybrid seed production. An experimentwas designed following the Split Plot design model with three replications. The main plot treatment was doses of GA3 application consist of 0, 200 ppm and 300 ppm. The subplot treatment was plant row ratios of restores and CMS i.e., 2R:8A, 2R:12A; 2R:16A. The material used is parental lines of hybrid variety HIPA 14. The results showed that GA3 application was able to increase plant height of parental lines (CMS and restorer), number of productive tillers, exerted panicle and stigma also outcrossing rate at seed production of HIPA 14. The plant row ratio influenced the plant heigh of CMS lines. Interaction between GA3 and plant row ratio increased plant height of parental lines, exerted panicle, and outcrossing rate.

Keywords : seed production, GA3, planting row ratio, hybrid rice