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Dampak Kebijakan Perdagangan terhadap Pengembangan Industri Biodiesel Indonesia

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Indonesia sedang melakukan upaya pengembangan biodiesel yang bersumber dari minyak sawit dalam kebijakan mandatori biodiesel. Biodiesel adalah sumber energi terbarukan dan rendah emisi. Minyak sawit dan produk turunannya adalah penyumbang devisa negara terbesar pada tahun 2017. Kebijakan perdagangan diperlukan untuk mempercepat pencapaian pengembangan industri biodiesel Indonesia. Penelitian ini bertujuan untuk menganalisis dampak kebijakan perdagangan (pajak ekspor oleh pemerintah Indonesia dan pembatasan impor oleh Uni Eropa) terhadap pengembangan industri biodiesel Indonesia. Analisis menggunakan model ekonometrik dalam bentuk sistem persamaan simultan terdiri dari 27 persamaan struktural dan 9 persamaan identitas yang diestimasi dengan metode Two Stage Least Squares (2SLS) menggunakan data series tahunan 1990–2015. Hasil penelitian memperlihatkan bahwa kebijakan pajak ekspor oleh pemerintah Indonesia maupun larangan impor oleh Uni Eropa berdampak positif bagi perkembangan industri biodiesel Indonesia, namun berdampak negatif terhadap penerimaan devisa Indonesia. Dampak negatif terhadap penerimaan devisa dapat diatasi dengan kebijakan peremajaan kelapa sawit (replanting). Manakala Uni Eropa melakukan pelarangan impor minyak sawit, maka disarankan Pemerintah Indonesia menerapkan kebijakan domestic market obligation dan replanting.

Kata kunci: biodiesel, kebijakan perdagangan, kebijakan mandatori biodiesel, minyak sawit

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Analisis Volatilitas Harga Cabai Keriting di Indonesia dengan Pendekatan ARCH GARCH

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Cabai termasuk komoditas strategis di Indonesia karena harganya volatil sehingga menjadi salah satu penentu utama dinamika inflasi nasional. Untuk itu, pemerintah senantiasa berusaha meningkatkan kemampuannya dalam melaksanakan kebijakan stabilisasi harga cabai. Penelitian ini bertujuan untuk mengkaji volatilitas harga cabai keriting di Indonesia dengan pendekatan ARCH GARCH dan data harga harian cabai keriting periode Januari 2011 hingga Desember 2015. Hasil penelitian menunjukkan bahwa model yang tepat untuk menghitung volatilitas harga cabai keriting adalah ARCH(1). Hasil pendugaan model menunjukkan volatilitas harga cabai keriting rendah dan pergerakan harga hanya dipengaruhi oleh volatilitas pada satu hari sebelumnya, tidak dipengaruhi varian harga, sehingga diperkirakan volatilitas harga cabai keriting di masa datang akan semakin kecil. Volatilitas yang rendah menunjukkan karakteristik waktu permintaan dan penawaran cabai keriting dapat diprediksi. Perubahan harga terjadi bertahap dan dapat diperkirakan. Kebijakan perlindungan petani melalui pembatasan impor cabai menyebabkan penyediaan cabai di dalam negeri menjadi lebih stabil. Kebijakan ini mengurangi risiko penurunan harga secara drastis akibat masuknya cabai impor, sehingga volatilitas harga cabai pada periode 2011–2015 lebih rendah dibandingkan periode sebelumnya. Namun, masih terdapat variasi harga musiman. Oleh karena itu, kebijakan ini perlu diperkuat dengan upaya jaminan sediaan cabai sepanjang musim.

Kata kunci: ARCH GARCH, *Capsicum annum L.*, harga, volatilitas

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Integrasi Pasar dan Pembentukan Harga Cabai Merah di Indonesia

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Cabai merah dipandang sebagai salah satu komoditas strategis di Indonesia, terutama karena harganya

sangat fluktuatif sehingga sering menyebabkan inflasi tinggi. Makalah ini bertujuan untuk membahas integrasi pasar, menentukan pasar acuan, dan pembentukan harga cabai merah dengan menggunakan data harga bulanan periode Januari 2011–Mei 2017. Integrasi pasar cabai merah dianalisis dengan pendekatan kointegrasi Johansen menggunakan Vector Error Correction Model (VECM). Penelitian menunjukkan adanya keterkaitan jangka panjang antara harga di tingkat petani, grosir, dan konsumen. Namun, derajat integrasi pasar secara vertikal tidak cukup kuat. Harga produsen dan harga grosir memengaruhi harga konsumen, ada hubungan kausal satu arah. Harga BBM berpengaruh terbesar terhadap pembentukan harga cabai merah di tingkat konsumen. Secara spasial, Medan adalah pasar acuan (price leader) untuk harga cabai di Indonesia. Oleh karena itu, harus diupayakan agar pasokan cabai merah ke pasar-pasar di Medan selalu tercukupi agar harga cabai merah tidak berfluktuasi secara signifikan.

