

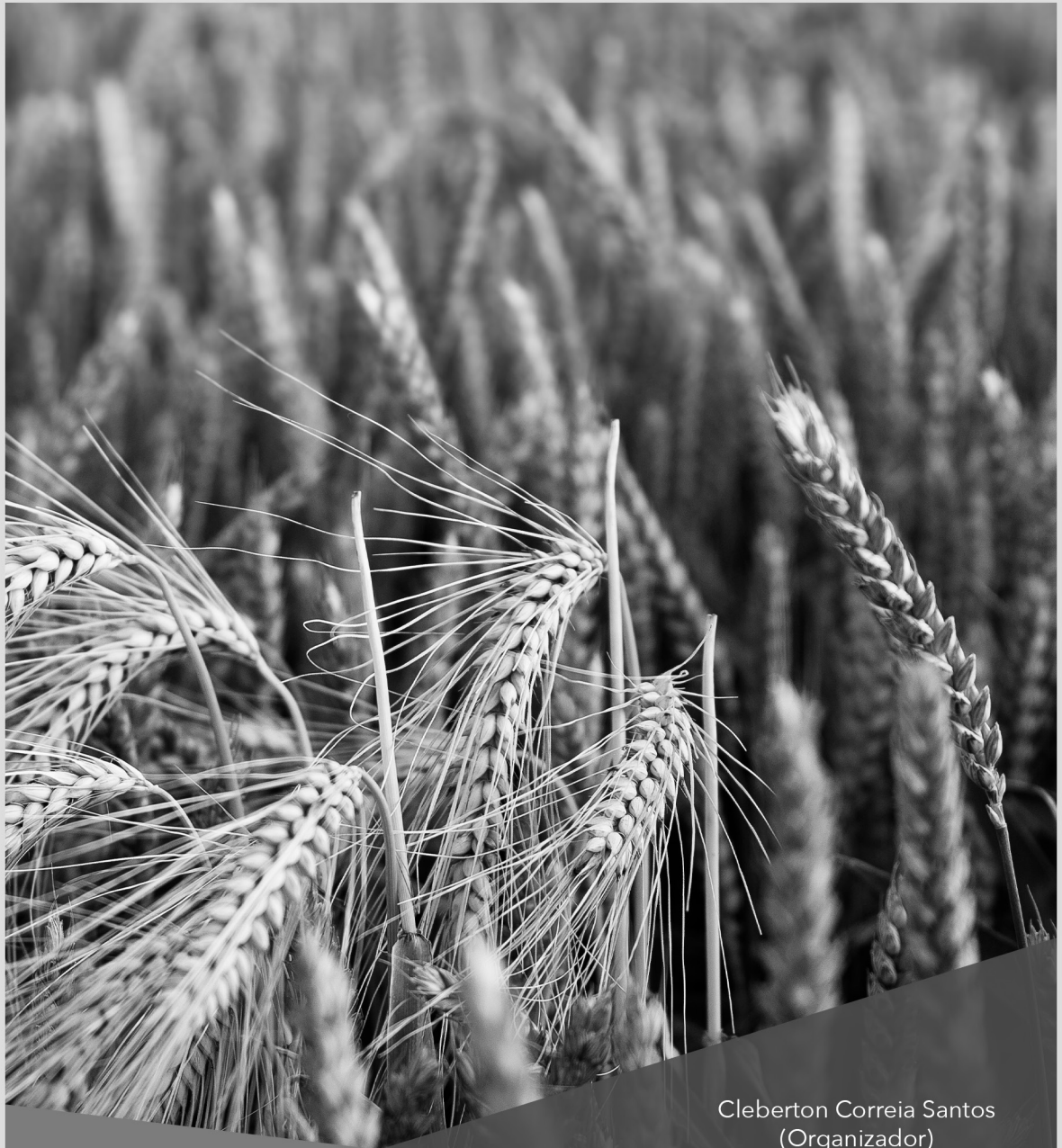


Cleberton Correia Santos
(Organizador)

Resultados Econômicos e de Sustentabilidade nos Sistemas nas Ciências Agrárias

Atena
Editora

Ano 2020



Cleberton Correia Santos
(Organizador)

Resultados Econômicos e de Sustentabilidade nos Sistemas nas Ciências Agrárias

Atena
Editora

Ano 2020

Editora Chefe

Profª Drª Antonella Carvalho de Oliveira

Assistentes Editoriais

Natalia Oliveira

Bruno Oliveira

Flávia Roberta Barão

Bibliotecário

Maurício Amormino Júnior

Projeto Gráfico e Diagramação

Natália Sandrini de Azevedo

Camila Alves de Cremona

Karine de Lima Wisniewski

Luiza Alves Batista

Maria Alice Pinheiro

Imagens da Capa

Shutterstock

Edição de Arte

Luiza Alves Batista

Revisão

Os Autores

2020 by Atena Editora

Copyright © Atena Editora

Copyright do Texto © 2020 Os autores

Copyright da Edição © 2020 Atena

Editora

Direitos para esta edição cedidos à Atena

Editora pelos autores.



Todo o conteúdo deste livro está licenciado sob uma Licença de Atribuição *Creative Commons*. Atribuição 4.0 Internacional (CC BY 4.0).

O conteúdo dos artigos e seus dados em sua forma, correção e confiabilidade são de responsabilidade exclusiva dos autores, inclusive não representam necessariamente a posição oficial da Atena Editora. Permitido o *download* da obra e o compartilhamento desde que sejam atribuídos créditos aos autores, mas sem a possibilidade de alterá-la de nenhuma forma ou utilizá-la para fins comerciais.

A Atena Editora não se responsabiliza por eventuais mudanças ocorridas nos endereços convencionais ou eletrônicos citados nesta obra.

Todos os manuscritos foram previamente submetidos à avaliação cega pelos pares, membros do Conselho Editorial desta Editora, tendo sido aprovados para a publicação.

Conselho Editorial

Ciências Humanas e Sociais Aplicadas

Prof. Dr. Álvaro Augusto de Borba Barreto – Universidade Federal de Pelotas

Prof. Dr. Alexandre Jose Schumacher – Instituto Federal de Educação, Ciência e Tecnologia do Paraná

Prof. Dr. Américo Junior Nunes da Silva – Universidade do Estado da Bahia

Prof. Dr. Antonio Carlos Frasson – Universidade Tecnológica Federal do Paraná

Prof. Dr. Antonio Gasparetto Júnior – Instituto Federal do Sudeste de Minas Gerais

Prof. Dr. Antonio Isidro-Filho – Universidade de Brasília

Prof. Dr. Carlos Antonio de Souza Moraes – Universidade Federal Fluminense
Profª Drª Cristina Gaio – Universidade de Lisboa
Prof. Dr. Daniel Richard Sant’Ana – Universidade de Brasília
Prof. Dr. Deyvison de Lima Oliveira – Universidade Federal de Rondônia
Profª Drª Dilma Antunes Silva – Universidade Federal de São Paulo
Prof. Dr. Edvaldo Antunes de Farias – Universidade Estácio de Sá
Prof. Dr. Elson Ferreira Costa – Universidade do Estado do Pará
Prof. Dr. Eloi Martins Senhora – Universidade Federal de Roraima
Prof. Dr. Gustavo Henrique Cepolini Ferreira – Universidade Estadual de Montes Claros
Profª Drª Ivone Goulart Lopes – Istituto Internazionele delle Figlie de Maria Ausiliatrice
Prof. Dr. Jadson Correia de Oliveira – Universidade Católica do Salvador
Prof. Dr. Julio Candido de Meirelles Junior – Universidade Federal Fluminense
Profª Drª Lina Maria Gonçalves – Universidade Federal do Tocantins
Prof. Dr. Luis Ricardo Fernandes da Costa – Universidade Estadual de Montes Claros
Profª Drª Natiéli Piovesan – Instituto Federal do Rio Grande do Norte
Prof. Dr. Marcelo Pereira da Silva – Pontifícia Universidade Católica de Campinas
Profª Drª Maria Luzia da Silva Santana – Universidade Federal de Mato Grosso do Sul
Profª Drª Paola Andressa Scortegagna – Universidade Estadual de Ponta Grossa
Profª Drª Rita de Cássia da Silva Oliveira – Universidade Estadual de Ponta Grossa
Prof. Dr. Rui Maia Diamantino – Universidade Salvador
Prof. Dr. Urandi João Rodrigues Junior – Universidade Federal do Oeste do Pará
Profª Drª Vanessa Bordin Viera – Universidade Federal de Campina Grande
Prof. Dr. William Cleber Domingues Silva – Universidade Federal Rural do Rio de Janeiro
Prof. Dr. Willian Douglas Guilherme – Universidade Federal do Tocantins

