UNIVERSIDAD NACIONAL SANTIAGO ANTUNEZ DE MAYOLO

REDACCIÓN CIENTÍFICA - II

Dr. Raúl Siche Jara

UNIVERSIDAD NACIONAL DE TRUJILLO

CONFERENCIA-TALLER

AUTORÍA

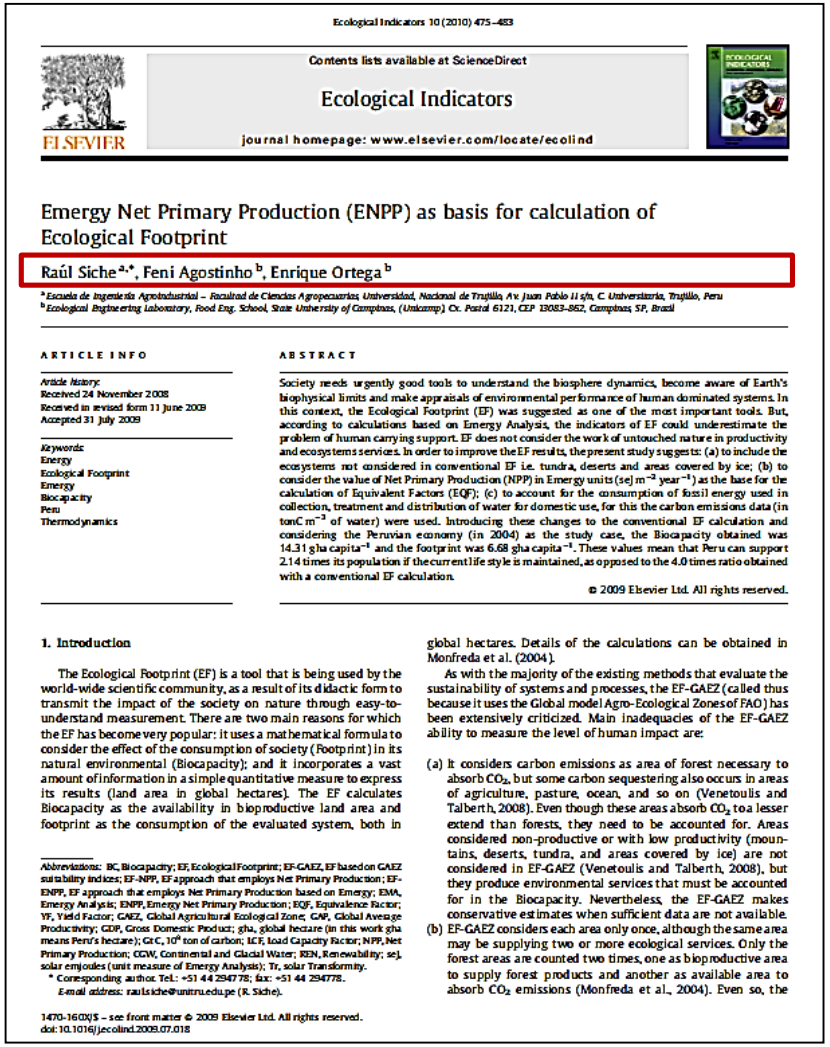
AUTORES

¿Quienes son?

¿Cuál es el orden?

¿Cómo redactarlo?

¿QUIÉN O QUIENES SON AUTORES?



Ecological Indicators 10 (2010) 475–483

Contents lists available at ScienceDirect

Ecological Indicators

journal homepage: www.elsevier.com/locate/ecolind

Emergy Net Primary Production (ENPP) as basis for calculation of Ecological Footprint

Raúl Siche [a,*], Feni Agostinho [b], Enrique Ortega [b]

[a] Escuela de Ingeniería Agroindustrial – Facultad de Ciencias Agropecuarias, Universidad, Nacional de Trujillo, Av. Juan Pablo II s/n, C. Universitaria, Trujillo, Peru
[b] Ecological Engineering Laboratory, Food Eng. School, State University of Campinas, (Unicamp) Cx. Postal 6121, CEP 13083-862, Campinas, SP, Brasil

ARTICLE INFO

Article history:
Received 24 November 2008
Received in revised form 11 June 2009
Accepted 31 July 2009

Keywords:
Energy
Ecological Footprint
Emergy
Biocapacity
Peru
Thermodynamics

ABSTRACT

Society needs urgently good tools to understand the biosphere dynamics, become aware of Earth's biophysical limits and make appraisals of environmental performance of human dominated systems. In this context, the Ecological Footprint (EF) was suggested as one of the most important tools. But, according to calculations based on Emergy Analysis, the indicators of EF could underestimate the problem of human carrying support. EF does not consider the work of untouched nature in productivity and ecosystems services. In order to improve the EF results, the present study suggests: (a) to include the ecosystems not considered in conventional EF i.e. tundra, deserts and areas covered by ice; (b) to consider the value of Net Primary Production (NPP) in Emergy units (sej m^{-2} year^{-1}) as the base for the calculation of Equivalent Factors (EQF); (c) to account for the consumption of fossil energy used in collection, treatment and distribution of water for domestic use, for this the carbon emissions data (in tonC m^{-3} of water) were used. Introducing these changes to the conventional EF calculation and considering the Peruvian economy (in 2004) as the study case, the Biocapacity obtained was 14.31 gha capita^{-1} and the footprint was 6.68 gha capita^{-1}. These values mean that Peru can support 2.14 times its population if the current life style is maintained, as opposed to the 4.0 times ratio obtained with a conventional EF calculation.

© 2009 Elsevier Ltd. All rights reserved.

1. Introduction

The Ecological Footprint (EF) is a tool that is being used by the world-wide scientific community, as a result of its didactic form to transmit the impact of the society on nature through easy-to-understand measurement. There are two main reasons for which the EF has become very popular: it uses a mathematical formula to consider the effect of the consumption of society (Footprint) in its natural environmental (Biocapacity); and it incorporates a vast amount of information in a simple quantitative measure to express its results (land area in global hectares). The EF calculates Biocapacity as the availability in bioproductive land area and footprint as the consumption of the evaluated system, both in global hectares. Details of the calculations can be obtained in Monfreda et al. (2004).

As with the majority of the existing methods that evaluate the sustainability of systems and processes, the EF-GAEZ (called thus because it uses the Global model Agro-Ecological Zones of FAO) has been extensively criticized. Main inadequacies of the EF-GAEZ ability to measure the level of human impact are:

(a) It considers carbon emissions as area of forest necessary to absorb CO_2, but some carbon sequestering also occurs in areas of agriculture, pasture, ocean, and so on (Venetoulis and Talberth, 2008). Even though these areas absorb CO_2 to a lesser extend than forests, they need to be accounted for. Areas considered non-productive or with low productivity (mountains, deserts, tundra, and areas covered by ice) are not considered in EF-GAEZ (Venetoulis and Talberth, 2008), but they produce environmental services that must be accounted for in the Biocapacity. Nevertheless, the EF-GAEZ makes conservative estimates when sufficient data are not available.
(b) EF-GAEZ considers each area only once, although the same area may be supplying two or more ecological services. Only the forest areas are counted two times, one as bioproductive area to supply forest products and another as available area to absorb CO_2 emissions (Monfreda et al., 2004). Even so, the

Abbreviations: BC, Biocapacity; EF, Ecological Footprint; EF-GAEZ, EF based on GAEZ suitability indices; EF-NPP, EF approach that employs Net Primary Production; EF-ENPP, EF approach that employs Net Primary Production based on Emergy; EMA, Emergy Analysis; ENPP, Emergy Net Primary Production; EQF, Equivalence Factor; YF, Yield Factor; GAEZ, Global Agricultural Ecological Zone; GAP, Global Average Productivity; GDP, Gross Domestic Product; gha, global hectare (in this work gha means Peru's hectare); GtC, 10^9 ton of carbon; LCF, Load Capacity Factor; NPP, Net Primary Production; CGW, Continental and Glacial Water; REN, Renewability; sej, solar emjoules (unit measure of Emergy Analysis); Tr, solar Transformity.

* Corresponding author. Tel.: +51 44 2947 78; fax: +51 44 2947 78.
E-mail address: raulsiche@unitru.edu.pe (R. Siche).

1470-160X/$ – see front matter © 2009 Elsevier Ltd. All rights reserved.
doi:10.1016/j.ecolind.2009.07.018

Persona que está en la capacidad de defender públicamente los resultados de la investigación y que cumple tres criterios:

- ✓ Su **contribución esencial** a la concepción y diseño del estudio, a la adquisición de datos o el análisis y la interpretación de estos;
- ✓ La **redacción del artículo o la revisión crítica** para hacer un aporte importante al contenido intelectual; y
- ✓ La **aprobación final** de la versión que será publicada.

AUTORES: ¿CUÁL ES EL ORDEN?

Ecological Indicators 10 (2010) 475–483

Contents lists available at ScienceDirect

Ecological Indicators

journal homepage: www.elsevier.com/locate/ecolind

Emergy Net Primary Production (ENPP) as basis for calculation of Ecological Footprint

Raúl Siche [a,*], Feni Agostinho [b], Enrique Ortega [b]

[b] Ecological Engineering Laboratory, Food Eng. School, State University of Campinas, (Unicamp) Cx. Postal 6121, CEP 13083-862, Campinas, SP, Brasil

ARTICLE INFO

Article history:
Received 24 November 2008
Received in revised form 11 June 2009
Accepted 31 July 2009

Keywords:
Energy
Ecological Footprint
Emergy
Biocapacity
Peru
Thermodynamics

ABSTRACT

Society needs urgently good tools to understand the biosphere dynamics, become aware of Earth's biophysical limits and make appraisals of environmental performance of human dominated systems. In this context, the Ecological Footprint (EF) was suggested as one of the most important tools. But, according to calculations based on Emergy Analysis, the indicators of EF could underestimate the problem of human carrying support. EF does not consider the work of untouched nature in productivity and ecosystems services. In order to improve the EF results, the present study suggests: (a) to include the ecosystems not considered in conventional EF i.e. tundra, deserts and areas covered by ice; (b) to consider the value of Net Primary Production (NPP) in Emergy units (sej m^{-2} $year^{-1}$) as the base for the calculation of Equivalent Factors (EQF); (c) to account for the consumption of fossil energy used in collection, treatment and distribution of water for domestic use, for this the carbon emissions data (in tonC m^{-3} of water) were used. Introducing these changes to the conventional EF calculation and considering the Peruvian economy (in 2004) as the study case, the Biocapacity obtained was 14.31 gha $capita^{-1}$ and the footprint was 6.68 gha $capita^{-1}$. These values mean that Peru can support 2.14 times its population if the current life style is maintained, as opposed to the 4.0 times ratio obtained with a conventional EF calculation.

© 2009 Elsevier Ltd. All rights reserved.

1. Introduction

The Ecological Footprint (EF) is a tool that is being used by the world-wide scientific community, as a result of its didactic form to transmit the impact of the society on nature through easy-to-understand measurement. There are two main reasons for which the EF has become very popular: it uses a mathematical formula to consider the effect of the consumption of society (Footprint) in its natural environmental (Biocapacity); and it incorporates a vast amount of information in a simple quantitative measure to express its results (land area in global hectares). The EF calculates Biocapacity as the availability in bioproductive land area and footprint as the consumption of the evaluated system, both in global hectares. Details of the calculations can be obtained in Monfreda et al. (2004).