Kata kunci: *Capsicum annum* L., dekomposisi keragaman, integrasi, kausalitas, VECM

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Analisis Efisiensi Produksi Bawang Merah di Kabupaten Pati dengan Fungsi Produksi Frontier Stokastik COBB-DOUGLAS

Jurnal Agro Ekonomi 2018, Vol. 36, No. 1, hlm. 55-69

Kabupaten Pati termasuk kabupaten di Jawa Tengah yang dipandang prospektif untuk percepatan peningkatan dan diversifikasi wilayah produksi bawang merah. Namun, produksi dan produktivitas bawang merah di Kabupaten Pati tidak stabil dan cenderung turun akhir-akhir ini. Penelitian ini bertujuan untuk mengetahui status dan determinan efisiensi produksi bawang merah tersebut dengan fungsi produksi stokastik frontier Cobb-Douglas. Penelitian dilakukan di tiga kecamatan sentra produksi yaitu Wedarijaksa, Batangan, dan Jaken pada Oktober 2017. Data primer diperoleh dengan mewawancarai 33 orang responden yang dipilih secara stratified sampling. Hasil penelitian menunjukkan bahwa petani bawang merah di Kabupaten Pati sudah efisien secara teknis, namun belum efisien secara ekonomis dan alokatif. Ditemukan dua faktor yang berpengaruh nyata terhadap efisiensi teknis, yaitu lama pengalaman menjadi petani (berpengaruh positif) dan umur petani (berpengaruh negatif). Keanggotaan kelompok tani dan akses penyuluhan berpengaruh positif, namun tidak nyata. Efisiensi dapat ditingkatkan melalui optimalisasi penggunaan input-input produksi, termasuk dengan mengurangi jumlah penggunaan pupuk anorganik, menambah jumlah pupuk organik dan benih, menggunakan benih jenis biji botani, dan menerapkan sistem pengendalian hama terpadu. Peningkatan fungsi penyuluh pertanian dan kelompok tani termasuk strategi untuk meningkatkan efisiensi usaha tani bawang.

Kata kunci: *Allium cepa* L., Cobb-Douglas, efisiensi, pati

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Status dan Determinan Pendapatan Petani Agroforestri di Lingkungan Taman Nasional Gunung Ciremai

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Masyarakat perdesaan di lingkungan Taman Nasional Gunung Ciremai (TNGC) umumnya adalah petani kurang sejahtera yang telah lama menekuni agroforestri turun-temurun. Penerapan teknologi pada sistem usaha tani agroforestri masih sederhana sehingga produktivitas tanaman masih rendah yang berdampak pada rendahnya pendapatan. Berbagai faktor dapat memengaruhi tingkat pendapatan petani agroforestri, sehingga perlu diungkap faktor-faktor yang dapat meningkatkan atau menurunkan pendapatan petani. Penelitian ini bertujuan untuk menganalisis besaran dan determinan pendapatan petani agroforestri di lingkungan TNGC. Penelitian ini dilakukan di Kabupaten Kuningan dan Majalengka, Provinsi Jawa Barat pada bulan Juli sampai Oktober 2017. Data diperoleh dari 310 orang petani yang dipilih berdasarkan cluster random sampling dengan kluster lokasi kelompok tani agroforestri di desa penyangga kawasan TNGC. Data dianalisis menggunakan metode statistik deskriptif dan statistik inferensial regresi. Hasil penelitian menunjukkan bahwa pendapatan petani agroforestri di lingkungan TNGC rendah karena rendahnya kapasitas petani agroforestri, lemahnya dukungan penyuluhan kehutanan, dan lemahnya peran kepemimpinan tokoh informal. Dukungan penyuluhan kehutanan dan peran kepemimpinan tokoh informal perlu ditingkatkan agar petani agroforestri memiliki kapasitas yang memadai dalam meningkatkan pendapatan mereka.