Ciências Agrárias e Multidisciplinar

Prof. Dr. Alexandre Igor Azevedo Pereira – Instituto Federal Goiano
Profª Drª Carla Cristina Bauermann Brasil – Universidade Federal de Santa Maria
Prof. Dr. Antonio Pasqualetto – Pontifícia Universidade Católica de Goiás
Prof. Dr. Cleberton Correia Santos – Universidade Federal da Grande Dourados
Profª Drª Daiane Garabeli Trojan – Universidade Norte do Paraná
Profª Drª Diocléa Almeida Seabra Silva – Universidade Federal Rural da Amazônia
Prof. Dr. Écio Souza Diniz – Universidade Federal de Viçosa
Prof. Dr. Fábio Steiner – Universidade Estadual de Mato Grosso do Sul
Prof. Dr. Fágner Cavalcante Patrocínio dos Santos – Universidade Federal do Ceará
Profª Drª Girlene Santos de Souza – Universidade Federal do Recôncavo da Bahia
Prof. Dr. Jael Soares Batista – Universidade Federal Rural do Semi-Árido
Prof. Dr. Júlio César Ribeiro – Universidade Federal Rural do Rio de Janeiro
Profª Drª Lina Raquel Santos Araújo – Universidade Estadual do Ceará
Prof. Dr. Pedro Manuel Villa – Universidade Federal de Viçosa
Profª Drª Raissa Rachel Salustriano da Silva Matos – Universidade Federal do Maranhão
Prof. Dr. Ronilson Freitas de Souza – Universidade do Estado do Pará
Profª Drª Talita de Santos Matos – Universidade Federal Rural do Rio de Janeiro
Prof. Dr. Tiago da Silva Teófilo – Universidade Federal Rural do Semi-Árido
Prof. Dr. Valdemar Antonio Paffaro Junior – Universidade Federal de Alfenas

Ciências Biológicas e da Saúde

- Prof. Dr. André Ribeiro da Silva – Universidade de Brasília
Profª Drª Anelise Levay Murari – Universidade Federal de Pelotas
Prof. Dr. Benedito Rodrigues da Silva Neto – Universidade Federal de Goiás
Profª Drª Débora Luana Ribeiro Pessoa – Universidade Federal do Maranhão
Prof. Dr. Douglas Siqueira de Almeida Chaves -Universidade Federal Rural do Rio de Janeiro
Prof. Dr. Edson da Silva – Universidade Federal dos Vales do Jequitinhonha e Mucuri
Profª Drª Eleuza Rodrigues Machado – Faculdade Anhanguera de Brasília
Profª Drª Elane Schwinden Prudêncio – Universidade Federal de Santa Catarina
Profª Drª Eysler Gonçalves Maia Brasil – Universidade da Integração Internacional da Lusofonia Afro-Brasileira
Prof. Dr. Ferlando Lima Santos – Universidade Federal do Recôncavo da Bahia
Profª Drª Gabriela Vieira do Amaral – Universidade de Vassouras
Prof. Dr. Gianfábio Pimentel Franco – Universidade Federal de Santa Maria
Prof. Dr. Helio Franklin Rodrigues de Almeida – Universidade Federal de Rondônia
Profª Drª Iara Lúcia Tescarollo – Universidade São Francisco
Prof. Dr. Igor Luiz Vieira de Lima Santos – Universidade Federal de Campina Grande
Prof. Dr. Jefferson Thiago Souza – Universidade Estadual do Ceará
Prof. Dr. Jesus Rodrigues Lemos – Universidade Federal do Piauí
Prof. Dr. Jônatas de França Barros – Universidade Federal do Rio Grande do Norte
Prof. Dr. José Max Barbosa de Oliveira Junior – Universidade Federal do Oeste do Pará
Prof. Dr. Luís Paulo Souza e Souza – Universidade Federal do Amazonas
Profª Drª Magnólia de Araújo Campos – Universidade Federal de Campina Grande
Prof. Dr. Marcus Fernando da Silva Praxedes – Universidade Federal do Recôncavo da Bahia
Profª Drª Mylena Andréa Oliveira Torres – Universidade Ceuma
Profª Drª Natiéli Piovesan – Instituto Federaci do Rio Grande do Norte
Prof. Dr. Paulo Inada – Universidade Estadual de Maringá
Prof. Dr. Rafael Henrique Silva – Hospital Universitário da Universidade Federal da Grande Dourados
Profª Drª Regiane Luz Carvalho – Centro Universitário das Faculdades Associadas de Ensino
Profª Drª Renata Mendes de Freitas – Universidade Federal de Juiz de Fora
Profª Drª Vanessa Lima Gonçalves – Universidade Estadual de Ponta Grossa
Profª Drª Vanessa Bordin Viera – Universidade Federal de Campina Grande

Ciências Exatas e da Terra e Engenharias

- Prof. Dr. Adélio Alcino Sampaio Castro Machado – Universidade do Porto
Prof. Dr. Alexandre Leite dos Santos Silva – Universidade Federal do Piauí
Prof. Dr. Carlos Eduardo Sanches de Andrade – Universidade Federal de Goiás
Profª Drª Carmen Lúcia Voigt – Universidade Norte do Paraná
Prof. Dr. Douglas Gonçalves da Silva – Universidade Estadual do Sudoeste da Bahia
Prof. Dr. Eloi Rufato Junior – Universidade Tecnológica Federal do Paraná
Prof. Dr. Fabrício Menezes Ramos – Instituto Federal do Pará
Profª Dra. Jéssica Verger Nardeli – Universidade Estadual Paulista Júlio de Mesquita Filho
Prof. Dr. Juliano Carlo Rufino de Freitas – Universidade Federal de Campina Grande
Profª Drª Luciana do Nascimento Mendes – Instituto Federal de Educação, Ciência e Tecnologia do Rio Grande do Norte
Prof. Dr. Marcelo Marques – Universidade Estadual de Maringá

Profª Drª Neiva Maria de Almeida – Universidade Federal da Paraíba
Profª Drª Natiéli Piovesan – Instituto Federal do Rio Grande do Norte
Prof. Dr. Takeshy Tachizawa – Faculdade de Campo Limpo Paulista

Linguística, Letras e Artes

Profª Drª Adriana Demite Stephani – Universidade Federal do Tocantins
Profª Drª Angeli Rose do Nascimento – Universidade Federal do Estado do Rio de Janeiro
Profª Drª Carolina Fernandes da Silva Mandaji – Universidade Tecnológica Federal do Paraná
Profª Drª Denise Rocha – Universidade Federal do Ceará
Prof. Dr. Fabiano Tadeu Grazioli – Universidade Regional Integrada do Alto Uruguai e das Missões
Prof. Dr. Gilmei Fleck – Universidade Estadual do Oeste do Paraná
Profª Drª Keyla Christina Almeida Portela – Instituto Federal de Educação, Ciência e Tecnologia do Paraná
Profª Drª Miranilde Oliveira Neves – Instituto de Educação, Ciência e Tecnologia do Pará
Profª Drª Sandra Regina Gardacho Pietrobon – Universidade Estadual do Centro-Oeste
Profª Drª Sheila Marta Carregosa Rocha – Universidade do Estado da Bahia

Conselho Técnico Científico

Prof. Me. Abrãao Carvalho Nogueira – Universidade Federal do Espírito Santo
Prof. Me. Adalberto Zorzo – Centro Estadual de Educação Tecnológica Paula Souza
Prof. Me. Adalto Moreira Braz – Universidade Federal de Goiás
Prof. Dr. Adaylson Wagner Sousa de Vasconcelos – Ordem dos Advogados do Brasil/Seccional Paraíba
Prof. Dr. Adilson Tadeu Basquerote Silva – Universidade para o Desenvolvimento do Alto Vale do Itajaí
Prof. Me. Alexsandro Teixeira Ribeiro – Centro Universitário Internacional
Prof. Me. André Flávio Gonçalves Silva – Universidade Federal do Maranhão
Profª Ma. Anne Karynne da Silva Barbosa – Universidade Federal do Maranhão
Profª Drª Andreza Lopes – Instituto de Pesquisa e Desenvolvimento Acadêmico
Profª Drª Andrezza Miguel da Silva – Faculdade da Amazônia
Prof. Dr. Antonio Hot Pereira de Faria – Polícia Militar de Minas Gerais
Prof. Me. Armando Dias Duarte – Universidade Federal de Pernambuco
Profª Ma. Bianca Camargo Martins – UniCesumar
Profª Ma. Carolina Shimomura Nanya – Universidade Federal de São Carlos
Prof. Me. Carlos Antônio dos Santos – Universidade Federal Rural do Rio de Janeiro
Prof. Ma. Cláudia de Araújo Marques – Faculdade de Música do Espírito Santo
Profª Drª Cláudia Tais Siqueira Cagliari – Centro Universitário Dinâmica das Cataratas
Prof. Me. Clécio Danilo Dias da Silva – Universidade Federal do Rio Grande do Norte
Prof. Me. Daniel da Silva Miranda – Universidade Federal do Pará
Profª Ma. Daniela da Silva Rodrigues – Universidade de Brasília
Profª Ma. Daniela Remião de Macedo – Universidade de Lisboa
Profª Ma. Dayane de Melo Barros – Universidade Federal de Pernambuco
Prof. Me. Douglas Santos Mezacas – Universidade Estadual de Goiás
Prof. Me. Edevaldo de Castro Monteiro – Embrapa Agrobiologia
Prof. Me. Eduardo Gomes de Oliveira – Faculdades Unificadas Doctum de Cataguases
Prof. Me. Eduardo Henrique Ferreira – Faculdade Pitágoras de Londrina