As with the majority of the existing methods that evaluate the sustainability of systems and processes, the EF-GAEZ (called thus because it uses the Global model Agro-Ecological Zones of FAO) has been extensively criticized. Main inadequacies of the EF-GAEZ ability to measure the level of human impact are:

(a) It considers carbon emissions as area of forest necessary to absorb CO_2, but some carbon sequestering also occurs in areas of agriculture, pasture, ocean, and so on (Venetoulis and Talberth, 2008). Even though these areas absorb CO_2 to a lesser extend than forests, they need to be accounted for. Areas considered non-productive or with low productivity (mountains, deserts, tundra, and areas covered by ice) are not considered in EF-GAEZ (Venetoulis and Talberth, 2008), but they produce environmental services that must be accounted for in the Biocapacity. Nevertheless, the EF-GAEZ makes conservative estimates when sufficient data are not available.
(b) EF-GAEZ considers each area only once, although the same area may be supplying two or more ecological services. Only the forest areas are counted two times, one as bioproductive area to supply forest products and another as available area to absorb CO_2 emissions (Monfreda et al., 2004). Even so, the

Abbreviations: BC, Biocapacity; EF, Ecological Footprint; EF-GAEZ, EF based on GAEZ suitability indices; EF-NPP, EF approach that employs Net Primary Production; EF-ENPP, EF approach that employs Net Primary Production based on Emergy; EMA, Emergy Analysis; ENPP, Emergy Net Primary Production; EQF, Equivalence Factor; YF, Yield Factor; GAEZ, Global Agricultural Ecological Zone; GAP, Global Average Productivity; GDP, Gross Domestic Product; gha, global hectare (in this work gha means Peru's hectare); GtC, 10^9 ton of carbon; ICF, Load Capacity Factor; NPP, Net Primary Production; CGW, Continental and Glacial Water; REN, Renewability; sej, solar emjoules (unit measure of Emergy Analysis); Tr, solar Transformity.

* Corresponding author. Tel.: +51 44 294778; fax: +51 44 294778.
E-mail address: raulsiche@unitru.edu.pe (R. Siche).

1470-160X/$ – see front matter © 2009 Elsevier Ltd. All rights reserved.
doi:10.1016/j.ecolind.2009.07.018

- El **PRIMER AUTOR** es generalmente el responsable por la primera redacción.
- Generalmente el autor responsable por la publicación es el **ÚLTIMO**.
- Debe incluirse un **COAUTOR** sólo si su contribución intelectual fue importante para el trabajo.

AUTOR CORRESPONDIENTE

Ecological Indicators 10 (2010) 475–483

Contents lists available at ScienceDirect

Ecological Indicators

journal homepage: www.elsevier.com/locate/ecolind

Emergy Net Primary Production (ENPP) as basis for calculation of Ecological Footprint

Raúl Siche [a,*], Feni Agostinho [b], Enrique Ortega [b]

[a] Escuela de Ingeniería Agroindustrial – Facultad de Ciencias Agropecuarias, Universidad, Nacional de Trujillo, Av. Juan Pablo II s/n, C. Universitaria, Trujillo, Peru
[b] Ecological Engineering Laboratory, Food Eng. School, State University of Campinas, (Unicamp), Cx. Postal 6121, CEP 13083-862, Campinas, SP, Brasil

ARTICLE INFO

Article history:
Received 24 November 2008
Received in revised form 11 June 2009
Accepted 31 July 2009

Keywords:
Energy
Ecological Footprint
Emergy
Biocapacity
Peru
Thermodynamics

ABSTRACT

Society needs urgently good tools to understand the biosphere dynamics, become aware of Earth's biophysical limits and make appraisals of environmental performance of human dominated systems. In this context, the Ecological Footprint (EF) was suggested as one of the most important tools. But, according to calculations based on Emergy Analysis, the indicators of EF could underestimate the problem of human carrying support. EF does not consider the work of untouched nature in productivity and ecosystems services. In order to improve the EF results, the present study suggests: (a) to include the ecosystems not considered in conventional EF i.e. tundra, deserts and areas covered by ice; (b) to consider the value of Net Primary Production (NPP) in Emergy units (sej m^{-2} $year^{-1}$) as the base for the calculation of Equivalent Factors (EQF); (c) to account for the consumption of fossil energy used in collection, treatment and distribution of water for domestic use, for this the carbon emissions data (in ton$C$ m^{-3} of water) were used. Introducing these changes to the conventional EF calculation and considering the Peruvian economy (in 2004) as the study case, the Biocapacity obtained was 14.31 gha $capita^{-1}$ and the footprint was 6.68 gha $capita^{-1}$. These values mean that Peru can support 2.14 times its population if the current life style is maintained, as opposed to the 4.0 times ratio obtained with a conventional EF calculation.

© 2009 Elsevier Ltd. All rights reserved.

1. Introduction

The Ecological Footprint (EF) is a tool that is being used by the world-wide scientific community, as a result of its didactic form to transmit the impact of the society on nature through easy-to-understand measurement. There are two main reasons for which

global hectares. Details of the calculations can be obtained in Monfreda et al. (2004).

As with the majority of the existing methods that evaluate the sustainability of systems and processes, the EF-GAEZ (called thus because it uses the Global model Agro-Ecological Zones of FAO) has been extensively criticized. Main inadequacies of the EF-GAEZ

Biocapacity as the availability in bioproductive land area and footprint as the consumption of the evaluated system, both in

Talberth, 2008). Even though these areas absorb CO_2 to a lesser extend than forests, they need to be accounted for. Areas considered non-productive or with low productivity (mountains, deserts, tundra, and areas covered by ice) are not considered in EF-GAEZ (Venetoulis and Talberth, 2008), but they produce environmental services that must be accounted for in the Biocapacity. Nevertheless, the EF-GAEZ makes conservative estimates when sufficient data are not available.

(b) EF-GAEZ considers each area only once, although the same area may be supplying two or more ecological services. Only the forest areas are counted two times, one as bioproductive area to supply forest products and another as available area to absorb CO_2 emissions (Monfreda et al., 2004). Even so, the

* Corresponding author. Tel.: +51 44 294778; fax: +51 44 294778.
E-mail address: raul.siche@unitru.edu.pe (R. Siche).

Abbreviations: BC, Biocapacity; EF, Ecological Footprint; EF-GAEZ, EF based on GAEZ suitability indices; EF-NPP, EF approach that employs Net Primary Production; EF-ENPP, EF approach that employs Net Primary Production based on Emergy; EMA, Emergy Analysis; ENPP, Emergy Net Primary Production; EQF, Equivalence Factor; YF, Yield Factor; GAEZ, Global Agricultural Ecological Zone; GAP, Global Average Productivity; GDP, Gross Domestic Product; gha, global hectare (in this work gha means Peru's hectare); GtC, 10^9 ton of carbon; LCF, Load Capacity Factor; NPP, Net Primary Production; CGW, Continental and Glacial Water; REN, Renewability; sej, solar emjoules (unit measure of Emergy Analysis); Tr, solar Transformity.

* Corresponding author. Tel.: +51 44 294778; fax: +51 44 294778.
E-mail address: raul.siche@unitru.edu.pe (R. Siche).

1470-160X/$ – see front matter © 2009 Elsevier Ltd. All rights reserved.
doi:10.1016/j.ecolind.2009.07.018

Sólo **UNO DE LOS AUTORES** actúa como autor correspondiente.

Es el autor que estará disponible para resolver cualquier solicitud del editor de la revista (antes de la publicación), o como contacto con lectores investigadores (luego de la publicación).

El autor correspondiente debe colocar además de los datos de afiliación, su correo electrónico y teléfono (fax).

AUTOR: ¿COMO REDACTARLO?

Journal of Food Engineering 97 (2010) 478–483

Contents lists available at ScienceDirect

Journal of Food Engineering

journal homepage: www.elsevier.com/locate/jfoodeng

Temperature and power control in microwave drying

Zhenfeng Li [a,b,*], G.S.V. Raghavan [b], Valérie Orsat [b]

[a] College of Mechanical and Electronic Engineering, Northwest A&F University, Yangling, Shaanxi 712100, China
[b] Department of Bioresource Engineering, McGill University, 21111 Lakeshore Road, Ste-Anne-de-Bellevue, QC, Canada H9X 3V9

Journal of Food Engineering 103 (2011) 417–433

Contents lists available at ScienceDirect

Journal of Food Engineering

journal homepage: www.elsevier.com/locate/jfoodeng

Managing food traceability information using EPCIS framework

Maitri Thakur [a,*], Carl-Fredrik Sørensen [a], Finn Olav Bjørnson [a], Eskil Forås [a], Charles R. Hurburgh [b,c]

[a] Aquaculture Technology, SINTEF Fisheries and Aquaculture, Brattørkaia 17C, 7010 Trondheim, Norway
[b] Department of Agricultural and Biosystems Engineering, Iowa State University, Ames, IA 50011, USA
[c] Department of Food Science and Human Nutrition, Iowa State University, Ames, IA 50011, USA

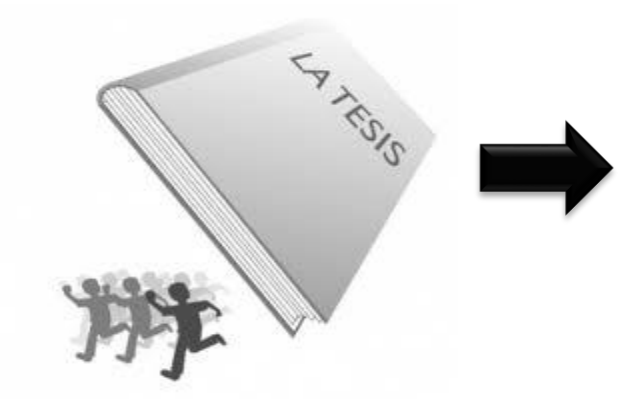
Nombre del autor

Desde su primera publicación, el autor debe tener un nombre científico y conservar el mismo en todas sus publicaciones

Forma de envío a la revista	Forma de aparición
Raúl Benito Siche Jara	Jara RBS
Raúl Siche Jara	Jara RS
Raúl Siche-Jara	Siche-Jara R
Raúl Benito Siche-Jara	Siche-Jara RB
Raúl Siche	Siche R
Raúl Benito Siche	Siche RB

AUTOR FANTASMA

Investigador que cumple los requisitos de autoría pero no es incluido al presentar el artículo.



Scientia Agropecuaria 6 (4): 247 – 257 (2015)

SCIENTIA AGROPECUARIA

Scientia Agropecuaria

Sitio Web: http://revistas.unitru.edu.pe/index.php/scientiaagrop

Facultad de Ciencias Agropecuarias

Universidad Nacional de Trujillo

Determinación del potencial promotor del crecimiento vegetal de *Azotobacter spp.* aislados de la rizósfera de malezas en cultivos de maíz (*Zea mays* L.)

Determination of plant growth promoting potential of Azotobacter spp. isolated from the rhizosphere of weeds in maize crop (*Zea mays* L.)

Luis H. León*; Luis M. Rojas

Facultad de Ciencias Biológicas, Universidad Nacional Pedro Ruiz Gallo, Av. Juan XXIII 391, Lambayeque, Perú.

Recibido 10 agosto 2015. Aceptado 09 octubre 2015.

CANTIDAD DE AUTORES

¿Cuántos autores puede tener un manuscrito?

nature biotechnology

Sharing and community curation of mass spectrometry data with Global Natural Products Social Molecular Networking

A full list of authors and affiliations appears at the end of the paper.

Received 11 August 2015; accepted 10 May 2016; published online 9 August 2016; doi:10.1038/nbt.3597

CANTIDAD DE AUTORES

¿Cuántos autores puede tener un manuscrito?