Kata kunci: agroforestri, pendapatan, petani, taman nasional

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Penurunan hingga penghapusan tarif impor untuk semua produk yang diperdagangkan adalah modalitas utama peningkatan akses pasar pada setiap kesepakatan perdagangan internasional. Walau bermanfaat menurunkan harga eceran, penurunan tarif impor dapat berdampak negatif terhadap kinerja usaha tani, kesejahteraan petani, dan industri pengolahan hasil pertanian. Salah satu yang perlu segera diantisipasi ialah penurunan tarif impor gula. Sejalan dengan itu, penelitian ini bertujuan untuk merumuskan bauran kebijakan dukungan domestik yang dapat menetralkan dampak negatif penurunan tarif impor terhadap industri gula Indonesia. Penelitian dilakukan dengan membangun model ekonometrik simulasi kebijakan industri gula Indonesia yang terdiri dari 21 persamaan struktural dan 15 persamaan identitas yang diestimasi menggunakan metode Two Stage Least Square dengan data time series periode 1995 hingga 2016. Hasil analisis simulasi menunjukkan bahwa penurunan tarif impor gula, di satu sisi, berdampak baik karena dapat menurunkan harga gula eceran domestik, namun di sisi lain berdampak tidak baik karena menyebabkan penurunan harga gula petani dan menurunkan produksi gula domestik, meningkatkan impor gula, dan menurunkan ekspor molase. Jika sekiranya terpaksa dilakukan sebagai konsekuensi dari pelaksanaan kesepakatan kerja sama perdagangan internasional maka bauran kebijakan yang disarankan untuk menetralkan dampak negatif penurunan tarif impor gula ialah peningkatan luas areal tanam tebu dan pembangunan pabrik gula baru.

Kata kunci: gula, kebijakan domestik, industri, perdagangan, tarif impor

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Dampak Alokasi Bantuan Modal dan Tenaga Kerja Keluarga terhadap Kesejahteraan Rumah Tangga Petani di Nusa Tenggara Timur

Jurnal Agro Ekonomi 2018, Vol. 36, No. 2, hlm. 113-134

Nusa Tenggara Timur merupakan provinsi dengan prevalensi kemiskinan tertinggi di Indonesia. Salah satu upaya yang dilakukan pemerintah untuk mengatasi kemiskinan di daerah tersebut adalah program bantuan modal kepada rumah tangga petani. Penelitian bertujuan untuk menganalisis dampak alokasi bantuan modal dan tenaga kerja rumah tangga terhadap kesejahteraan rumah tangga petani. Penelitian dilaksanakan pada bulan Februari hingga Juli 2017. Lokasi penelitian meliputi Kabupaten Timor Tengah Selatan dan Kupang Provinsi Nusa Tenggara Timur dengan sampel sebanyak 118 rumah tangga petani. Analisis dilakukan dengan membangun model simulasi ekonometrik berbasis teori ekonomi rumah tangga petani. Hasil penelitian menunjukkan bahwa

peningkatan alokasi bantuan modal untuk usaha ternak menurunkan kesejahteraan, namun peningkatan investasi untuk usaha ternak, alokasi bantuan modal untuk usaha non-pertanian, dan alokasi tenaga kerja keluarga untuk usaha nonpertanian secara tunggal berdampak meningkatkan kesejahteraan rumah tangga petani. Kombinasi terbaik ialah kombinasi peningkatan investasi untuk usaha ternak, alokasi bantuan modal untuk usaha nonpertanian, dan alokasi tenaga kerja keluarga untuk usaha nonpertanian. Peningkatan alokasi tenaga kerja keluarga untuk usaha nonpertanian merupakan kebijakan yang cukup penting karena secara tunggal maupun kombinasi berdampak meningkatkan kesejahteraan rumah tangga petani.