Prof. Dr. Edwaldo Costa – Marinha do Brasil
Prof. Me. Eliel Constantino da Silva – Universidade Estadual Paulista Júlio de Mesquita
Prof. Me. Ernane Rosa Martins – Instituto Federal de Educação, Ciência e Tecnologia de Goiás
Prof. Me. Euvaldo de Sousa Costa Junior – Prefeitura Municipal de São João do Piauí
Profª Ma. Fabiana Coelho Couto Rocha Corrêa – Centro Universitário Estácio Juiz de Fora
Prof. Dr. Fabiano Lemos Pereira – Prefeitura Municipal de Macaé
Prof. Me. Felipe da Costa Negrão – Universidade Federal do Amazonas
Profª Drª Germana Ponce de Leon Ramírez – Centro Universitário Adventista de São Paulo
Prof. Me. Gevair Campos – Instituto Mineiro de Agropecuária
Prof. Dr. Guilherme Renato Gomes – Universidade Norte do Paraná
Prof. Me. Gustavo Krahl – Universidade do Oeste de Santa Catarina
Prof. Me. Helton Rangel Coutinho Junior – Tribunal de Justiça do Estado do Rio de Janeiro
Profª Ma. Isabelle Cerqueira Sousa – Universidade de Fortaleza
Profª Ma. Jaqueline Oliveira Rezende – Universidade Federal de Uberlândia
Prof. Me. Javier Antonio Alborno – University of Miami and Miami Dade College
Prof. Me. Jhonatan da Silva Lima – Universidade Federal do Pará
Prof. Dr. José Carlos da Silva Mendes – Instituto de Psicologia Cognitiva, Desenvolvimento Humano e Social
Prof. Me. Jose Elyton Batista dos Santos – Universidade Federal de Sergipe
Prof. Me. José Luiz Leonardo de Araujo Pimenta – Instituto Nacional de Investigación Agropecuaria Uruguay
Prof. Me. José Messias Ribeiro Júnior – Instituto Federal de Educação Tecnológica de Pernambuco
Profª Drª Juliana Santana de Curcio – Universidade Federal de Goiás
Profª Ma. Juliana Thaisa Rodrigues Pacheco – Universidade Estadual de Ponta Grossa
Profª Drª Kamilly Souza do Vale – Núcleo de Pesquisas Fenomenológicas/UFPA
Prof. Dr. Kárpio Márcio de Siqueira – Universidade do Estado da Bahia
Profª Drª Karina de Araújo Dias – Prefeitura Municipal de Florianópolis
Prof. Dr. Lázaro Castro Silva Nascimento – Laboratório de Fenomenologia & Subjetividade/UFPR
Prof. Me. Leonardo Tullio – Universidade Estadual de Ponta Grossa
Profª Ma. Lilian Coelho de Freitas – Instituto Federal do Pará
Profª Ma. Liliani Aparecida Sereno Fontes de Medeiros – Consórcio CEDERJ
Profª Drª Lúvia do Carmo Silva – Universidade Federal de Goiás
Prof. Dr. Lucio Marques Vieira Souza – Secretaria de Estado da Educação, do Esporte e da Cultura de Sergipe
Prof. Me. Luis Henrique Almeida Castro – Universidade Federal da Grande Dourados
Prof. Dr. Luan Vinicius Bernardelli – Universidade Estadual do Paraná
Prof. Dr. Michel da Costa – Universidade Metropolitana de Santos
Prof. Dr. Marcelo Máximo Purificação – Fundação Integrada Municipal de Ensino Superior
Prof. Me. Marcos Aurelio Alves e Silva – Instituto Federal de Educação, Ciência e Tecnologia de São Paulo
Profª Ma. Maria Elanny Damasceno Silva – Universidade Federal do Ceará
Profª Ma. Marileila Marques Toledo – Universidade Federal dos Vales do Jequitinhonha e Mucuri
Prof. Me. Ricardo Sérgio da Silva – Universidade Federal de Pernambuco
Profª Ma. Renata Luciane Polsaque Young Blood – UniSecal

Prof. Me. Robson Lucas Soares da Silva – Universidade Federal da Paraíba
Prof. Me. Sebastião André Barbosa Junior – Universidade Federal Rural de Pernambuco
Profª Ma. Silene Ribeiro Miranda Barbosa – Consultoria Brasileira de Ensino, Pesquisa e Extensão
Profª Ma. Solange Aparecida de Souza Monteiro – Instituto Federal de São Paulo
Prof. Me. Tallys Newton Fernandes de Matos – Faculdade Regional Jaguaribana
Profª Ma. Thatianny Jasmine Castro Martins de Carvalho – Universidade Federal do Piauí
Prof. Me. Tiago Silvio Dedoné – Colégio ECEL Positivo
Prof. Dr. Welleson Feitosa Gazel – Universidade Paulista

Resultados econômicos e de sustentabilidade nos sistemas nas ciências agrárias

Editora Chefe: Profª Drª Antonella Carvalho de Oliveira
Bibliotecário Maurício Amormino Júnior
Diagramação: Luiza Alves Batista
Edição de Arte: Luiza Alves Batista
Revisão: Os Autores
Organizador: Cleberton Correia Santos

Dados Internacionais de Catalogação na Publicação (CIP) (eDOC BRASIL, Belo Horizonte/MG)

R436 Resultados econômicos e de sustentabilidade nos sistemas nas ciências agrárias [recurso eletrônico] / Organizador Cleberton Correia Santos. – Ponta Grossa, PR: Atena, 2020.

Formato: PDF

Requisitos de sistema: Adobe Acrobat Reader

Modo de acesso: World Wide Web

Inclui bibliografia

ISBN 978-65-5706-299-9

DOI 10.22533/at.ed.999202608

1. Agroecologia – Pesquisa – Brasil. 2. Meio ambiente – Pesquisa – Brasil. 3. Sustentabilidade. I. Santos, Cleberton Correia.

Elaborado por Maurício Amormino Júnior – CRB6/2422

Atena Editora

Ponta Grossa – Paraná – Brasil

Telefone: +55 (42) 3323-5493

www.atenaeditora.com.br

contato@atenaeditora.com.br

APRESENTAÇÃO

O e-book “**Resultados Econômicos e de Sustentabilidade nos Sistemas nas Ciências Agrárias**” de publicação da Atena Editora, apresenta, em seus 25 capítulos, estudos almejando a reflexão dos impactos no cenário econômico baseando-se nos sistemas de produção e suas óticas nas sustentabilidade, objetivando-se o manejo dos recursos naturais renováveis e qualidade de vida da população mundial.

As ciências agrárias abrange diversas áreas de conhecimento, tais como a Agronomia, Zootecnia, Engenharia Agrícola, Engenharia Florestal, Agronegócio, Medicina Veterinária, Sociologia, Economia e Administração Rural, entre outras. Ao longo dos anos tem-se intensificado a busca por sistemas de produção vegetal e animal de base sustentável, isto é, articulando a preocupação com o meio ambiente e os alicerces econômicos. No entanto, ainda existem alguns aspectos que devem ser elucidados, almejando o emponderamento das comunidades rurais e sua inserção no Agronegócio. O e-book apresenta discussões e reflexões dos diferentes setores agropecuários e suas contribuições na economia mundial, além de descrever práticas que contribuam no manejo sustentável dos sistemas nas ciências agrárias, e para a sociedade.

Aos autores, os agradecimentos do Organizador e da Atena Editora pela dedicação e empenho na elucidação de trabalhos que irão contribuir no fortalecimento econômico e dimensões socioambientais. Esperamos contribuir no processo de ensino-aprendizagem e diálogos da necessidade da preocupação socioambiental e seus impactos positivos na cadeia do agronegócio, além de incentivar agentes de desenvolvimento, isto é, alunos de graduação, de pós-graduação e pesquisadores, instituições públicas e privadas de assistência e extensão rural na execução de práticas que promovam o desenvolvimento rural.

Uma ótima reflexão e leitura sobre os paradigmas da sustentabilidade econômica rural!