Mingxun Wang[1,2,53], Jeremy J Carver[1,2,53], Vanessa V Phelan[3,53], Laura M Sanchez[3,53], Neha Garg[3,53], Yao Peng[4,53], Don Duy Nguyen[4], Jeramie Watrous[3], Clifford A Kapono[4], Tal Luzzatto-Knaan[3], Carla Porto[3], Amina Bouslimani[3], Alexey V Melnik[3], Michael J Meehan[3], Wei-Ting Liu[5], Max Crüsemann[6], Paul D Boudreau[6], Eduardo Esquenazi[7], Mario Sandoval-Calderón[8], Roland D Kersten[9], Laura A Pace[3], Robert A Quinn[10], Katherine R Duncan[11,6], Cheng-Chih Hsu[4], Dimitrios J Floros[4], Ronnie G Gavilan[12], Karin Kleigrewe[6], Trent Northen[13], Rachel J Dutton[14], Delphine Parrot[15], Erin E Carlson[16], Bertrand Aigle[17], Charlotte F Michelsen[18], Lars Jelsbak[18], Christian Sohlenkamp[8], Pavel Pevzner[2,1], Anna Edlund[19,20], Jeffrey McLean[21,20], Jörn Piel[22], Brian T Murphy[23], Lena Gerwick[6], Chih-Chuang Liaw[24], Yu-Liang Yang[25], Hans-Ulrich Humpf[26], Maria Maansson[18], Robert A Keyzers[27], Amy C Sims[28], Andrew R Johnson[29], Ashley M Sidebottom[29], Brian E Sedio[30,12], Andreas Klitgaard[18], Charles B Larson[6,31], Cristopher A Boya P[12], Daniel Torres-Mendoza[12], David J Gonzalez[3,31], Denise B Silva[32,33], Lucas M Marques[32], Daniel P Demarque[32], Egle Pociute[7], Ellis C O'Neill[6], Enora Briand[6,34], Eric J N Helfrich[22], Eve A Granatosky[35], Evgenia Glukhov[6], Florian Ryffel[22], Hailey Houson[7], Hosein Mohimani[2], Jenan J Kharbush[6], Yi Zeng[4], Julia A Vorholt[22], Kenji L Kurita[36], Pep Charusanti[37], Kerry L McPhail[38], Kristian Fog Nielsen[18], Lisa Vuong[7], Maryam Elfeki[23], Matthew F Traxler[39], Niclas Engene[40], Nobuhiro Koyama[3], Oliver B Vining[38], Ralph Baric[28], Ricardo R Silva[32], Samantha J Mascuch[6], Sophie Tomasi[15], Stefan Jenkins[13], Venkat Macherla[7], Thomas Hoffman[41], Vinayak Agarwal[42], Philip G Williams[43], Jingqui Dai[43], Ram Neupane[43], Joshua Gurr[43], Andrés M C Rodríguez[32], Anne Lamsa[44], Chen Zhang[45], Kathleen Dorrestein[3], Brendan M Duggan[3], Jehad Almaliti[3], Pierre-Marie Allard[46], Prasad Phapale[47], Louis-Felix Nothias[48], Theodore Alexandrov[47], Marc Litaudon[48], Jean-Luc Wolfender[46], Jennifer E Kyle[49], Thomas O Metz[49], Tyler Peryea[50], Dac-Trung Nguyen[50], Danielle VanLeer[50], Paul Shinn[50], Ajit Jadhav[50], Rolf Müller[41], Katrina M Waters[49], Wenyuan Shi[20], Xueting Liu[51], Lixin Zhang[51], Rob Knight[52], Paul R Jensen[6], Bernhard Ø Palsson[37], Kit Pogliano[44], Roger G Linington[36], Marcelino Gutiérrez[12], Norberto P Lopes[32], William H Gerwick[3,6], Bradley S Moore[3,6,42], Pieter C Dorrestein[3,6,31] & Nuno Bandeira[2,3,31]

CANTIDAD DE AUTORES

¿Cuántos autores puede tener un manuscrito?

No hay un número definido, sólo se debe cumplir el requisito de que la participación de los que aparecen allí haya sido significativa.

AFILIACIÓN

¿Cómo redactarlo?
¿Porqué es importante?

AFILIACIÓN INSTITUCIONAL: ¿CÓMO REDACTARLO?

- Dentro del manuscrito, el nombre del autor debe estar vinculado, mediante un llamado, **a la institución a la cual perteneció durante el desarrollo de su trabajo de investigación**.

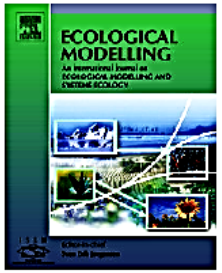
ECOLOGICAL MODELLING 210 (2008) 37–57

available at www.sciencedirect.com

ScienceDirect

ELSEVIER

journal homepage: www.elsevier.com/locate/ecolmodel



The use of emergy assessment and the Geographical Information System in the diagnosis of small family farms in Brazil

Feni Agostinho[a], Guaraci Diniz[b], Raúl Siche[c], Enrique Ortega[a,]*

[a] FEA (College of Food Engineering) – Unicamp, CP 6121, CEP 13083-862 Campinas, SP, Brazil
[b] Sítio Duas Cachoeiras (Farm) – Rodovia SP 360, Km 121, CEP 13908-009 Arcadas, Amparo, SP, Brazil
[c] Escuela de Ingeniería Agroindustrial – Facultad de Ciencias Agropecuarias, Universidad National de Trujillo, Av. Juan Pablo II s/n. C. Universitaria, Trujillo, Peru

AFILIACIÓN INSTITUCIONAL: ¿CÓMO REDACTARLO?

- Un autor puede estar afiliado a una o más instituciones.

Food Bioscience 17 (2017) 24–28

Contents lists available at ScienceDirect

Food Bioscience

journal homepage: www.elsevier.com/locate/fbio

Osmotic pretreatment to assure retention of phenolics and anthocyanins in berry jams

Gabriela Barraza-Jáuregui[a,b,*], G. Vega[a], J. Valeriano[a], J. Obregón[c], Raúl Siche[a], A.C. Miano[d]

[a] *Escuela de Ingeniería Agroindustrial, Facultad de Ciencias Agropecuarias,, Universidad Nacional de Trujillo, Trujillo, Peru*
[b] *Escuela de Ingeniería de Industrias Alimentarias, Facultad de Ciencias Agrarias, Universidad Antenor Orrego, Trujillo, Peru*
[c] *Quality Management Consultant, Engineering Consulting & Services, Trujillo, Peru*
[d] *Department of Agri-food Agri food Industry, Food and Nutrition (LAN), Luiz de Queiroz College of Agriculture (ESALQ), University of São Paulo (USP), Piracicaba, SP, Brazil*

AFILIACIÓN INSTITUCIONAL: ¿CÓMO REDACTARLO?

- Normalmente las revistas solicitan colocar el nombre de la **ciudad** y el **país** (dirección postal) donde se encuentra localizada la institución donde se realizó la investigación.
- La institución debe mantener su **nombre original** (no traducirse), a no ser que también se dé a conocer en otro idioma.

Ecological Indicators 10 (2010) 475–483

Contents lists available at ScienceDirect

Ecological Indicators

journal homepage: www.elsevier.com/locate/ecolind

Emergy Net Primary Production (ENPP) as basis for calculation of Ecological Footprint

Raúl Siche [a,*], Feni Agostinho [b], Enrique Ortega [b]

[a] Escuela de Ingeniería Agroindustrial – Facultad de Ciencias Agropecuarias, Universidad, Nacional de Trujillo, Av. Juan Pablo II s/n, C. Universitaria, Trujillo, Peru
[b] Ecological Engineering Laboratory, Food Eng. School, State University of Campinas, (Unicamp), Cx. Postal 6121, CEP 13083-862, Campinas, SP, Brazil

AFILIACIÓN INSTITUCIONAL: ¿PARA QUÉ SIRVE?

La afiliación permite que la actuación del autor, la institución, la ciudad y el país pueda ser evaluada en el campo científico.

Ayudar al proceso de indización del artículo científico

¿Cómo redactar el RESUMEN (ABSTRACT)?

RESUMEN (ABSTRACT)

El resumen consiste básicamente en la reducción a términos breves y concisos de lo esencial de un asunto o materia.

Cómo resumir

- ✓ Leer el texto tantas veces como sea necesario.
- ✓ Pensar en el texto e "integrarnos" a él, hasta estar seguros de haberlo comprendido.
- ✓ Discernir la importancia de cada elemento que figura en el texto.
- ✓ Elegir qué elementos debemos sacrificar y cuáles destacar.
- ✓ Por último expresar con nuestras propias palabras lo que hemos comprendido.

RESUMEN (ABSTRACT)

El resumen consiste básicamente en la reducción a términos breves y concisos de lo esencial de un asunto o materia.

Errores más frecuentes

- ✓ No presenta un orden adecuado
- ✓ Ser demasiado extenso (más de 200 palabras)
- ✓ Incluir información innecesaria.

RESUMEN (ABSTRACT)

Artículo de Investigación Original

LWT - Food Science and Technology xxx (2014) 1–7

Contents lists available at ScienceDirect

LWT - Food Science and Technology

journal homepage: www.elsevier.com/locate/lwt

Measurement parameter of color on yacon (*Smallanthus sonchifolius*) slices using a computer vision system

Erick Saldaña [a], Raúl Siche [b,*], Wilson Castro [c], Rosmer Huamán [d], Roberto Quevedo [e]

[a] Department of Agro-industry, Food and Nutrition, "Luiz de Queiroz" Agricultural College, University of Sao Paulo, Piracicaba City, SP 13418-900, Brazil
[b] Facultad de Ciencias Agropecuarias, Universidad Nacional de Trujillo, Av. Juan Pablo II s/n. Ciudad Universitaria, Trujillo, Peru
[c] Facultad de Ingeniería y Ciencias Agrarias, Universidad Nacional Toribio Rodríguez de Mendoza de Amazonas, Pampas de Higos Urco S/N, Ciudad Universitaria, Amazonas, Peru
[d] Escola de Química e Alimentos, Universidade Federal de Rio Grande, Av. Italia km 8, Campos Carreiros s/n. Rio Grande, Brazil
[e] Food Science and Technology Department, Universidad de Los Lagos, Osorno, Chile

ARTICLE INFO

Article history:
Received 28 January 2014
Received in revised form
4 June 2014
Accepted 16 June 2014
Available online xxx

Keywords:
CIE $L^*a^*b^*$ color space
Minimally processed food
Color system
Yacon

ABSTRACT

The aim of this research was to design, implement and calibrate a Computer Vision System (CVS) in real-time, in order to measure the color on minimally processed yacon slices. For this purpose a (software and hardware) was designed and implemented which consisted of two steps: a) image acquisition and b) image processing and analysis. For both, an algorithm and a graphical user interface (GUI) were developed in MatLab. CVS calibration was performed with a conventional colorimeter (Model CIE $L^*a^*b^*$). Minimally processed yacon slices were obtained and stored at 5 °C. Color changes were estimated every 2 h, for 26 h, obtaining its color parameters. L^* decreased from 65.9 to 60.8, with a tendency to a black color; a^* increased from 7.3 to 17.7, approaching a red color; b^* increased from 33.1 to 41.5, presenting a tendency to a yellow color. Moreover, C^* increased from 35.9 to 48.1, H^* decreased from 78.2 to 66.9 and ΔE^* increased from 2.6 to 13.2. Low errors calculated (e_{L^*} = 5.001%, and e_{a^*} = 2.287%, and e_{b^*} = 4.314%) ensure suitable and efficient application in industrial process automation and quality control in the food industry.