Kata kunci: bantuan modal, kesejahteraan, petani, rumah tangga, tenaga kerja

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Efisiensi Teknis Usaha Tani Bawang Putih Pola Tumpang Sari di Kabupaten Karanganyar, Provinsi Jawa Tengah

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Konsumsi bawang putih di Indonesia terus mengalami peningkatan. Dalam rangka memenuhi permintaan konsumsi maka produksi juga harus meningkat. Salah satu upaya yang dapat dilakukan untuk meningkatkan produksi adalah dengan cara meningkatkan efisiensi. Penelitian ini bertujuan untuk mengetahui faktor-faktor yang memengaruhi produksi, tingkat efisiensi teknis, dan faktor-faktor yang memengaruhi inefisiensi teknis pada usaha tani bawang putih pola tumpang sari di Kabupaten Karanganyar. Penelitian dilakukan pada bulan April 2018. Pengambilan sampel daerah dilakukan dengan metode multistage cluster sampling. Pengambilan sampel petani dilakukan dengan metode simple random sampling, dengan jumlah 60 petani. Analisis faktor yang memengaruhi produksi menggunakan metode OLS, efisiensi teknis menggunakan analisis stochastic frontier dengan metode MLE. Hasil analisis menunjukkan bahwa produksi bawang putih pola tumpang sari di Kabupaten Karanganyar dipengaruhi oleh luas lahan, jumlah benih, dan pestisida cair. Usaha tani bawang putih pola tumpang sari di Kabupaten Karanganyar belum efisien secara teknis. Faktor yang menurunkan inefisiensi teknis adalah umur, pengalaman petani, dan pelatihan. Peningkatan produksi bawang putih di Kabupaten Karanganyar dapat dilakukan dengan penambahan luas lahan, peningkatan penggunaan jumlah benih, dan mengurangi penggunaan pestisida cair. Efisiensi teknis dapat ditingkatkan melalui pemberian pelatihan bagi petani.

Kata kunci: *Allium sativum*, efisiensi, frontier stokastik, tumpang sari

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Efisiensi Teknis Usaha Tani Padi pada Sistem Tanam Jajar Legowo di Kabupaten Lamongan, Provinsi Jawa Timur

Jurnal Agro Ekonomi 2018, Vol. 36, No. 2, hlm. 149-162

Salah satu terobosan teknologi yang saat ini dianjurkan oleh pemerintah untuk meningkatkan produktivitas padi adalah sistem tanam jajar legowo. Kabupaten Lamongan sebagai sentra padi di Provinsi Jawa Timur menjadi salah satu sasaran pemerintah dalam mengembangkan sistem tanam jajar legowo. Namun, nyatanya teknologi ini masih belum banyak diterapkan petani. Adanya teknologi baru diduga dapat berpengaruh terhadap tingkat efisiensi teknis petani karena dapat memengaruhi aspek manajerial petani. Tujuan dari penelitian ini adalah untuk mengetahui tingkat efisiensi teknis usaha tani padi sistem tanam jajar legowo dan mengetahui faktor apa saja yang berpengaruh terhadap tingkat efisiensi teknis usaha tani padi di Kabupaten Lamongan. Penelitian dilakukan menggunakan metode stochastic frontier. Hasil penelitian menunjukkan usaha tani padi sistem tanam jajar legowo memiliki nilai rata-rata tingkat efisiensi teknis lebih tinggi jika dibandingkan dengan usaha tani padi konvensional. Usaha tani padi dengan sistem tanam jajar legowo memiliki rata-rata tingkat efisiensi teknis sebesar 0,95, sedangkan usaha tani padi konvensional memiliki rata-rata tingkat efisiensi teknis sebesar 0,80. Terdapat empat variabel yang berpengaruh signifikan terhadap tingkat efisiensi teknis usaha tani padi, yaitu usia, pengalaman berusaha tani, status lahan, dan tipe teknologi tanam yang digunakan petani (jarwo/konvensional). Disarankan agar dilakukan pelatihan dan penyuluhan secara rutin seperti sekolah lapang sehingga petani termotivasi untuk menerapkan sistem tanam jajar legowo.