Cleberton Correia Santos

SUMÁRIO

CAPÍTULO 1..... 1

A REGULAÇÃO DAS TELECOMUNICAÇÕES NO BRASIL E A INFLUÊNCIA NO CONTEXTO DAS POLÍTICAS PÚBLICAS PARA A ZONA RURAL

Jailton César Padilha

DOI 10.22533/at.ed.9992026081

CAPÍTULO 2..... 13

POTENCIAL DAS FLORESTAS PLANTADAS NO AGRONEGÓCIO BRASILEIRO

Aécio Dantas de Sousa Júnior

Fabiola Martins Delatorre

Gabriela Fontes Mayrinck Cupertino

Alfredo José dos Santos Junior

Ananias Francisco Dias Júnior

Alexandre Miguel do Nascimento

DOI 10.22533/at.ed.9992026082

CAPÍTULO 3..... 25

BANCO MUNDIAL E DESENVOLVIMENTO RURAL NO RIO GRANDE DO NORTE: UM BALANÇO CRÍTICO DO PROJETO GOVERNO CIDADÃO NO TERRITÓRIO ALTO OESTE

Vinícius Rodrigues Vieira Fernandes

Clesio Marcelino de Jesus

DOI 10.22533/at.ed.9992026083

CAPÍTULO 4..... 37

UNSATISFIED BASIC NEEDS OF PRODUCERS IN THE RURAL AREA OF THE URABÁ REGION, COLOMBIA

Joan Esteban Moreno Hernandez

Wilson Andres Arcila Sanchez

Luis Hernando Gonzalez Vellojin

DOI 10.22533/at.ed.9992026084

CAPÍTULO 5..... 47

IMPLEMENTAÇÃO DE UMA ROTA DE TURISMO RURAL COMO ALTERNATIVA DE DIVERSIFICAÇÃO DA RENDA E REPRODUÇÃO SOCIAL EM CONCÓRDIA/SC

Flávio José Simioni

Carla Cristine Boscatto

Flávia Arcari da Silva

Roni Matheus Severis

Debora Nayar Hoff

DOI 10.22533/at.ed.9992026085

CAPÍTULO 6..... 63

AGRONEGÓCIO, RESPONSABILIDADE AMBIENTAL E LIDERANÇA

Leandro Divino Miranda de Oliveira

Sérgio Mendes Dutra

Joyce Costa Henrique

DOI 10.22533/at.ed.9992026086

CAPÍTULO 7..... 73

REGIONALIZAÇÃO DA PRODUÇÃO VITIVINÍCOLA DO BRASIL: SUBSÍDIO PARA GESTÃO E PLANEJAMENTO DO TERRITÓRIO

Fernando Cesar Barros da Gama

DOI 10.22533/at.ed.9992026087

CAPÍTULO 8..... 90

INCOME DIVERSIFICATION IN THE ASSOCIATION OF COFFEE PRODUCERS AGROPASUNCHA, CUNDINAMARCA, COLOMBIA

Ángela Paola Rico

Angie Lizeth Gómez

Camilo González-Martínez

Daniel Acosta-Leal

DOI 10.22533/at.ed.9992026088

CAPÍTULO 9..... 102

EFEITO DE CIANAMIDA HIDROGENADA E EXTRATO DE ALHO NA QUEBRA DE DORMÊNCIA DE CULTIVARES DE NOGUEIRA PECÃ NO ALTO VALE DO ITAJAÍ

Cláudio Keske

Josué Andreas Vieira

Marcos Franzão

Luis Henrique Pegoraro Padilha

Marcelo Foster

DOI 10.22533/at.ed.9992026089

CAPÍTULO 10..... 110

MELHORAMENTO GENÉTICO COMO ESTRATÉGIA DE SUSTENTABILIDADE NA BOVINOCULTURA LEITEIRA

Renata Negri

Giovani Luis Feltes

DOI 10.22533/at.ed.99920260810

CAPÍTULO 11..... 120

IMPORTÂNCIA DA AVALIAÇÃO DO FLUIDO RUMINAL NA DETECÇÃO DE ALTERAÇÕES DO TRATO DIGESTÓRIO DOS RUMINANTES DOMÉSTICOS

Luiza Borba de Almeida Madruga

Caroline da Silva Leite

Isabela Gilena Lins dos Santos

Marcelo Weinstein Teixeira

DOI 10.22533/at.ed.99920260811

CAPÍTULO 12..... 125

MEL TIPO EXPORTAÇÃO: ESTUDO DE VIABILIDADE TÉCNICA PARA INCENTIVAR PEQUENOS PRODUTORES VISTA COMO ATIVIDADE COMPLEMENTAR

Jameson Serafim Cruz

Jailton César Padilha

Maísa Santos Joaquim

DOI 10.22533/at.ed.99920260812

CAPÍTULO 13..... 136

MODELOS DIDÁTICOS ÓSSEOS DE RESINA PARA O ENSINO DE ANATOMIA HUMANA

Dayana Maria Serafim da Silva Cunha

Ana Greice Borba Leite

Vitor Caiaffo Brito

DOI 10.22533/at.ed.99920260813

CAPÍTULO 14..... 143

PESO MÉDIO DE CARÇAÇAS SUÍNAS EM ABATEDOUROS SEGUNDO A CATEGORIA DE INSPEÇÃO SANITÁRIA: UMA ANÁLISE EM ESTADOS DO CENTRO-SUL

Bernardo Souza Mello Viscardi

DOI 10.22533/at.ed.99920260814

CAPÍTULO 15..... 147

CHEMICAL PROFILES OF POLYPHENOLS IN AQUEOUS INFUSION OF YERBA MATE AND TEA MATE (*Ilex paraguariensis*) FROM ARGENTINA, BRAZIL AND URUGUAY

Victoria Panzl

Cecilia Trías

David Menchaca

Alejandra Rodríguez-Haralambides

DOI 10.22533/at.ed.99920260815

CAPÍTULO 16..... 157

ENSAYOS PRELIMINARES EN LA SÍNTESIS VERDE DE NANOPARTÍCULAS DE PLATA CON EXTRACTOS DE YERBA MATE (*Ilex paraguariensis*)

Mónica Mariela Covinich

Griselda Patricia Scipioni

David Leopoldo Brusilovsky

DOI 10.22533/at.ed.99920260816

CAPÍTULO 17..... 164

PRODUÇÃO E ANÁLISE FINANCEIRA DE JILÓ IRRIGADO SOB O PARCELAMENTO DA ADUBAÇÃO DE COBERTURA

Luís Sérgio Rodrigues Vale

Cássio da Silva Kran

Thâmara de Mendonça Guedes

Leandro Cardoso de Lima

Evaldo Alves dos Santos

Marta Jubielle Dias Felix

Débora Regina Marques Pereira

DOI 10.22533/at.ed.99920260817

CAPÍTULO 18..... 176

ETIOLOGIA, FISIOPATOGENIA E ASPECTOS CLÍNICOS DA ISOERITRÓLISE

NEONATAL FELINA: REVISÃO DE LITERATURA

Vanessa Maranhão Soares
Alane Bárbara Patriota Nogueira
Sinara Fernanda Souza da Silva
Tomás Guilherme Pereira da Silva
Júlio César dos Santos Nascimento

DOI 10.22533/at.ed.99920260818

CAPÍTULO 19..... 181

APLICAÇÃO E AVALIAÇÃO DE DIFERENTES CORANTES NATURAIS EM CÉLULAS SOLARES

Marcel Ricardo Nogueira de Oliveira
Julianno Pizzano Ayoub
Gideã Taques Tractz
Maico Taras da Cunha
Paulo Rogerio Pinto Rodrigues

DOI 10.22533/at.ed.99920260819

CAPÍTULO 20..... 189

USO DA BAGANA DE CARNAÚBA NO SEMIÁRIDO COMO COBERTURA VEGETAL NA PRODUÇÃO DE HORTALIÇAS IRRIGADAS

Alexsandro Oliveira da Silva
Antonio Vanklane Rodrigues de Almeida
Valsergio Barros da Silva
Jenyffer da Silva Gomes Santos
Anderson da Silva Pinheiro

DOI 10.22533/at.ed.99920260820

CAPÍTULO 21..... 201

UTILIZAÇÃO DA GONADOTROFINA CORIÔNICA EQUINA NA REPRODUÇÃO DE VACAS E ÉGUAS

Luiza Borba de Almeida Madruga
Caroline da Silva Leite
Isabela Gilena Lins dos Santos
Marcelo Weinstein Teixeira

DOI 10.22533/at.ed.99920260821

CAPÍTULO 22..... 206

ANÁLISE DA ADAPTABILIDADE DE TRÊS CULTIVARES DE AMORA-PRETA EM SISTEMA AGROECOLÓGICO NO ALTO VALE DO ITAJAÍ

Daniela Münch
Laiana Neri de Souza
Raul Sebastião Cota
Leonardo de Oliveira Neves
Flávia Queiroz de Oliveira