© 2014 Elsevier Ltd. All rights reserved.

Objetivo

Metodología

Resultados y Conclusiones

RESUMEN (ABSTRACT)

INTERNATIONAL JOURNAL OF FOOD PROPERTIES
2017, VOL. 20, NO. S2, S1264–S1297
https://doi.org/10.1080/10942912.2017.1338729

Taylor & Francis
Taylor & Francis Group

Artículo de Revisión

Check for updates

Evaluation of biological contaminants in foods by hyperspectral imaging: A review

Ricardo Vejarano[a,b], Raúl Siche [a], and Wendu Tesfaye[c]

[a]Facultad de Ciencias Agropecuarias, Universidad Nacional de Trujillo (UNT), Ciudad Universitaria, Trujillo, Peru; [b]Facultad de Ingeniería, Universidad Privada del Norte (UPN), Trujillo, Peru; [c]Departamento de Química y Tecnología de Alimentos, Universidad Politécnica de Madrid (UPM), Madrid, Spain

ABSTRACT

Responding to the ever-growing concern about safe foods and security, the food industries are forced to seek an emerging technology capable of detecting and quantifying contaminations, especially those of biological origin. Among the different emerging technologies, hyperspectral imaging is considered a good alternative as it can be easily applied at all steps of the food production process and is a non-destructive technique. This paper reviews targeted analytical applications of hyperspectral imaging in monitoring biological contaminants in food. First, traditional techniques for detection of biological contaminants in foods are presented, where disadvantages for practical applications are highlighted and explained in detail. Second, prominent applications of hyperspectral imaging from the last decade to food safety and quality assessment are reviewed, specifically focusing on both deteriorative and pathogenic microorganisms, microbial toxins, and parasites; whether acting individually or collectively in spoiling food products and/or represent a health risk to the consumers. Finally, relevant current and future challenges, advantages and disadvantages of hyperspectral imaging applications are briefly examined.

ARTICLE HISTORY
Received 16 January 2017
Accepted 1 June 2017

KEYWORDS
Hyperspectral imaging; Microbial contaminants; Toxins detection; Parasite detection; Image technology

Justificación

Objetivo

Opcional

Resumen de los capítulos

RESUMEN (ABSTRACT)

Food Research International 119 (2019) 839–849

Contents lists available at ScienceDirect

Food Research International

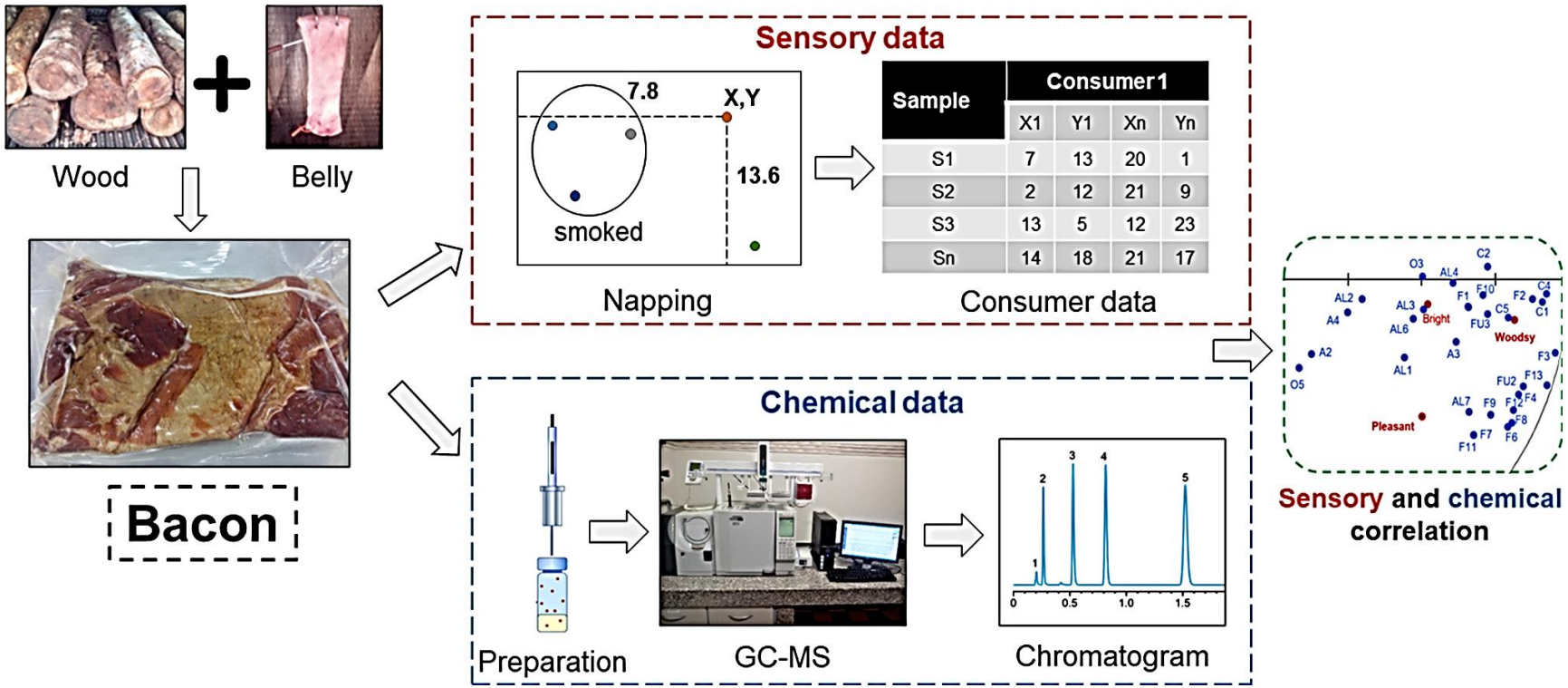
journal homepage: www.elsevier.com/locate/foodres

Relationship between volatile compounds and consumer-based sensory characteristics of bacon smoked with different Brazilian woods

Erick Saldaña[a], Luiz Saldarriaga[b], Jorge Cabrera[b], Raúl Siche[b], Jorge H. Behrens[c], Miriam M. Selani[d], Marcio A. de Almeida[a], Luciana Duque Silva[e], Jair S. Silva Pinto[a], Carmen J. Contreras-Castillo[a,*]

[a] Escola Superior de Agricultura "Luiz de Queiroz" (ESALQ), Departamento de Agroindústria, Alimentos e Nutrição (LAN), Universidade de São Paulo (USP), Piracicaba 13418-900, Brazil
[b] Facultad de Ciencias Agropecuarias, Universidad Nacional de Trujillo, Av. Juan Pablo II s/n. Ciudad Universitaria, Trujillo, Peru
[c] Department of Food and Nutrition, School of Food Engineering, University of Campinas, Rua Monteiro Lobato, 80, Campinas 13083-862, Brazil
[d] Centro de Ciências da Natureza, Universidade Federal de São Carlos, Campus Lagoa do Sino Rod. Lauri Simões de Barros, Km 12, Buri, Brazil
[e] Departamento de Ciências Florestais (CF), Escola Superior de Agricultura "Luiz de Queiroz" (ESALQ), Universidade de São Paulo (USP), Piracicaba 13418-900, Brazil

Graphical Abstract



Sample	Consumer1			
	X1	Y1	Xn	Yn
S1	7	13	20	1
S2	2	12	21	9
S3	13	5	12	23
Sn	14	18	21	17

PALABRAS CLAVE
¿Cómo seleccionarlas?

PALABRAS CLAVE

Las palabras clave son términos o frases cortas (lexemas) que permiten **clasificar y direccionar** las entradas en los sistemas de indexación y de recuperación de la información en las bases de datos de un manuscrito o área temática en particular.
Las palabras clave se convierten entonces en una herramienta esencial de **doble vía**, es decir, de quienes escriben y de quienes buscan la información de manuscritos o áreas temáticas relacionadas.

En consecuencia, no se debe subvalorar o menospreciar su importancia a la hora de considerarlas, pues se podría dificultar la difusión de un manuscrito e incluso no detectar la relación del mismo con otros similares, justamente por el uso inadecuado de las palabras clave.

PALABRAS CLAVE

Así, se considera que las palabras clave (descriptores) incrementan ostensiblemente las posibilidades de profundización y búsqueda de la información de un área temática, lo que no es posible solo a través del examen del título del manuscrito.

RECOMENDACIÓN

Procurar incluir palabras clave que no estén incluidas en el título del manuscrito ni en el resumen, ya que aplicando esta estrategia se pueden aumentar las posibilidades de búsqueda y ser visibles en los sistemas de información actuales.

PALABRAS CLAVE

Food Bioscience 17 (2017) 24–28

Contents lists available at ScienceDirect

Food Bioscience

journal homepage: www.elsevier.com/locate/fbio

Osmotic pretreatment to assure retention of phenolics and anthocyanins in berry jams

Gabriela Barraza-Jáuregui[a,b,*], G. Vega[a], J. Valeriano[a], J. Obregón[c], Raúl Siche[a], A.C. Miano[d]

[a] Escuela de Ingeniería Agroindustrial, Facultad de Ciencias Agropecuarias,, Universidad Nacional de Trujillo, Trujillo, Peru
[b] Escuela de Ingeniería de Industrias Alimentarias, Facultad de Ciencias Agrarias, Universidad Antenor Orrego, Trujillo, Peru
[c] Quality Management Consultant, Engineering Consulting & Services, Trujillo, Peru
[d] Department of Agri-food Agri food Industry, Food and Nutrition (LAN), Luiz de Queiroz College of Agriculture (ESALQ), University of São Paulo (USP), Piracicaba, SP, Brazil

ARTICLE INFO

Chemical compounds studied in this article:
Sucrose (PubChem CID: 5988)
ethanol (PubChem CID: 702)
hydrochloric acid (PubChem CID: 313)
potassium chloride (PubChem CID: 4873)
sodium acetate (PubChem CID: 517045)
pectin (PubChem CID: 441476)
distilled water (PubChem CID: 962)
sodium carbonate (PubChem CID: 10340)
cyanidin 3-O-glucoside (PubChem CID: 441667)
gallic acid (PubChem CID: 370)

Keywords:
Vaccinium corymbosum
Fragaria x ananassa
Response surface methodology
Osmotic treatment
Jam

ABSTRACT

A Rotational Central Compound Design was used to optimize time and sucrose concentration for osmotic pretreatment of blueberries and strawberries to preserve anthocyanin and phenolic compound content and color during subsequent jam preparation. No significant differences were found for color, but statistically significant differences in the phenolic compounds and anthocyanins content in the resulting jam were observed. Superposition of the resulting response surfaces allowed for prediction of optimized osmotic pre-treatment time and sucrose concentration. The predicted values were confirmed in triplicate. The results indicate that pretreatment times of 242 and 219 min and sucrose concentrations of 1.65 and 1.46 M recovered the greatest amount of the target compounds in blueberry and strawberry jams, respectively.

¿Cómo redactar la INTRODUCCIÓN?

Artículo de Investigación Original

Debe proveer:

INFORMACIÓN SUFICIENTE

Para que el lector entienda:

- La **realidad problemática (Problema)**
- Las **soluciones reportadas en la literatura científica** relacionados al problema **(Antecedentes)**
- El **vacío en el conocimiento** del asunto que se propone dilucidar **(Justificación teórica)**
- El propósito del estudio **(Objetivo)**.

Artículo de Revisión

Debe proveer:

INFORMACIÓN SUFICIENTE

Para que el lector entienda:

- La **realidad problemática (Problema)**
- Las **publicaciones reportadas en la literatura científica** relacionados al problema **(Estado del arte)**
- El **vacío en el estado del arte** del asunto que se propone revisar **(Justificación)** } Opcional
- El propósito de la revisión **(Objetivo)**.