Kata kunci: efisiensi teknis, jajar legowo, produktivitas, oriza sativa, stochastic frontier

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Strategi Pengembangan Rantai Pasok Kentang Berkelanjutan di Kabupaten Magetan

Jurnal Agro Ekonomi 2018, Vol. 36, No. 2, hlm. 163-182

Akselerasi pertumbuhan permintaan yang dicerminkan oleh peningkatan nyata konsumsi per kapita mengindikasikan bahwa kentang berpotensi besar untuk dikembangkan di Indonesia. Namun demikian, produksi kentang di Kabupaten Magetan dalam beberapa tahun terakhir ternyata berfluktuasi yang ditengarai akibat dari beberapa kelamahan pada rantai pasok. Sejalan dengan itu, penelitian ini bertujuan untuk merumuskan strategi pengembangan kinerja rantai pasok berkelanjutan untuk kentang di Kabupaten Magetan. Penelitian dilakukan dengan perspektif Sustainable Supply Chain Management dan metode analisis the Analytical Network Process. Penelitian dilakukan pada 2016. Penelitian menunjukkan bahwa pengembangan rantai pasok berkelanjutan adalah kunci untuk akselerasi dan stabilisasi produksi. Dimensi ekonomi merupakan prioritas utama, namun dimensi sosial dan lingkungan hampir sama pentingnya. Pemilihan varietas atau teknologi didasarkan pada keuntungan terbesar, namun juga diterima secara sosial dan ramah lingkungan, seperti varietas Granola di Kabupaten Magetan. Aktor terpenting ialah petani, pemerintah, dan pedagang (pengumpul dan pedagang besar). Program aksi strategis diprioritaskan pada peningkatan kualitas dan produktivitas usaha tani, peningkatan nilai tambah kentang, serta pemberdayaan petani dan kelompok tani.

Kata kunci: Analytic Network Process, kentang, rantai pasok, strategi pengembangan



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The Impact of Trade Policy on Indonesia's Biodiesel Industry Development

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Indonesian government has been promoting development of palm oil based biodiesel industry through the so-called biodiesel mandatory policy. Biodiesel is a renewable energy and low emission. Palm oil and its derivative products are the most important contributors of foreign exchange in 2017. Trade policy is required to accelerate the achievement of biodiesel industry development in Indonesia. The study is intended to analyze the impacts of trade policy (export tax by Indonesian government and import restriction by the European Union) on the development of Indonesia's biodiesel industry. The analysis used econometrics model in the form of simultaneous equations system consisting of 27 structural and 9 identity equations, estimated using the 2SLS (Two Stage Least Squares) method. This research used annual time series data 1991–2015. The result shows that both the export tax policy by Indonesian government and palm oil import ban by European Union have positive impacts on Indonesia's biodiesel industry but do have negative impacts on the foreign exchange revenues. The negative impacts on foreign exchange revenues can be avoided by replanting policy. Whenever the European Union imposes palm oil import ban policy; then, it is suggested that Indonesian government imposes the domestic market obligation and replanting policy.

Keywords: biodiesel, biodiesel mandatory policy, palm oil, trade policy

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Analyzing Curly Chili Price Volatility in Indonesia Using the ARCH GARCH Approach

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Chili includes a strategic commodity in Indonesia because of its high price volatility that makes it a major determinant of national inflation dynamics. The government always tries to improve its capability in implementing the chili price stabilization policy. The objective of the study is to assess the volatility of curly chili price volatility in Indonesia by using the ARCH GARCH approach with daily price data of January 2011 to December 2015. The results showed that the right model to calculate chili price volatility is ARCH(1). The price volatility was low and price movement was only influenced by the volatility in the previous day, not by the price variant, so the chili price volatility in the future will be smaller. Low volatility indicates that demand and supply characteristics were predictable. Price changes gradually and predictable. Farmers' protection policy through import restrictions improves stability of domestic supply. The policy reduces the risk of drastic decline in prices due to imported chili, so the price volatility of chili in the period 2011–2015 was lower than the previous period. However, the seasonal price variation remains. Therefore, the policy should be supported with all season chili availability assurance.

Keywords: ARCH GARCH, Capsicum annum L., volatility, price

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Market Integration and Price Formation of Chili in Indonesia

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Red chili is considered as one of the strategic commodities in Indonesia primary due to its high price volatility and often causes high inflation. This paper is intended to discuss market integration, determine the reference market and price formation of red chili by using monthly price data for the period of January

2011–May 2017. Red Chili market integration was analyzed by Johansen's cointegration approach utilizing the Vector Error Correction Model (VECM). Results show that there are long run integration between prices at farmer, wholesaler, and consumer levels. The vertical integration is, however, not strong. The producer and wholesale prices affect consumer prices, there is a one-way causal relationship. Petroleum price is the largest contributor to chilli price formation at consumer level. Spatially, Medan is the reference market for the price of chili in Indonesia. Therefore, efforts must be made to ensure sufficient red chili supplies for markets in Medan areas so that the price of red chili does not fluctuate significantly.