DOI 10.22533/at.ed.99920260822

CAPÍTULO 23.....	212
PRINCIPAIS DOENÇAS DIAGNOSTICADAS EM BOVINOS ABATIDOS SOB REGIME DE INSPEÇÃO FEDERAL NO PERÍODO DE JANEIRO A JUNHO DE 2019 EM ALEGRETE - RS	
<ul style="list-style-type: none"> Vinicius Mazui Costa Amanda da Rosa Rosado Cristhian Grégory Ferreira Kaefer Betina de Matos Rocha Nátalli dos Santos Britto Sérgio Farias Vargas Júnior Adriana Lucke Stigger 	
DOI 10.22533/at.ed.99920260823	
CAPÍTULO 24.....	216
COMPORTAMENTO PRODUTIVO DE SELEÇÕES DE AMOREIRA-PRETA DESENVOLVIDAS PELA EMBRAPA CLIMA TEMPERADO AVALIADAS NO MEIO-OESTE CATARINENSE	
<ul style="list-style-type: none"> Cristiane de Lima Wesp André Luiz Kulkamp de Souza Keren Jemima Almeida Maciel Rafael Ermenegildo Contini Maria do Carmo Bassols Raseira 	
DOI 10.22533/at.ed.99920260824	
CAPÍTULO 25.....	221
CONTROLE POTENCIAL DE NEMATOIDE DE CISTO COM ESPÉCIES DE CROTALARIA NÃO ASSOCIADO à MONOCROTALINA	
<ul style="list-style-type: none"> Lisa Oki Expósito Gustavo Henrique Loiola Estela de Oliveira Nunes Ivani de Oliveira Negrão Lopes 	
DOI 10.22533/at.ed.99920260825	
SOBRE O ORGANIZADOR	231
ÍNDICE REMISSIVO	232

INCOME DIVERSIFICATION IN THE ASSOCIATION OF COFFEE PRODUCERS AGROPASUNCHA, CUNDINAMARCA, COLOMBIA

Data de aceite: 01/08/2020

Ángela Paola Rico

UNIMINUTO Zipaquirá Colombia.

ORCID <https://orcid.org/0000-0002-3315-6592>

Perfil de Google Académico

<https://scholar.google.es/citations?hl=es&user=R9dw98wAAAAJ>

Angie Lizeth Gómez

UNIMINUTO Zipaquirá Colombia.

ORCID <https://orcid.org/0000-0003-4043-325X>

Perfil de Google Académico

<https://scholar.google.es/citations?hl=es&user=EzXxNukAAAAJ>

Camilo González-Martínez

Corporación Universitaria Minuto de Dios -

UNIMINUTO Zipaquirá Colombia.

ORCID <https://orcid.org/0000-0001-7051-147X>

Perfil de Google académico

<https://scholar.google.es/citations?user=ZSDiexkAAAAJ&hl=en>

Daniel Acosta-Leal

Corporación Universitaria Minuto de Dios -

UNIMINUTO Zipaquirá Colombia.

ORCID <https://orcid.org/0000-0002-6135-7439>

Perfil de Google académico <https://scholar.google.es/citations?user=FANTjaYAAAAJ&hl=en>

ABSTRACT: Coffee activity in Colombia has great importance due to its direct relation with the economy and the population's welfare. Five hundred and sixty-three coffee families in Colombia depend on this agricultural activity. This paper shows the results of a viability evaluation of

commercializing beekeeping products obtained from the implementation of *Apis mellifera* bees in the producers association Agropasuncha to generate an income diversification. The project created the diversification line as a new business alternative for the associate producers to improve their income with bee products. The viability plan was developed through the evaluation and projection of the economic aspect, with a rural economy methodology that evaluates monetary costs or explicit production and non-monetary or implicit production. Finally, an economic analysis was obtained in which the profitability was 1.95 of net profit obtained by each monetary unit of investment, family surplus of production for US\$ 3.426 and a technical remuneration of domestic labor day for US\$ 28,5. In addition, descriptive surveys were conducted to determine the potential market for apicultural products in health food stores in Pacho, Zipaquirá and Tocancipá, Colombia.

KEYWORDS: Apiculture, costs, diversification rural economy. incomes, market.

DIVERSIFICACIÓN DE INGRESOS EN LA ASOCIACIÓN DE PRODUCTORES DE CAFÉ AGROPASUNCHA, CUNDINAMARCA, COLOMBIA

RESUMEN: La actividad cafetera en Colombia es una actividad muy importante para la economía y en especial para el bienestar de las comunidades cafeteras. Cientos de familias en Colombia dependen de esta actividad agropecuaria, por tal razón la diversificación de ingresos es importante en el contexto de la producción cafetera. Este artículo muestra los resultados de una evaluación de viabilidad de la comercialización de productos apícolas obtenidos de la implementación de las abejas *Apis mellifera* en la asociación de

productores Agropasuncha para generar una diversificación de ingresos. El proyecto creó la línea de diversificación como una nueva alternativa de negocios para que los productores asociados mejoren sus ingresos con productos de abejas. El plan de viabilidad se desarrolló a través de la evaluación y proyección del aspecto económico, con una metodología de economía rural que evalúa los costos monetarios o la producción explícita y la producción no monetaria o implícita. Finalmente, se obtuvo un análisis económico en el cual la rentabilidad fue de 1.95 del beneficio neto obtenido por cada unidad monetaria de inversión, el excedente familiar de producción por US \$ 3.426 y una remuneración técnica del día laboral doméstico por US \$ 28,5. Además, se realizaron encuestas descriptivas para determinar el mercado potencial de productos apícolas en las tiendas naturistas de Pacho, Zipaquirá y Tocancipá, Colombia.

PALABRAS CLAVE: Apicultura, costos, economía rural, diversificación de ingresos, mercado.

1 | INTRODUCTION

Coffee activity in Colombia has great importance due to its direct relation with the economy and the population's welfare. Five hundred and sixty-three coffee families in Colombia depend on this agricultural activity (Federación Nacional de Cafeteros, 2010). However, profitability and productivity have shown low figures in recent years due to factors related to labor costs, low capital, deficit in the adoption of new technologies and low education. Small producers continue to maintain Coffee activity as their main source of income. Therefore, to strengthen this activity to take advantage of the existing potential is necessary (Cano, Vallejo, Caicedo, Amador y Tique, 2012). Hence, to look for alternatives that imply the mitigation of the risk effects of the dependence on a single product is important.

To continue, one of the strategies is the diversification of income, which is a mechanism to reduce poverty and thus improve the food security of peasant families related to the increase in the number of sources of income and their use (Zhao & Barry, 2013). The diversification effect depends mainly on the activity carried out; the determinants of this process are survival and accumulation (Mora y Cerón, 2015). In this case, beekeeping represents an option.

The term beekeeping or apiculture, which etymologically comes from the root *Apis*, 'bee', and *cultura*, 'culture' or 'breeding', is a concept determined as an applied science that studies the *Melifera* bee with which, through the application of technology, an economic benefit from its activity is obtained. It is an opportunity for competitive development in the market; for example, in Chile, in 2013, honey was the primary export product, reaching a value of USD 27.2 million for 8,195 tons exported.

Regarding pollination, the paid value for this service is estimated between USD 10 and 15 million. The economic impact of the activity is within a range of USD 225 to 450 million (Valdés, 2014). Due to the prominence of some of the products that are important in the market such as honey, royal jelly, propolis, pollen, wax, queen's cores or packages and others; the profitability is bound to the performance of the hives, to the sale price of the products and obviously to the production costs (Vásquez y Tello, 1995).

The beekeeping sector is linked to food security because of the role that bees

play in agricultural productivity with pollination. The apicultural production system has the capacity to provide more diversified productions than other products such as natural foods rich in vegetable protein, vitamins and minerals (Verde, 2014). There is certain connection between the quality of apicultural products and agricultural productivity since the practices in nearby crops can contaminate them with residues of agrochemical supplies.

1.1 Beekeeping in Colombia

The beekeeping activity in Colombia is getting stronger. It is one of the 37 productive chains and has predominated about 30 years ago as a rustic system. In 2011, 115,000 hives were reported in the livestock inventory (Flórez y Ward, 2013). In the 1970s the greatest development in pollen production was reached although they have always been characterized as small productive units. This size is probably related to the importance that this activity has in the economy since it is taken as a complementary process in the farm which limits the growth of the chain. This factor is also related to the fact that constant income is not generated but only in harvest seasons. There is a deficit in the demand for these products at a national level and in the ability to export or colonize international markets. Therefore, it is necessary to develop policies that strengthen the sector as well as combat the falsification issues and provide more information to the population. (Sánchez, Castañeda, Muñoz y Téllez, 2013).

According to Sánchez (2014), in three apicultural production systems of Boyacá most of the producers are small producers and the average number of beehives per producer is 16. The beekeeping activity has the potential to diversify products, but this advantage is not leveraged. Factors such as working capital, technical management and access to properties influence the development of this activity.