1. Revisión de la literatura atingente al tema

Fuentes Secundarias. Son documentos que utilizan o listan fuentes primarias.

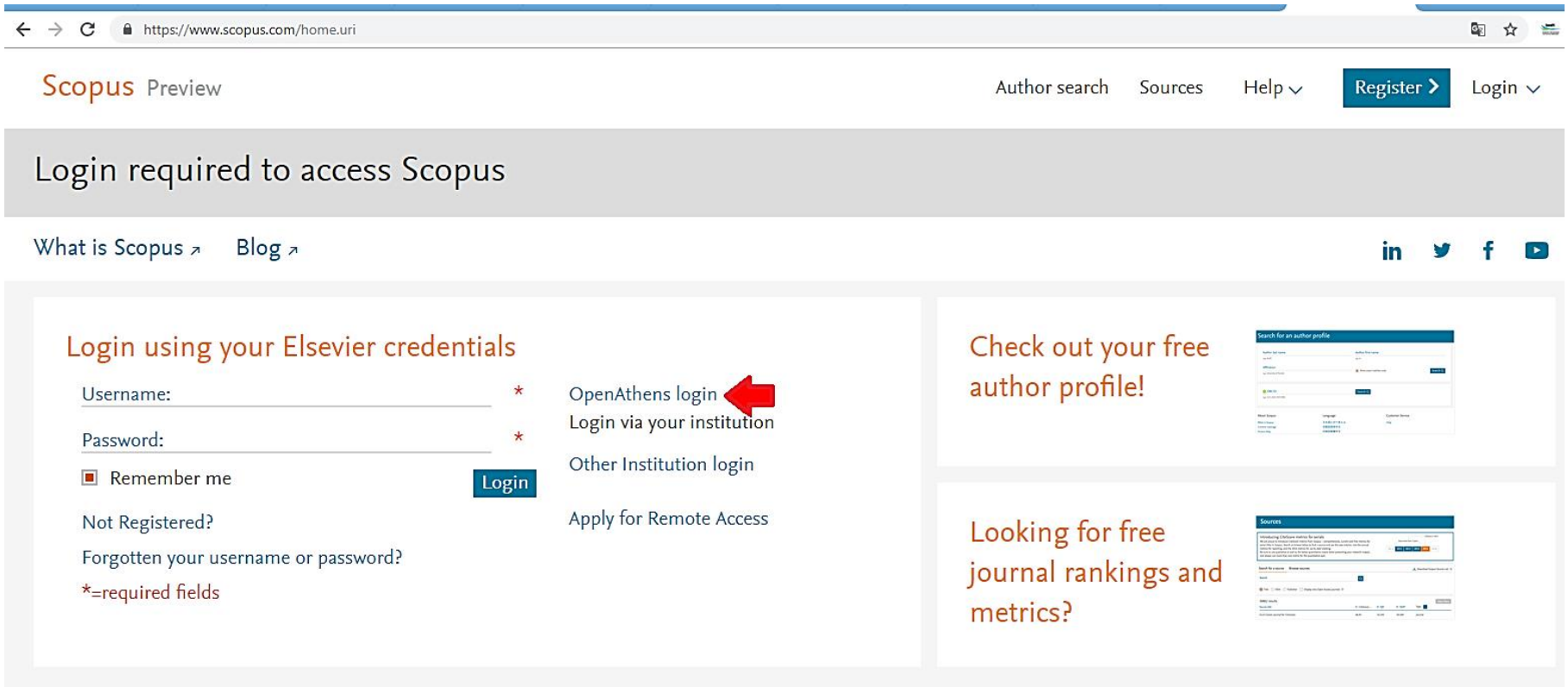
Base de datos recomendada para realizar búsquedas:

www.scopus.com

Scopus®

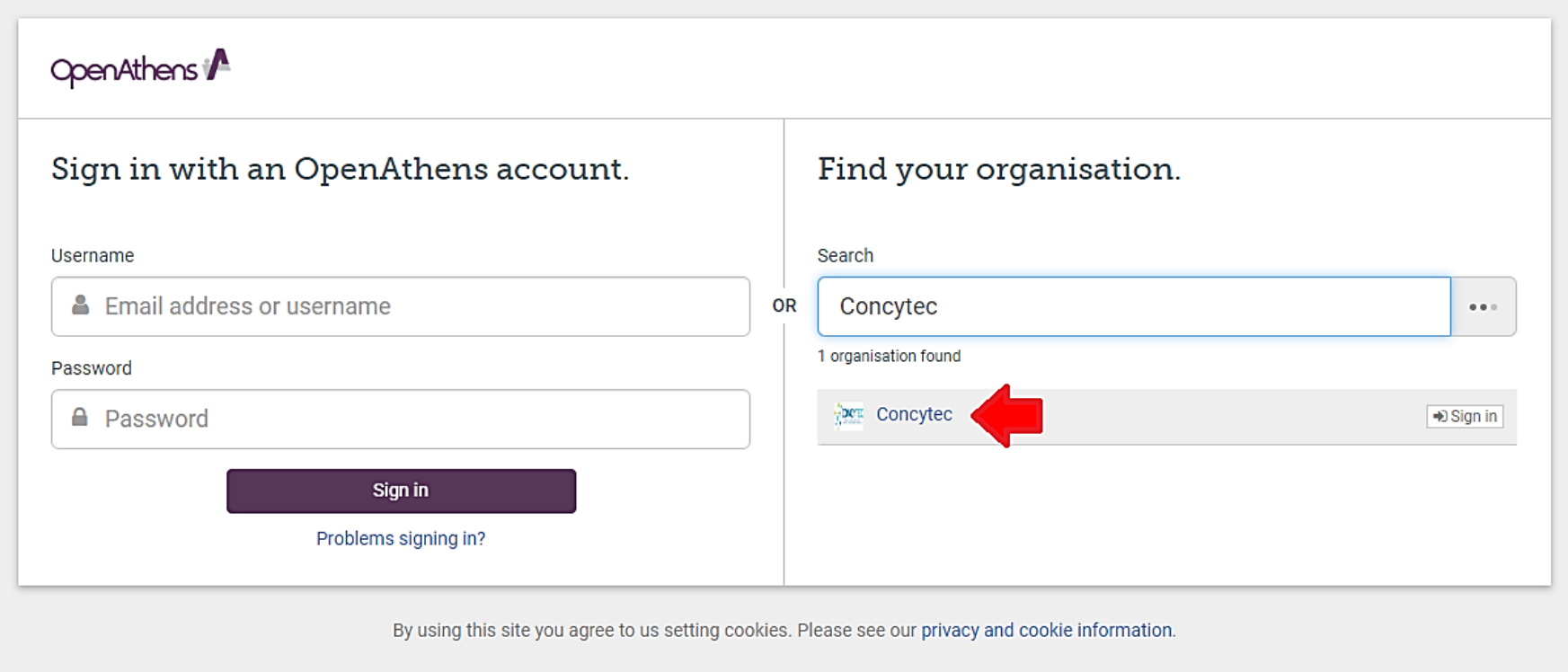
LA INTRODUCCIÓN

www.scopus.com



LA INTRODUCCIÓN

www.scopus.com

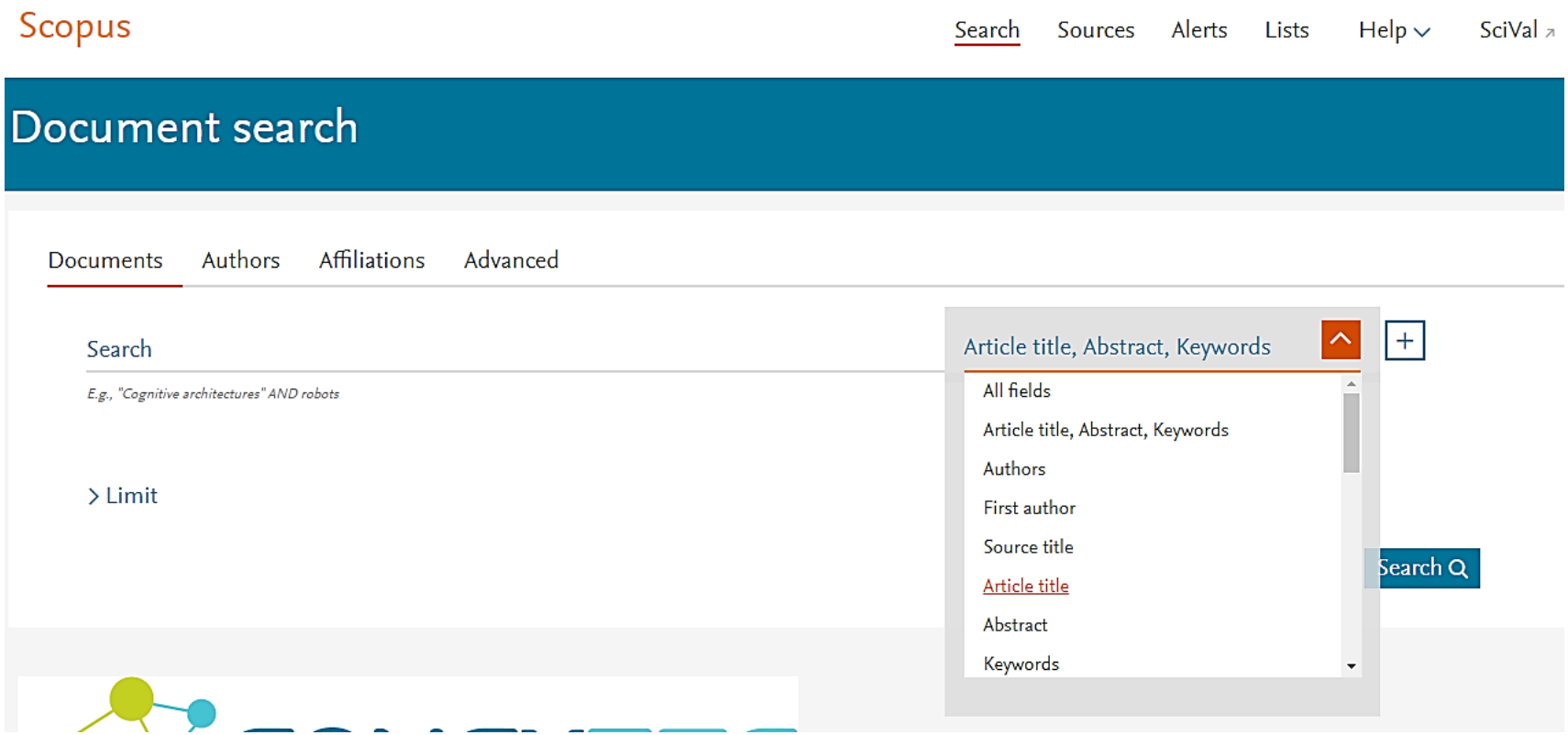


LA INTRODUCCIÓN

www.scopus.com

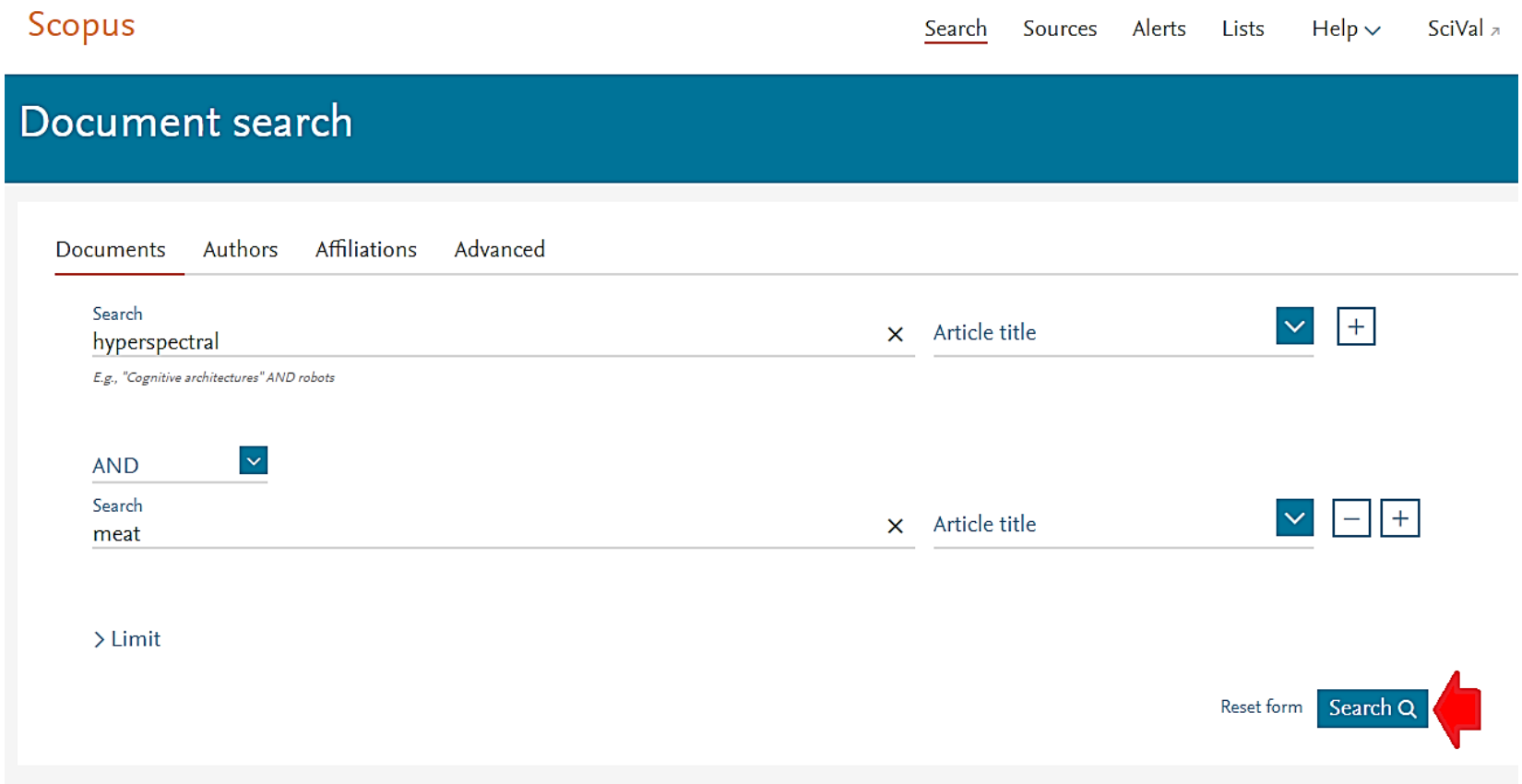
LA INTRODUCCIÓN

www.scopus.com



LA INTRODUCCIÓN

www.scopus.com



LA INTRODUCCIÓN

www.scopus.com

Scopus

Search | Sources | Alerts | Lists | Help | SciVal | Raúl Siche

69 document results

View secondary documents | View 164 patent results | View 20 Mendeley Data

(TITLE (hyperspectral) AND TITLE (meat))

Edit | Save | Set alert | Set feed

Search within results...

Refine results

Limit to | Exclude

Document type

- Article (43)
- Conference Paper (17)
- Book Chapter (5)
- Review (4)

- 2019 (6)
- 2018 (5)
- 2017 (9)

Analyze search results

Show all abstracts | Sort on: Date (newest)

All | CSV export | Download | View citation overview | View cited by | Save to list

	Document title	Authors	Year	Source	Cited by
1	Non-invasive and rapid pH monitoring for meat quality assessment using a low-cost portable hyperspectral scanner View abstract | View at Publisher | Related documents	Yao, X., Cai, F., Zhu, P., (...), Li, J., He, S.	2019	Meat Science 152, pp. 73-80	0
2	Integration of spectral and textural features of visible and near-infrared hyperspectral imaging for differentiating between normal and white striping broiler breast meat View abstract | View at Publisher | Related documents	Jiang, H., Yoon, S.-C., Zhuang, H., (...), Li, Y., Yang, Y.	2019	Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy 213, pp. 118-126	0

LA INTRODUCCIÓN

Google

Nondestructive monitoring of chicken meat freshness using hyperspectral

Todo | Imágenes | Noticias | Vídeos | Más | Preferencias | Herramientas

Cerca de 103,000 resultados (0.54 segundos)

Artículos académicos para Nondestructive monitoring of chicken meat freshness using hyperspectral imaging technology

... of **chicken meat using hyperspectral imaging** - Xiong - Mencionado por 101

... detection of the microbial spoilage **in chicken meat** by ... - Lin - Mencionado por 103

... **in** emerging **imaging techniques** for **non-destructive** ... - Chen - Mencionado por 81

Nondestructive monitoring of chicken meat freshness using ...

https://ieeexplore.ieee.org/document/8075445/ - Traducir esta página

por X Ye - 2015 - Mencionado por 3 - Artículos relacionados

Nondestructive monitoring of chicken meat freshness using hyperspectral imaging technology. ... The results demonstrated the promising potential of **hyperspectral imaging technology** for the detection of bacteria on **meat** surface.

Nondestructive monitoring of chicken meat freshness using ...

https://www.researchgate.net/.../320636928_Nondestructive_moni... - Traducir esta página

Nondestructive monitoring of chicken meat freshness using hyperspectral imaging technology. Conference Paper · June 2015 **with** 5 Reads.

Applications of Hyperspectral Imaging in Chicken Meat Safety and ...

https://www.researchgate.net/.../261289752_Applications_of_Hyp... - Traducir esta página

Moreover, the usefulness of **hyperspectral imaging technique** for detecting fecal ... **Freshness** is an important quality issue for **chicken meat**, **and** the HSI **technique** could be ... A Review of **Hyperspectral Imaging** for **Chicken Meat** Safety **and** Quality ... **Non-destructive** evaluation of bacteria-infected watermelon seeds **using** ...

LA INTRODUCCIÓN

https://ieeexplore.ieee.org/document/8075445

IEEE.org | IEEE *Xplore* Digital Library | IEEE-SA | IEEE Spectrum | More Sites — Cart (0) | Create Account | Personal Sign In

IEEE *Xplore*® Digital Library — Institutional Sign In — IEEE

Browse — My Settings — Get Help — Subscribe

All — Enter keywords or phrases (Note: Searches metadata only by default. A search for 'smart grid' = 'smart AND grid') — Advanced Search | Other Search Options

Conferences > 2015 7th Workshop on Hyperspe...

Nondestructive monitoring of chicken meat freshness using hyperspectral imaging technology

4 Author(s) Xujun Ye ; Kanako Iino ; Shuhuai Zhang ; Seiichi Oshita View All Authors

1 Paper Citation — 112 Full Text Views

Abstract

Document Sections

1. Introduction
2. Materials and Methods

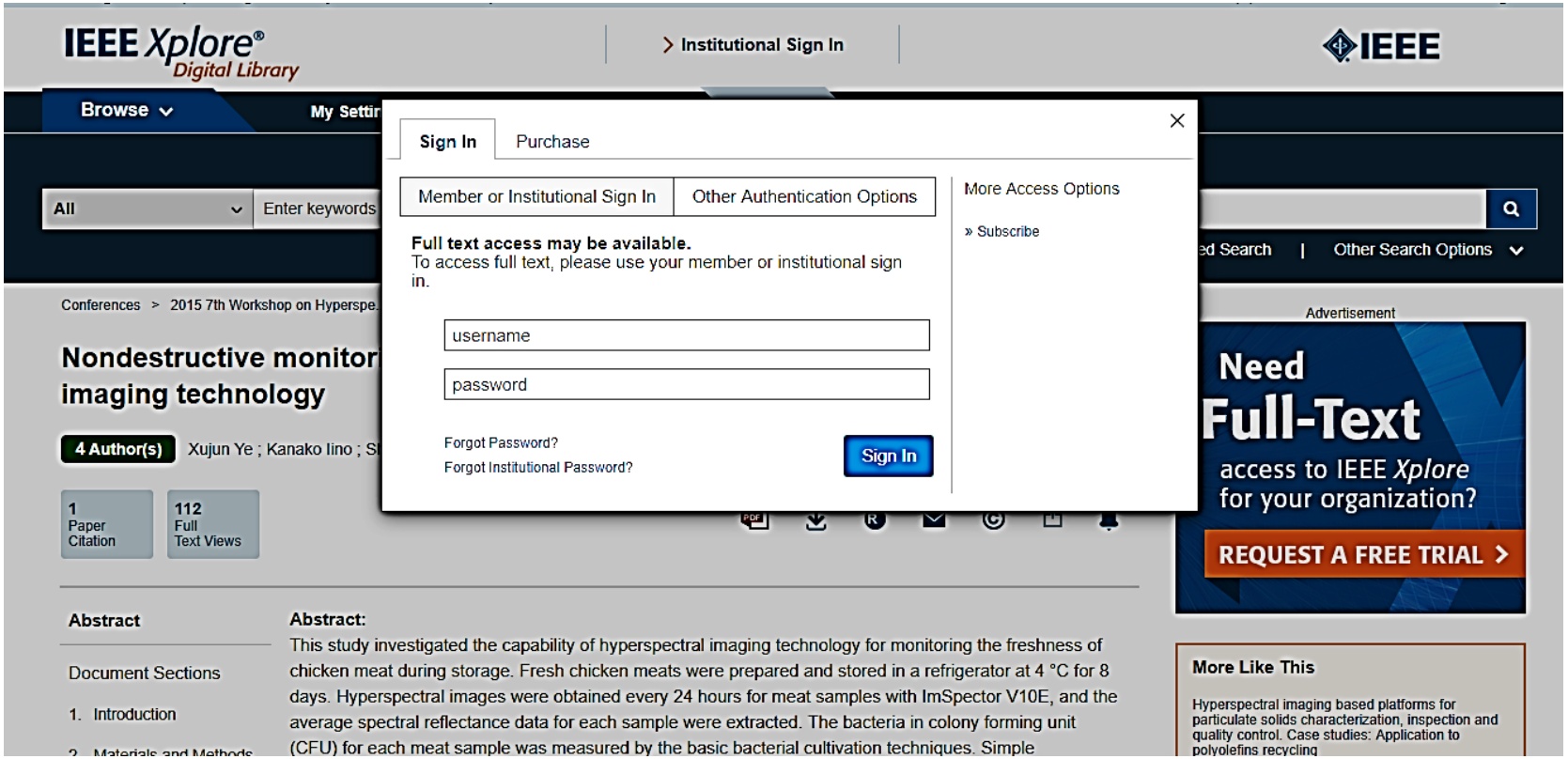
Abstract:
This study investigated the capability of hyperspectral imaging technology for monitoring the freshness of chicken meat during storage. Fresh chicken meats were prepared and stored in a refrigerator at 4 °C for 8 days. Hyperspectral images were obtained every 24 hours for meat samples with ImSpector V10E, and the average spectral reflectance data for each sample were extracted. The bacteria in colony forming unit (CFU) for each meat sample was measured by the basic bacterial cultivation techniques. Simple correlation analysis and the two band vegetation index (TBVI) methods were used to develop the spectra-

Advertisement
Need Full-Text access to IEEE *Xplore* for your organization?
REQUEST A FREE TRIAL >

More Like This

Hyperspectral imaging based platforms for particulate solids characterization, inspection and quality control. Case studies: Application to polyolefins recycling
2011 3rd Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing

LA INTRODUCCIÓN



LA INTRODUCCIÓN

https://ieeexplore.ieee.org/document/8075445

IEEE.org | IEEE *Xplore* Digital Library | IEEE-SA | IEEE Spectrum | More Sites

IEEE *Xplore*® Digital Library

Institutional Sign In

Browse | My Settings | Get Help | Subscribe

All | Enter keywords or phrases (Note: Searches metadata only by default. A search for 'smart grid' = 'smart AND grid')

Conferences > 2015 7th Workshop on Hyperspe...