Keywords: *Capsicum annum* L., causality, integration, variance decomposition, VECM

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Analyzing the Efficiency of Shallot Production in Pati Regency Using the Cobb-Douglas Stochastic Frontier Production Function

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Pati includes the prospective regencies for accelerating the growth rate and area diversification of shallot production in Central Java. However, the shallot production and productivity in Pati were unstable with a decreasing trend in recent years. The objective of this study is to evaluate the status and determinants of the shallot production efficiency using the Cobb-Douglas stochastic frontier production function. The research was conducted in three production centers sub-districts, Wedarijaksa, Batangan, and Jaken, in October 2017. The primary data were collected by interviewing 33 respondents which were selected through the stratified sampling technique. The results indicated that shallot farmers were efficient technically, but not economically and allocatively. Two significant determinants of the technical efficiency were the length of farming experience (positively related) and farmers' age (negatively related). The farmers group membership and access to extension services were not significant, but both have positive effects on technical efficiency. Production efficiency may be increased through inputs use optimization that include reducing of anorganic fertilizer, increasing the quantity of organic fertilizer and seed, using of the true shallot seed and implementation of Integrated Pest Management. Improving the functions of agriculture extensions and farmers' groups should also enhance shallot farming efficiency.

Keywords: *Allium cepa* L., Cobb-Douglas, efficiency, pati

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The State and Determinants of Agroforestry Farmers' Income in the Surrounding Areas of the Gunung Ciremai National Park

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Rural communities in Gunung Ciremai National Park (GCNP) are generally low income farmers. Farms that have long been adopted agroforestry farming systems through inter generation legacy. The existing agroforestry technology applied by the farmers remains the simple traditional technology, so that the crops yields and income are low. Understanding the determinants of farmers' income is useful in formulating the appropriate policy for increasing farmers' income. This study was aimed to analyze the level and determinants of the agroforestry farmers income in GCNP. This research was conducted in Kuningan and Majalengka Regency, West Java Province, in July to October 2017. The data was collected by interviewing 310 agroforestry farmers which were selected using the cluster random sampling technique with clusters consisted of the locations of farmer groups from agroforestry in the GCNP buffer zone. The data was analyzed using descriptive statistics and regression inferential statistics. The results show that the income of agroforestry farmers was low because of low agroforestry farmers' capacity, weak extension support and weak leadership role of informal leaders. Supports of the forestry extension service and informal leaders' leadership roles are needed for enhancing the agroforestry farmers' capacity in increasing their income.

Keywords: agroforestry, farmers, income, national park

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Domestic Support Policies for Neutralizing the Negative Impacts of Import Tariff Reduction on Indonesian Sugar Industry

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Reduction toward elimination of import tariffs for all tradable products is a common modality of international trade agreements. Although it may be beneficial for reducing retail prices, import tariff reduction could create some negative impacts on farming, farmers' welfare, and

agro-processing industries. One of the most immediate impacts to anticipate is import tariff reduction on sugar. Accordingly, this study aims to formulate domestic support policy mix for neutralizing the negative impacts of sugar import tariff reduction on the Indonesian sugar industry. The study is conducted by developing an econometric policy simulation model for the Indonesian sugar industry, consisting of 21 structural equations and 15 identities, estimated by the Two-Stage Least Square method using time series data of 1995–2016. The result shows that sugar import tariff reduction, on one hand, is good because it reduces retail sugar price, but on the other hand, it is bad because it reduces sugar farmer price and domestic sugar production, increases sugar imports, and reduces molasses export. As a consequence of the international agreements, the policy mix suggested for neutralizing the negative impacts of the sugar import tariff reduction should include increasing the planted area of sugar cane crop and construction of new sugar factories.