This study determined production costs and monetary benefits of \$ 6,945 for honey / kg and \$ 9,494 to \$ 13,520 for pollen / kg, taking into account that the utility increases with the number of hives. Implementing good practices to guarantee the quality and safety of apicultural products is necessary. For small producers an approximate profitability of the 28 % is estimated (Hoyos, 2007).

The honey production of bees is variable according to the biogeographic zones, the efficiency can reach 40 kg / hive / year in Sucre, Atlántico, Magdalena, and Bolívar, while in high mountain areas, the annual average is 20 kg / hive / year (Laverde, Egea, Rodríguez and Peña, 2010).

1.2 Bee products

Climatic and / or environmental conditions directly affected beekeeping since plants are the ones that provide the raw material for bees to make the products (Martínez, 2011). Any change in temperature and strong rainfall can decrease the nectar and pollen demand, which affects the efficiency of apicultural products (Acosta, González-Martínez, & Vargas, 2017).

Vásquez and Tello (1995) classify bee products as follows:

- Secretion products: wax, royal jelly, apitoxin

- Products collected:
- No transformation: Pollen and propolis
- With transformation: Honey, frutimiel, honeydew
- Other products: queens, cores, packages, drone larva

1.3 Viability study

“A viability study consists on the collection, analysis and evaluation of different types of information with the purpose of determining whether or not to establish a company that implies economic risks” (Vega, 2006 p.1). The main objectives aim for demonstrating the viability of the business to investors, owners and financial institutions and to estimate the possible output or economic profit of a business initiative. This viability study is carried out by executing four phases: Conceptual, operational, market and economic (Vega, 2007). Adding to this concept you can see the viability at the legal or regulatory level, taking into account the necessary requirements for a project, in this case, an association that works properly.

In order to capture it, a feasibility plan is carried out, which is the document that will reflect the content of the business project that is going to be implemented, and that ranges from the definition of the idea to develop to the concrete form to carry it out (Manises, 2008).

1.4 Legal or regulation viability

In order for a business project to function properly, the rules and / or requirements that govern economic activity must be taken into account.

Legal framework for beekeeping: The legislation in Colombia on agricultural production, tries to normalize the adequate technical and technological progress of the productive activities. In Colombia, there is no law that governs beekeeping, but there is a regulatory framework, somehow related to beekeeping. This framework is grouped into two normative groups: a general legal framework, which is related to the environmental interest regulations, and a specific legal framework for the beekeeping activity (Silva, Arcos y Gómez, 2006).

These two legal frameworks are detailed as follows:

- General legal framework: In this frame, beekeeping is linked to environmental legislation, which regulates the development of productive activities and, in some way, may affect ecosystems due to their relationship and use of natural resources (Silva, Arcos y Gómez, 2006).
- Specific Legal Framework: “Beekeeping can be related as an agricultural activity or enterprise stated in the decree 2020 de 1971” (Silva, Arcos y Gómez, 2006) In the specific regulations are the technical, sanitary, agricultural, civil and tax.

1.5 Economic viability

The economic viability is determined from balance sheets, profit and loss (P & L) and

thus determine profitability for associations of agricultural producers. The analyses are in the field of rural economy, for this a valuation methodology proposed by Forero (2002) and adjusted by Acosta (2014) is applied, which is more appropriate for the current situation of agricultural producers pursuing an income improvement.

Specifically, in economic studies in beekeeping such as Magaña and Leyva (2011), variable costs represent 67.1% of total production costs, in which, labor is the most representative and fixed costs attributed to the depreciation of equipment in infrastructure. Another case is the study carried out by Rodi (2013), where analyzes of profitability for the production and marketing of honey with projections are carried out. The value of working capital represents 17.82%, in which the purchase of stamped wax sheets is the highest value in production supplies.

According to Sánchez (2014), the production costs (without monetizing labor) for the departments of Boyacá and Cundinamarca vary between \$ 2,966 and \$6,945. The fixed costs represent the greater part of the total cost for the production of honey. In addition, the higher number of hives, the greater the annual profits and the remuneration for family labor.

1.6 Rural economy and income diversification

At a global level, diversification in the rural economy allows social development, giving the possibility of reducing poverty and improving food security in peasant families. Family farming is a key sector for achieving change towards sustainable agricultural systems in Latin America, the Caribbean and the world. Small farmers are allies of food security and key players in the countries' efforts to achieve a future without hunger (OIT, 2015). In the Latin American region, 80% of farms belong to family agriculture, including more than 60 million people which makes it the main source of agricultural and rural employment that largely supplies the needs of all the population. Despite this, the peasant family has a higher poverty index. Taking this reality, the ideal is the existence of a diversification of income that allows producers to be sustainable, have more production alternatives and obtain more profits (Salcedo y Guzmán, 2014).

The diversification of rural income is a mechanism to reduce poverty and thus improve the food security of peasant families related to the increase in the number of sources of income and the use of these (Zhao & Barry, 2013). The diversification effect depends mainly on the activity carried out; the determinants of this process are survival and accumulation (Mora y Cerón, 2015).

2 | MATERIALS AND METHODS

The study was carried out in the Agropasucha Coffee Producers Association, located in Pasunchá, corregimiento of Pacho, Cundinamarca, in the province of Rionegro; in three farms with 20 hives, close to the coffee crop. In order to estimate costs the methodology proposed by Acosta (2014) is used. Acosta developed a pricing method for vegetables. The economic analysis is based on the methodology of Forero et al (2002). Bearing this in mind, the calculations are made as follows:

- Monetary costs (CM): Explicit costs, being those that the producer must pay in cash. Normally they are fixed and variable costs.
- Domestic costs (CD): Implicit costs, those in which money is not used for remuneration (taking family labor and the use of land where the apiaries are located).
- Total costs (TC): Sum between monetary costs (MC) and domestic costs. $TC = MC + DC$.
- Total Income (TI): Sum of the monetary income (MI), being these the sales of the products and the domestic (DI), being the self-consumption (A), which corresponds to the self-consumed quantities by the families calculating the amount consumed by the normal sale price. $TI = V + A$.
- Surplus or net benefits (EN): Correspond to the difference between total revenues and total costs. $EN = IT - CT$.
- Family production surpluses (VET): Express the capacity of the production system to generate income for the farmer. $EFP = IT - CM - (CnM \neq MO)$.

Where IT (total income), CM (monetary costs), CnM (non-monetary costs), MO (labor).

- Profitability (Rent): Denominated as a benefit / cost relationship, it is an indicator that reflects the net benefit obtained by each monetary unit of investment and is obtained with the ratio between the net benefits and the total costs generated by the activity: $Rent = (V + A - CT) / CT$.
- V (Sales), A (self-consumption), CT (total cost).
- Technical remuneration day of domestic work (RTDTD): Indicator that expresses the ability to generate income from a production system if income is not paid and is obtained with the relationship surplus family production between domestic daily wages. $RTDTD = EFP / JD$.

Taking the previous information into account, a general balance was made and P&L with production projections according to the agro-ecological conditions of the area, floral offer of the coffee crop, other plant species and the state of development of the hives. In the structure of costs and surpluses, the self-consumption of the association families was taken into account. These data were obtained through surveys to the three families and thus know the contribution of these products to improve their diet without the need of purchasing them at high prices.

The estimation of the potential market was carried out through 17 surveys to establishments that sell honey, pollen and other apicultural products or that are interested in them, in the municipalities of Pacho, Zipaquirá and Tocancipá, Cundinamarca. In addition, an average of the current market prices was taken to locate the price of the association's products in the optimum range, taking into account a fair trade. The surveys were descriptive with closed questions.

31 RESULTS

The cost structure was made taking variable and fixed costs, monetary costs and domestic costs, which are generally not taken into account in the reality of the rural area. These are the land use cost in which the apiaries and family labor are located. It must be taken into account the US\$ 4.735 investment. This value includes the necessary elements for 20 hives, such as rod bases for beehives, piquera lid, breeding chamber, half rise, honey boost, bee's core, roof, pollen trap, beekeeping overalls, lever stainless steel beekeeping, beekeeping brush, medium smoker in stainless steel and enclosed for four apiaries.

First, a sale price of US\$ 3,05 for the presentation of 350 g and of US\$ 1,81 for 175 g was determined with a profit of 50%. The cost per unit was found based on the monetary and domestic costs of apicultural production, which were defined taking into account variable costs (feeding with refined sugar, wax sheet changes, extraction and transport of commercialization) and fixed costs including depreciation and queens wear.

Later, to estimate the value of the annual income, a projection of the production equivalent to 20 kg / hive of honey was made, the self-consumption corresponds to 25.2 kg of honey and the total sales in relation to the 20 beehives of 374.8 kg of honey. In addition, due to the conditions of the area, pollen and wax production will be minimal, only covering self-consumption, not included in sales.