Nondestructive monitoring of chicken meat freshness using hyperspectral imaging technology

4 Author(s) Xujun Ye ; Kanako Iino ; Shuhuai

1 Paper Citation

112 Full Text Views

Abstract

Document Sections

1. Introduction
2. Materials and Methods

Abstract:
This study investi
chicken meat duri
days. Hyperspect
average spectral
(CFU) for each m
correlation analys

ness of
°C for 8
E, and the
unit
spectra-

4. Conclusions
Authors
Figures
References
Citations
Keywords
Metrics

700 nm and 650 nm achieved the optimal estimation of CFU on meat surface (R^2 =0.9328). The TBVI values based on the above two wavelengths were calculated for all pixels on meat images, and were visualized by displaying the TBVI values for all corresponding pixels on a new image. The predicted CFU for meat samples were then calculated and visualized by incorporating the model into the new TBVI image. The results demonstrated the promising potential of hyperspectral imaging technology for the detection of bacteria on meat surface.

Published in: 2015 7th Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS)

Date of Conference: 2-5 June 2015
INSPEC Accession Number: 17286139
Date Added to IEEE *Xplore*: 23 October 2017
DOI: 10.1109/WHISPERS.2015.8075445
ISBN Information:
Publisher: IEEE
Electronic ISSN: 2158-6276
Conference Location: Tokyo, Japan

1. Introduction
Meat is an important part of a balanced human diet. It is a major source of protein, and helps build lean muscle mass in human body. Meat also provides high levels of iron and vitamins, as well as all of the nearly two dozen different types of amino acids that the human body requires on a daily basis [1]. Meat is edible raw, but is normally ea ocessed in a variety of ways. Uncooked or unprocessed meat will his spoilage is practically unavoidable because the infectious bacteria and fungi may be borne by the animal itself, the people handling the meat, and/or the implements [2]. Therefore, timely and accurate detection of the spoilage

Sign in to Continue Reading

LA INTRODUCCIÓN

LA INTRODUCCIÓN

https://sci-hub.tw/

https://sci-hub.tw/https://ieeexplore.ieee.org/document/8075445

sci-hub

to open science

↻ reload ⇣ save

Ye, X., Iino, K., Zhang, S., & Oshita, S. (2015). *Nondestructive monitoring of chicken meat freshness using hyperspectral imaging technology. 2015 7th Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS).* doi:10.1109/whispers.2015.8075445

url to share this paper:
sci-hub.tw/10.1109/WHISPERS.2015.8075445

Sci-Hub is a project
to make knowledge free.
support →

NONDESTRUCTIVE MONITORING OF CHICKEN MEAT FRESHNESS USING HYPERSPECTRAL IMAGING TECHNOLOGY

Xujun Ye[1], Kanako Iino[1], Shuhuai Zhang[1], Seiichi Oshita[2]

[1]Faculty of Agriculture and Life Science, Hirosaki University, Aomori 036-8561, Japan
[2]Laboratory of Bioprocess Engineering, Graduate School of Agricultural and Life Sciences, The University of Tokyo, Tokyo 113-8657, Japan

ABSTRACT

This study investigated the capability of hyperspectral imaging technology for monitoring the freshness of chicken meat during storage. Fresh chicken meats were prepared and stored in a refrigerator at 4 °C for 8 days. Hyperspectral images were obtained every 24 hours for meat samples with ImSpector V10E, and the average spectral reflectance data for each sample were extracted. The bacteria in colony forming unit (CFU) for each meat sample was measured by

itself, the people handling the meat, and/or the implements [2]. Therefore, timely and accurate detection of the spoilage will help discriminate the quality and safety of meat products.

The concerns over pathogenic bacteria within meats have illustrated the requirement for a rapid and accurate detection system for microbial spoilage of meats. Many methods are currently available to detect the spoilage bacteria loads such as the standard colony-counting method [3], and several other modern molecular biological and

2. Obtención de la literatura

- Elaboración directa de citas y bibliografía
  - ✓ Cita textual
  - ✓ Paráfrasis
  - ✓ Resumen
  - ✓ Cita de datos

En cualquiera de los casos anteriores se debe **dar el crédito** correspondiente al autor

2. Obtención de la literatura

✓ Parafraseo

¿En qué consiste?

Redactar con palabras propias la idea del autor consultado.

¿Cuándo se debe hacer?

En lo posible se debe parafrasear para reducir las posibilidades de incurrir en plagio, sin necesidad de hacerlo más extenso que el texto original.

¿Cómo hacerlo?

Entender lo leído, internalizarlo y redactar sin mirar el texto original para evitar la tentación de utilizar las mismas palabras del autor.

Estrategias: utilizar sinónimos, traducir de un idioma a otro, cambiar la función gramatical de algunas palabras, expresar números y porcentajes de forma diferente, cambiar el orden de las palabras.

Nunca se deben introducir nuevas ideas.

Software antiplagio

:::plagium™

http://www.plagium.com/

PlagScan
The online service for plagiarism detection

https://www.plagscan.com/

turnitin

https://turnitin.com/login_page.asp?lang=es

iThenticate®
for Authors & Researchers

http://www.ithenticate.com/

Viper
Plagiarism Scanner

https://www.scanmyessay.com/

Plagiarism
Checker X

http://plagiarismcheckerx.com/online-plagiarism

3. Redacción

Cuidado con las siguientes afirmaciones:

"Este tema jamás ha sido estudiado…."
"No existen estudios que hayan analizado …."
"Nunca prestaron atención a este objeto de estudio….."
"No hay ningún documento que aborde….."

3. Redacción

Errores comunes

Se insertan párrafos **sin relación** con los anteriores y posteriores o la relación es muy tangencial.

Los párrafos de un mismo punto o subpunto deben girar en **torno a la idea-eje** manteniendo el hilo conductor alrededor de esta idea.

Son muy útiles los **párrafos de introducción** a un párrafo de síntesis final, así como los **párrafos de transición** que nos permiten transitar de un punto a otro y no de forma abrupta.

¿Cómo lograr una buena introducción?

Además de los elementos técnicos indicados (lo conocido, lo desconocido y el objetivo), quizás la clave esté en la autenticidad.

LA INTRODUCCIÓN

Lo conocido

- Problema
- Antecedentes

Meat Science 133 (2017) 43–50

Contents lists available at ScienceDirect

Meat Science

journal homepage: www.elsevier.com/locate/meatsci

An application based on the decision tree to classify the marbling of beef by hyperspectral imaging

Lía Velásquez[a], J.P. Cruz-Tirado[a], Raúl Siche[a,*], Roberto Quevedo[b]

[a] Facultad de Ciencias Agropecuarias, Universidad Nacional de Trujillo, Av. Juan Pablo II s/n, Ciudad Universitaria, Trujillo, Peru
[b] Fitogen Program, Department of Aquaculture and Agrifood Resources, Universidad de Los Lagos, Av. Fuchslocher 1305, Osorno, Chile

Artículo de Investigación Original

1. Introduction

Quality is the key factor for the commercial success of any agricultural food product (Saldaña et al., 2013; Siche et al., 2015; Wu & Sun, 2013a), especially in meat for its importance in the diet as a contributor of protein, vitamins and minerals. The meat is rapidly deteriored by physical and biological agents, which forces the meat processing industry to have rigorous controls to determine its suitability as fresh or stored food (ElMasry, Sun, & Allen, 2013; Lohumi et al., 2016; McAfee et al., 2010). The methods used to evaluate and control meat quality are usually tedious, time-consuming, and destructive, which produces losses to the industry (Xiong, Sun, Zeng, & Xie, 2014).

Marbling is one of the features that most influences the sensory acceptability of meat and meat products (Morales, Guerrero, Aguiar, Guàrdia, & Gou, 2013; Muñoz, Rubio-Celorio, Garcia-Gil, Guàrdia, & Fulladosa, 2015) and it is defined as the amount and spatial distribution of visible fat, which appears as thin spots in the muscle that give a similar appearance to marble (Cernadas, Durán, & Antequera, 2002). Marbling is usually associated with superior quality meat products when the streaks of fat are uniformly distributed over its surface (Xiong et al., 2014). The differences in eating quality can be attributed to the quantitative and spatial distribution of streaks in meat (Albrecht, Wegner, & Ender, 1996) and meat products such as ham, where marbling is used to characterize and classify this product (Cernadas et al., 2002).

The estimated degree of marbling is based on official standards in each country, the American and Japanese standards being the most widespread ones (Liu, Ngadi, Prasher, & Gariépy, 2012). However, as this is conducted by human inspectors, evaluation is subjective and the consistency of its results cannot be guaranteed, leading to various investigations using artificial vision systems for an objective assessment of marbling in beef (Shiranita, Hayashi, Otsubo, Tsuneharu, & Takiyama, 2000; Tan, 2004; Toraichi et al., 2002; Yoshikawa et al., 2000), pork (Saucitano, Huff, Teuscher, Gariepy, & Wegner, 2005; Liu et al., 2012), cured ham (Muñoz et al., 2015) and sheep meat (Przybylak et al., 2016).

Hyperspectral imaging integrates spectroscopy and computer vision techniques to provide both spectral and spatial information of an object (Kamruzzaman, Makino, & Oshita, 2016b; Wu & Sun, 2013b). The spatial information allows the characterization of a complex heterogeneous sample, while that the spectral information allows to identify a wide range of multi-constituent surface and subsurface features (Gowen, O'Donnell, Cullen, Downey, & Frias, 2007). Hyperspectral imaging captures hundreds of images of a single band at a certain wavelength, forming a three-dimensional data structure of multivariate images (hypercube), constituted by a spectrum for each pixel in the image (Kamruzzaman et al., 2016b). The application of hyperspectral imaging technique has proven to be fast and objective. It has been accepted as one of the most powerful methods of nondestructive imaging to predict quality and safety attributes in different species of meat (Kamruzzaman

LA INTRODUCCIÓN

Meat Science 133 (2017) 43–50

Contents lists available at ScienceDirect

Meat Science

journal homepage: www.elsevier.com/locate/meatsci

ELSEVIER

An application based on the decision tree to classify the marbling of beef by hyperspectral imaging

Lía Velásquez[a], J.P. Cruz-Tirado[a], Raúl Siche[a,*], Roberto Quevedo[b]

[a] Facultad de Ciencias Agropecuarias, Universidad Nacional de Trujillo, Av. Juan Pablo II s/n, Ciudad Universitaria, Trujillo, Peru

[b] Fitogen Program, Department of Aquaculture and Agrifood Resources, Universidad de Los Lagos, Av. Fuchslocher 1305, Osorno, Chile

et al., 2016b; Xiong et al., 2014). Recent researches have used hyperspectral imaging systems for the evaluation of marbling in meat, obtaining good results (Li, Shan, Peng, & Gao, 2011; Liu et al., 2012; Qiao, Ngadi, Wang, Gariépy, & Prasher, 2007). The work of Qiao et al. (2007) stands out because they used marbling standards for objective assessment of marbling scores. Liu et al. (2012) developed an automatic and objective method for the evaluation of degree of marbling in pork based on the simplification of fats to linear patterns areas by image analysis in RGB (Red, Green, Blue) format.