Keywords: domestic policies, import tariff, industry, sugar, trade

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Impacts of Capital Support and Household Labor Allocation on the Welfare of Farm Households in East Nusa Tenggara

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East Nusa Tenggara is the province with the highest poverty prevalence in Indonesia. One of the government's efforts to overcome poverty in the area is the capital assistance program for farm households. This research aimed to analyze the impacts of capital support and household labor allocation on the welfare of farm households in East Nusa Tenggara. The study was conducted from February to July 2017. The research location covered South Central Timor and Kupang Regencies of East Nusa Tenggara Province with the samples of 118 farmer households. Data analysis was conducted by developing an econometric simulation model based on farm-household economic theory. The results showed that increasing capital aid allocation for livestock business decreased the welfare, but increasing investment for livestock business, allocation of capital support for nonfarm business, and allocation of family labor for nonfarm business in single case had an impact on improving the welfare of farmer's household. The best combination consisted of increasing investment for livestock business, allocation of capital support for nonfarm business, and family labor allocation for nonfarm business. Increasing the allocation of family labor for nonfarm business is an important policy because it singly or in combination had an impact on improving the welfare of farm households.

Keywords: capital support, farmers, household, labor, welfare

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Technical Efficiency of Garlic Farming with Intercropping Pattern in Karanganyar Regency, Central Java Province

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Consumption of garlic in Indonesia continues to increase. In order to meet the growing consumption, production will also have to increase. One effort that can be made to increase production is by increasing efficiency. This study was aimed to determine the factors that influence production, the level of technical efficiency, and the factors that affect technical inefficiency in the intercropping garlic farming in Karanganyar Regency. The study was conducted in April 2018. Regional sampling was done using multistage cluster sampling method. Sampling of farmers was done by simple random sampling method, with a total of 60 farmers. Analysis of factors that influence production using the OLS method, technical efficiency using Stochastic Frontier analysis with the MLE method. Results showed that the production of garlic with intercropping pattern in Karanganyar Regency was influenced by the land, the quantity of seeds and liquid pesticides. Garlic farming with intercropping pattern in Karanganyar Regency was not technically efficient. Factors that reduce technical inefficiency were age, farmer experience, and training. Production of garlic in Karanganyar Regency can be increased by increasing land area, increasing the quantity of seeds, and reduce the quantity of liquid pesticides. Technical efficiency can be improved through providing training for farmers.

Keywords: *Allium sativum*, efficiency, intercropping, stochastic frontier

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Technical Efficiency of Rice Farming with Jajar Legowo Planting System in Lamongan Regency, East Java Province

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Jajar Legowo planting system is one of the most recent technological innovation breakthrough promoted by the Indonesian Government to increase rice farming productivity. Lamongan Regency, as a rice producing

center in East Java Province, is one of the government's targets in developing jajar legowo planting system. However, this technology is still not yet widely implemented by farmers. The existence of new technology is thought to affect the level of technical efficiency of farmers because it can affect the managerial aspects of farmers. The purpose of this study was to determine the level of technical efficiency of rice farming in the jajar legowo planting system and to find out what factors influence the level of technical efficiency of rice farming in Lamongan Regency. The study was conducted using the stochastic frontier method. The results showed that the jajar legowo rice farming system had a higher average value of technical efficiency compared to conventional rice farming. Rice farming with a jajar legowo planting system had an average technical efficiency level of 0.95, while conventional rice farming had an average technical efficiency level of 0.80. There were four variables that had significant effects on the level of technical efficiency of rice farming, namely age, farming experience, land status, and type of planting technology used by farmers (Jarwo/conventional). It is recommended that training and extension be conducted routinely so that farmers are motivated to implement the jajar legowo planting system.

Keywords: jajar legowo, productivity, *oriza sativa*, technical efficiency, stochastic frontier

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Development Strategy of Sustainable Potato Supply Chain in Magetan Regency

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The accelerating demand growth as reflected by significant increase of potato consumption per capita indicates high potential of potato development in Indonesia. Potato production in Magetan Regency in recent years, however, has been fluctuating, perhaps due to some weaknesses in its supply chains. The objective of this study, therefore, is to formulate a sustainable supply chain development strategy for potato in Magetan Regency. The study was conducted using the Sustainable Supply Chain Management perspective and the Analytical Network Process. The study was conducted in 2016. The results show that development of sustainable supply chain is the key for accelerating and stabilization of potato production growth. Although the economic dimension is the highest priority, the social and environmental dimensions are almost equally important as well. While varietal and technological choice should be based on the highest profit, it nevertheless should also be socially acceptable and environmentally friendly, such as the Granola variety in Magetan Regency. The priority actors are farmers, government, and traders (collectors and wholesalers). The priority strategic action programs are increasing potato farming product quality and productivity, increasing potato value added, and empowering of farmers and farmers' groups.

Keywords: Analytic Network Process, potato, supply chain, development strategy