The table 1 shows the summary of the results of income costs and benefits, where the income projection was obtained for US\$ 3.865,8, including sales and family consumption, a profitability of 1.95.

The technical remuneration of domestic work day it's important for the hi value in a sporadic work, approximately 1 day for month; If the apicultural activity would be a principal economic activity, the remuneration day weren't expensive price.

Annual Structure	
Income	\$US
Sales	3.589
Self-consumption	276,6
Total	3.865,6
Cost	\$US
Monetary	414,2
Domestic	893,8
Total	1308
Profit	\$US
Production surplus	2.557,8
Family production surplus	3.426,7
Profitability	1,95
Technical remuneration day of domestic work	\$ 28,5

Table 1. Income, cost and benefits

Source: Own elaboration

3.1 Potential market

The market was segmented, taking only the naturalist shops and some supermarkets that commercialize apicultural products. 100% of establishments sell honey, the presentations that are marketed are 750, 375, 250, 125 and 75 cc, which the majority sold honey is the presentation of 375 cc. In Zipaquirá, the sale of 750 cc honey (1,000 g approx.) predominates. There is little demand for honey since in the three municipalities they have sales of 1 to 10 units mostly.

The most commonly used packaging is glass, in addition, establishments purchase honey from intermediaries by 75% to 80%, while only 20% to 25% receive it directly from beekeepers.

According to Table 1 of prices consulted in the establishments, there is a great variability in presentations and prices, but the best-selling presentations are those with the lowest content such as 125 cc, which is equivalent to about 175 g taking the density of the honey of 1.4g / CC.

4 | DISCUSSION

The negative effect generated by transgenic crops and pesticides on bee health and honey quality is known, as reported by the Network for a Transgenic Free America (2016). However, because it is in a production system in which chemical synthetic agricultural inputs are not applied to control pests and diseases, honey is not affected in its organoleptic quality, and those who know where it comes from have paid up to 25% more compared to commercially available honey.

After the commercialization study to analyze the viability of the commercialization of bee products in the AGROPASUNCHA association, the honey production exercise was accompanied during two harvests with productions of 40 and 68 kg of honey, respectively. Honey could be marketed as agroecological honey under reliable labels with direct marketing between producers and consumers, generating a more significant profit margin for the producer and they are part of the group of small producers that can contribute to satisfying the demands of the domestic market (Saul da Rosa et al., 2014).

Additionally, it is necessary to consider the apicultural chain described by Razo, Jesús, Rebollar, Hernández, & Guzmán (2014), they have evidence that between the producer and the consumer there are retail gatherers and wholesale gatherers and these links in the chain generally remain with most of the profit with percentages of up to 18% in the first collection and an additional 15% in the second collection, before reaching the final consumer.

The difference in value acquired depends on the marketing channel to which they have access; in the case of direct marketing by the AGROPASUNCHA association, they receive 100% of what the consumer pays. In contrast, the intermediation channels can make the producer receive only 20% of the value paid by the final consumer for honey (Magaña, Moguel, Sanginés, & Leyva, 2012).

It is crucial to keep in mind that if the production of honey in this association continues to increase, not only is self-consumption satisfied and this contributes to the food sovereignty and autonomy of the beneficiary families (Altieri & Nicholls, 2020), but they could saturate the market and would require including in its marketing chain an intermediate link that deals with marketing (Rodi, 2013).

Finally, another benefit brought by the inclusion of bees for income diversification is the increase in productivity and quality in crops that results in an economic benefit from the ecosystem service provided by bees in pollination (Acosta, González-Martínez, & Vargas, 2017; Veldtman et al. 2018), which for the same association AGROPASUNCHA during the years 2015-2016 presented an increase of 15% in both quality and performance (Acosta, Rodríguez, González-Martínez, Cuervo, & Vargas, 2019).

5 | CONCLUSIONS

According to the review for the association Agropasuncha, to market honey is more viable since it has greater extraction and commercialization than other bee products. Additionally it has great market potential in the naturalist shops of the region. On the other hand, for the other apicultural products a minimum production projection obtained will only cover family self-consumption.

Thanks to the surveys, it was possible to obtain in which presentations it is feasible to offer. Intermediaries offer the largest amount of honey, in the case of selling the honey of the association is also concluded; the establishments will be supporting producers directly, promoting the development of the region and promoting fair trade. In addition, the price obtained for this study competes perfectly with the market.

Because of the economic study is possible to conclude that apiculture is profitable as an alternative for income diversification to coffee producers as well as the pollination of crops carried out by bees obtaining a cost / benefit of 1.9.

It is important to note that the economic study was made taking into account that the association in which the research was conducted is composed of peasants, which applies the rural economy model, closer to the reality of the Colombian countryside; therefore, peasant labor is quantified.

Small producers and their families will not need to invest money to buy apicultural products because they can access to this energy and nutritional sources as well as taking advantage of their medicinal properties for their consumption, which is a great benefit since it will contribute to the quality of life of these producers.

ACKNOWLEDGMENTS

To the association of agricultural producers of Pasuncha Agropasuncha for always receiving us in the best way and having full disposition for our work. To teacher Lilibeth Jiménez for their trust, support and constant advice,

the Asociación para el Avance de la Ciencia (ACAC) and la Corporación Universitaria

Minuto de Dios for financing the project.

REFERENCES

Acosta, D., González-Martínez, C., & Vargas, G. (2017). *Manual de Abejas al servicio del caficultor: La apicultura como una herramienta agroecológica*. UNIMINUTO (1.ª ed.). Bogotá DC., Colombia: Corporación Universitaria Minuto de Dios. Recuperado de <https://hdl.handle.net/10656/7785%09>

Acosta, D., Rodríguez, C., González-Martínez, C., Cuervo, J., & Vargas, G. (2019). Bees in the pollination of coffee, *Coffea arabica* Variety Castillo; in Pasuncha - Cundinamarca - Colombia. In *Meio Ambiente, Sustentabilidade e Agroecologia 5* (pp. 102–109). Ponta Grossa: Atena Editora. <https://doi.org/10.22533/at.ed.316191604>

Acosta Leal, D. A. (2014). *Fijación de precios en mercados campesinos de Bogotá Caso hortalizas frescas de Fomeque y Chipaque (Cundinamarca)*. Universidad Nacional de Colombia, 116. Retrieved from: <http://www.bdigital.unal.edu.co/46578/>

Altieri, M. A., & Nicholls, I. (2020, March). La Agroecología en tiempos del COVID-19 . University of California , Berkeley. Centro Latinoamericano de Investigaciones Agroecológicas CELIA, 1–6. Retrieved from <https://consumidoresorganicos.org/2020/03/26/la-agroecologia-en-tiempos-del-covid-19/>

Cano, C., Vallejo, C., Caicedo, E., Amador, J. y Tique, E. (2012). El mercado mundial del café y su impacto en Colombia. *Revista Borradores de Economía-BanRep*, 710, 1–57. Retrieved from: http://www.banrep.gov.co/sites/default/files/publicaciones/archivos/be_710.pdf

Federación Nacional de Cafeteros. (2010). *Café de Colombia*. Retrieved from http://www.cafedecolombia.com/particulares/es/la_tierra_del_cafe/la_gente_del_cafe

Flórez, D. y Ward, S. (2013). Diseño de una minicadena productiva para apicultura orgánica en San Andrés Islas a través de un itinerario de ruta como herramienta de gestión e integración. *Corpoica Ciencia y Tecnología Agropecuaria*, 14(2), 129-147. Retrieved from <http://www.scielo.org.co/pdf/ccta/v14n2/v14n2a03.pdf>

Forero, J. (2002). *Sistemas de producción rurales en la región andina colombiana: análisis de su viabilidad económica, ambiental y cultural*. Bogotá: Javegraf. Retrieved from https://www.rds.org.co/aa/img_upload/30af8836e18ffedc2f0c15373601ed59/cc7508bb694caee87ff688edb93cb824.pdf

Hoyos, D. (2007). *Manejo sostenible de la producción de miel de abejas para el pequeño productor*. Bogotá: Universidad de La Salle. Retrieved from https://ciencia.lasalle.edu.co/cgi/viewcontent.cgi?article=1018&context=esp_gerencia_empresas_agropecuarias

Kevan, P., *et al.* (2007). High quality bee products are important to agriculture: why, and what needs to be done. *Journal of Apicultural Research*, 46(1), 59–64. <http://doi.org/10.3896/IBRA.1.46.1.11>

Laverde, J., Egea, L., Rodríguez, D., & Peña, J. (2010). *Agenda prospectiva de investigación y desarrollo tecnológico para la cadena productiva de las abejas y la apicultura en Colombia con énfasis en miel de abejas*. Ministerio de Agricultura y Desarrollo Rural. Bogotá: Ministerio de Agricultura y Desarrollo Rural. Retrieved from <http://hdl.handle.net/20.500.12324/12612>

Magaña, M. y Leyva, C. (2011). Costos y rentabilidad del proceso de producción apícola en México. *Contaduría y Administración*, (235), 99–119. Retrieved from <http://www.scielo.org.mx/pdf/cya/n235/n235a6.pdf>

Magaña, M., Moguel, Y., Sanginés, J., & Leyva, C. (2012). Estructura e importancia de la cadena productiva y comercial de la miel en México Importance and structure of honey production chain in Mexico. *Rev Mex Cienc Pecu*, 3(1), 49–64. Retrieved from http://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S2007-11242012000100004

Manises. (2008). *Guía para elaborar un plan de viabilidad*, 16. Retrieved from: http://www.boltana.es/pub/documentos/documentos_Guia_PLAN_DE_VIABILIDAD_-_Ayto_Manises_9735ccb7.pdf

Martínez. (2011). *Diagnóstico de la actividad apícola y de la crianza de abejas en Colombia*. Ministerio de Agricultura y Desarrollo Rural. Retrieved from <http://bibliotecadigital.agronet.gov.co/bitstream/11438/87971/1/004%20-%20D.C.%20-%202011%20Abril%20-%20Diagnostico%20Apicola.pdf>

Mora, J. y Cerón, H. (2015). Diversificación de ingresos en el sector rural y su impacto en la eficiencia: evidencia para México. *Cuadernos de Desarrollo Rural* 12(76), 57. <http://doi.org/10.11144/Javeriana.cdr12-76.disr>

Organización Internacional del Trabajo (OIT). (2015). *Diversificación económica de la economía rural*. Retrieved from: http://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_policy/documents/publication/wcms_437215.pdf

Razo, G., Jesús, F., Rebollar, R., Hernández, J., & Guzmán, E. (2014). The commercialization of the honey in the south of the State of Mexico. *Revista Mexicana de Agronegocios*, 34, 806–815. Retrieved from <https://www.redalyc.org/pdf/141/14131514015.pdf>

Red por una América libre de Transgénicos. (2016). Transgénicos, plaguicidas y el declive de la polinización y la producción melífera. Quito Ecuador: Acción ecológica. Retrieved from https://semillas.org.co/apc-aa-files/5d99b14191c59782eab3da99d8f95126/abejas_web.pdf

Rodi, S. (2013). Producción y comercialización de miel de abeja. Universidad Tecnológica Intercontinental. Retrieved from <https://es.scribd.com/document/282799917/Produccion-y-Comercializacion-de-Miel-de-Abeja>

Salcedo, S., y Guzmán, L. (2014). *Agricultura familiar en América Latina y el Caribe: recomendaciones de política*. Santiago, Chile: organización de las naciones unidas para la alimentación y la agricultura - FAO. Retrieved from <http://www.fao.org/3/i3788s/i3788s.pdf>

Sánchez, O. (2014). *Sistemas de producción y economía apícola en los departamentos de Cundinamarca y Boyacá. Caso de tres Organizaciones de Productores* (tesis doctoral). Bogotá: Universidad Nacional de Colombia.

Sánchez, O., Castañeda, P., Muñoz, G., y Téllez, G. (2013). Aportes para el análisis del sector apícola colombiano. *CienciAgro*, 2(4), 469–483. Retrieved from http://www.revistasbolivianas.org.bo/pdf/rca/v2n4/v2n4_a05.pdf

Saul da Rosa, A., Rogerio, C., Rogerio, É., Avelar, L., Kochhann, R., & Juárez, M. (2014). Caracterización de la producción y comercialización de la miel en Brasil. *Bioagrocencias*, 2(2), 1–6. Retrieved from https://www.researchgate.net/publication/305319081_Caracterizacion_de_la_produccion_y_comercializacion_de_la_miel_en_Brasil

Silva, Arcos y Gómez. (2006). *Guía ambiental apícola. Biocomercio sostenible*. Bogotá: Instituto de investigación de recursos biológicos Alexander von Humboldt.

Valdés, P. (2014). Apicultura de Precisión. *Agrimundo, inteligencia competitiva para el sector Agroalimentario*, Reporte n.º 2. Retrieved from: [http://www.agrimundo.cl/wp-content/uploads/140604_reporte_apicultura_n2 .pdf](http://www.agrimundo.cl/wp-content/uploads/140604_reporte_apicultura_n2.pdf)

Vásquez, R., & Tello, J. (1995). Administración de una empresa apícola. En Vásquez, R., & Tello, J. *Producción Apícola* (Ed.) (pp. 115-120). Bogotá: Produmedios.

Vega, J. L. (2007). Los estudios de viabilidad para negocios. *Centro de Desarrollo Económico del Recinto Universitario de Mayagüez*. Retrieved from: http://www.uprm.edu/cde/public_main/Informes_Articulos/articulos/ArticuloViabilidad.pdf

Veldtman, R., National, S. A., Town, C., Africa, S., Africa, S., & Veldtman, R. (2018). Are managed pollinators ultimately linked to the pollination ecosystem service paradigm? *South African Journal of Science*, 114(11), 2–5. Retrieved from https://www.researchgate.net/publication/329219745_Are_managed_pollinators_ultimately_linked_to_the_pollination_ecosystem_service_paradigm

Verde, M. (2014). Apicultura y seguridad alimentaria. *Revista Cubana de Ciencia Agrícola*, 48(1). Retrieved from <https://www.redalyc.org/pdf/1930/193030122008.pdf>

Zhao, J., y Barry, P. J. (2013). Implications of different income diversification indexes: the case of *Rural* 2(1), 13–20. <http://doi.org/10.17811/ebl.2.1.2013.13-20>

ÍNDICE REMISSIVO

A

Adaptabilidade 113, 206, 207
Agroindústrias 28, 31, 34, 48, 52, 59, 69
Agronegócio 9, 13, 15, 16, 19, 21, 22, 23, 24, 63, 64, 65, 69, 70, 71, 72, 73, 84, 127
Amoreira-Preta 206, 207, 210, 211, 216, 217, 218, 219, 220
Anticorpos 176, 177, 178
Apicultor 125, 127, 129, 131, 132, 133

B

Bioenergia 181, 187
Bovinocultura 29, 53, 55, 110, 111, 112, 113, 119, 212
Brotação 102, 104, 105, 106, 107, 108, 220

C

Cianamida 102, 104, 107, 108
Cobertura do Solo 189, 195, 196, 197, 198, 200, 208
Conservação 15, 64, 66, 67, 70, 112, 113, 114, 117
Crotalaria 230

D

Desenvolvimento Territorial Rural 25, 36
Didática 136, 140, 141
Dormência 102, 103, 106, 108, 109, 220

E

Energias Renováveis 181
Exportação 21, 84, 125, 126, 127, 128, 129

F

Frigoríficos 213, 214

H

Heterodera Glycines 221, 222, 223, 224, 228, 229
Hortaliças 52, 57, 189, 191, 196, 197, 198

M

Mel 30, 34, 54, 57, 125, 126, 127, 128, 129, 130, 131, 133, 134, 135
Melhoramento Genético 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 146, 218
Monocrotalina 221, 222, 224, 226, 227, 229

N

Nanopartículas 157, 158, 159, 162, 183
Nematoides 222, 223, 225, 226, 229

P

Patologia 180, 212, 213, 214

Planejamento 5, 30, 31, 32, 73, 87, 88, 125, 128, 131, 133, 134, 141, 231

Polifenóis 148

Políticas Públicas 1, 2, 9, 26, 27, 30, 38, 39, 49, 59, 61, 110, 114, 115, 118

Preservação 47, 49, 51, 52, 54, 56, 58, 63, 64, 69, 70, 112, 113, 114, 191, 199

Produtos Florestais 13, 15, 16, 18, 20, 21, 22, 23

Progesterona 201, 202, 203, 204

R

Resina 136, 137, 138, 139, 140

S

Suínos 49, 52, 143, 144, 145, 146, 221

Superovulação 201, 203

Sustentabilidade 2, 10, 13, 14, 15, 60, 62, 63, 64, 66, 67, 69, 70, 71, 99, 110, 113, 114, 117, 118, 119, 125, 128, 134, 181, 199, 231

T

Telecomunicações 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

V

Viabilidade 32, 118, 125, 128, 134, 164, 174, 175


X


Xantinas 148



www.atenaeditora.com.br 

contato@atenaeditora.com.br 

@atenaeditora 

www.facebook.com/atenaeditora.com.br 


Resultados Econômicos e de Sustentabilidade nos Sistemas nas Ciências Agrárias


Atena
Editora


Ano 2020



www.atenaeditora.com.br 

contato@atenaeditora.com.br 

[@atenaeditora](https://www.instagram.com/atenaeditora) 

www.facebook.com/atenaeditora.com.br 

Resultados Econômicos e de Sustentabilidade nos Sistemas nas Ciências Agrárias

**Atena**
Editora

Ano 2020