Statistical analysis of the spectra obtained is the most relevant part in the development of hyperspectral imaging methods. So, various statistical methods were used to classify foods or determine certain compounds of interest using hyperspectral imaging, such as Principal Component Analysis (PCA) (Zhang et al., 2016), partial least-squares regression (PLSR) (Lim et al., 2016; Yeh et al., 2016), least square support vector machine (LS-SVM) (Huang, Tang, Yang, & Zhu, 2016; Kamruzzaman, Makino, & Oshita, 2016a; Kamruzzaman et al., 2016b), artificial neural network (ANN) (Khulal, Zhao, Hu, & Chen, 2016), and multilayer perceptron with scaled conjugate gradient (MLP-SCG) (Sanz et al., 2016), among other methods.

The decision tree is one of the most powerful and popular classifiers available, and since it follows a diagram of flow similar to human logic and reasoning, it has the effective ability to learn and understand (Ma, Destercke, & Wang, 2016; Sok, Ooi, Kuang, & Demidenko, 2016; Wickramarachchi, Robertson, Reale, Price, & Brown, 2016). That compressibility trait, makes the decision trees highly accessible to different users in different areas of learning, which can be found in a wide range of applications such as business (Creamer & Freund, 2010), manufacturing (Ooi, Sok, Kuang, Demidenko, & Chan, 2013; Williams et al., 2016), computational biology (Kingsford & Salzberg, 2008), bioinformatics (He, Hu, Harrison, Tai, & Pan, 2006), geography (Basse, Charif, & Bódis, 2016; Gharaei-Manesh, Fathzadeh, & Taghizadeh-Mehrjardi, 2016), foods (Bozkir & Sezer, 2011; Zwietering, 2015), etc. However, investigations that use decision trees for classifying food products were not found.

This study aimed to develop a rapid and nondestructive system to classify the degree of marbling in beef, based on the analysis of hyperspectral images associated to the method of decision tree.

Lo conocido

- Antecedentes

Lo desconocido

Objetivo

LA INTRODUCCIÓN

INTERNATIONAL JOURNAL OF FOOD PROPERTIES
2017, VOL. 20, NO. S2, S1264–S1297
https://doi.org/10.1080/10942912.2017.1338729

Taylor & Francis
Taylor & Francis Group

Check for updates

Evaluation of biological contaminants in foods by hyperspectral imaging: A review

Ricardo Vejarano[a,b], Raúl Siche [a], and Wendu Tesfaye[c]

[a]Facultad de Ciencias Agropecuarias, Universidad Nacional de Trujillo (UNT), Ciudad Universitaria, Trujillo, Peru; [b]Facultad de Ingeniería, Universidad Privada del Norte (UPN), Trujillo, Peru; [c]Departamento de Química y Tecnología de Alimentos, Universidad Politécnica de Madrid (UPM), Madrid, Spain

Artículo de Revisión

Introduction

Food quality and safety problems are receiving increasing attention in both developed and developing countries,[1] and these issues are frequently confronted in our daily life because in today's markets there is an increasing demand for safe and quality products and also because food safety legislations have become more and more stringent.[2]

The food industry is actually focused on developing innocuous products and requires a constant commitment to the design and implementation of procedures and systems to control various parameters in food products (Fig. 1). Currently available analytical techniques are mostly slow methods and destructive too. Therefore, it is urgent to develop non-invasive, efficient, and quick testing method for monitoring food quality and safety.[3] Of all the available options, hyperspectral imaging (HSI) technology is shown as one of the most promising alternatives, being a non-destructive analysis technology that can easily engage in productive processes.

Several recent review articles have been published on applications of HSI which is primarily concerned with overall food quality and safety evaluation,[3–13] and others have been mainly focused on determination of chemical and microbiological contamination on food products.[1,2,14,15] However, there is not any paper which specifically addresses on the application of HSI to evaluate different contaminants of biological origin in food products, such as spoilage microorganisms that can attack agricultural crops and cause losses in production output and quality; microorganisms causing deterioration and quality loss in ready-to-eat foods, especially pathogens and/or their toxins; different organic residues that can be a vehicle for different microbial contaminants; and parasites.

It is estimated that between 10% and 50% of agricultural production, especially grains and vegetables, are lost each year as a result of microbial contamination.[16] Besides, it is estimated that 42% of foodborne illnesses are mainly caused by contaminating microorganisms, especially pathogenic bacteria.[17] For instance, in the United States, it is estimated that each year roughly 1 in 6 Americans (about 48 million people) gets sick, where around 128,000 were hospitalized, and 3000 died of foodborne diseases.[18] Therefore, this review focuses on the most notable application of HSI for detecting such contaminations at any level of food production chain, which includes the production of agricultural raw materials, and the industrial processing, packaging, and the storage conditions, that is, from farm to table.

Problema

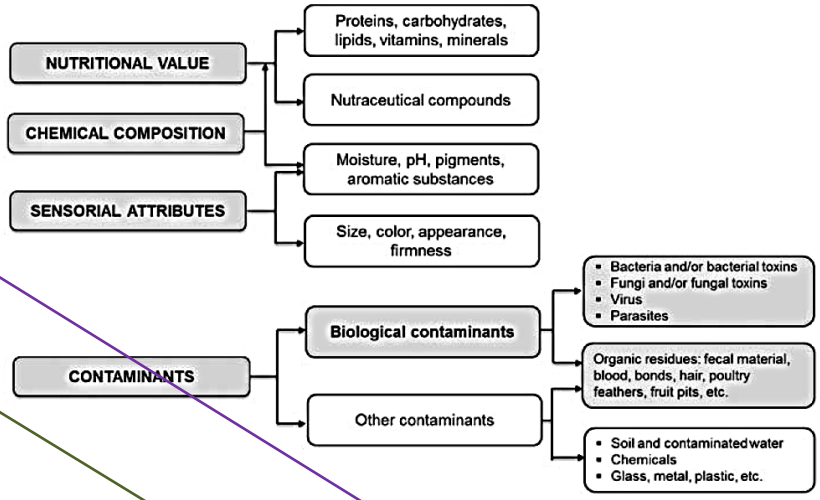


Figure 1. Main parameters controlled in food production.

Antecedentes

Vacío en el Estado del Arte

Objetivo

LA INTRODUCCIÓN

Food Eng Rev (2016) 8:306–322
DOI 10.1007/s12393-015-9137-8

CrossMark

REVIEW ARTICLE

Artículo de Revisión

Evaluation of Food Quality and Safety with Hyperspectral Imaging (HSI)

Raúl Siche[1] · Ricardo Vejarano[1] · Victor Aredo[1] · Lia Velasquez[1] · Erick Saldaña[2] · Roberto Quevedo[3]

Introduction

The current food industry is focused on developing innocuous products that meet the quality requirements demanded by the market, but using technologies quick and accurate response [99], with less product loss during the analysis.

Of the many available technologies, hyperspectral imaging (HSI) is shown as a promising alternative, offering speed, accuracy, reliability, besides being a nondestructive analysis technology that can be attached along the different production processes [28], obtaining information immediately, something that other technologies cannot do.

Problema

To this must be added the efforts of the scientific community that directed significant research toward optimizing the adaptability of HSI to the food production processes, which is evidenced by the different studies published in the last decade (Fig. 1).

Figure 1 shows that from the year 2011 there have been a considerable increase in number of studies on the application of HSI in life sciences. This indicates that, as an alternative technology, the acceptance of HSI by industry was increasing, thanks to the advantages already mentioned above.

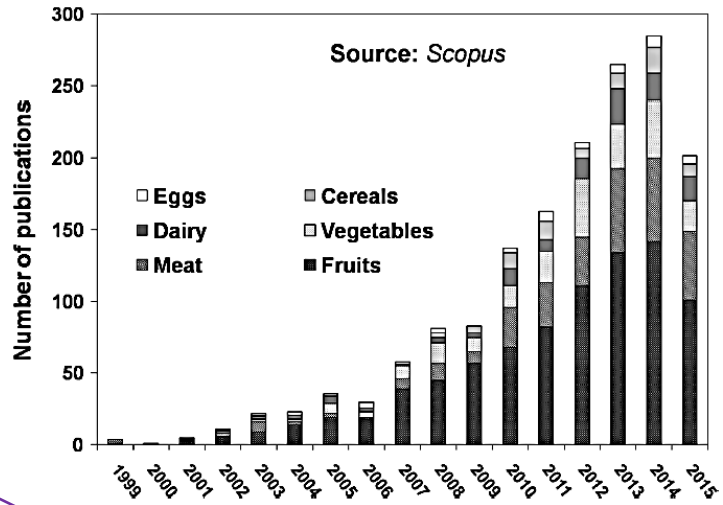


Fig. 1 Publications of scientific articles on the application of hyperspectral imaging (HSI) in the food industry. Information obtained from the database Scopus (search criteria: ALL FIELDS: "hyperspectral imaging" and ARTICLE TITLE, ABSTRACT, KEYWORDS: "each group of food")

Antecedentes

The objective of this review is to gather the most important studies conducted on the application of HSI in the evaluation of the quality and safety of food, referring first to the fundamentals of this analytical technology and then detailing its application to different food groups.

Objetivo

MATERIALES Y MÉTODOS

¿Cómo redactarlos?

En esta sección se describe cómo se realizó el trabajo de tal manera que otros puedan reproducirlo (**REPRODUCIBILIDAD**).

MATERIALES Y MÉTODOS

En artículos de Investigación Original:

Especificar los **MATERIALES** en cuanto a: origen/procedencia, características generales, grado de pureza, número de lote, fabricante, etc.

Especificar los **MÉTODOS** con la referencia adecuada o detallar la metodología desarrollada.

En artículos de investigación original

Current Nutrition & Food Science, 2016, *12*, 65-71 65

Antioxidant Capacity of Binary and Ternary Mixtures of Orange, Grape, and Starfruit Juices

Raúl Siche[1,*], Carmen Ávalos[1], Hubert Arteaga[1], Erick Saldaña[2] and Thais M. F. S. Vieira [2]

[1] *Instituto Regional de Investigación Agraria, Universidad Nacional de Trujillo, Av. Juan Pablo II s/n. Ciudad Universitaria, Trujillo, Peru;* [2]*Department of Agro-industry, Food and Nutrition, "Luiz de Queiroz" Agricultural College, University of São Paulo, Brazil*

2. MATERIALS AND METHODS

2.1. Raw Material

Orange (var. Washington navel), red grape (var. Alfonso Lavallet), and starfruit (var. Golden Star) samples were obtained from the cities of Huaral (Lima, Peru), Gran Chimu (La Libertad, Peru) and Viru (La Libertad, Peru), respectively, and immediately were subjected to juice preparation.

2.2. Process for Obtaining Juices

The raw materials were selected based on their state of maturity and macroscopic high quality. Selected fruits were washed to remove foreign material. Juices were extracted by cold compression or crushing (for oranges) (Pulper DFV 19-40 I/C, Vulcano, Peru). Subsequently, in order to remove traces of bark, seeds and excess of pulp in the juice, raw juices were filtered under vacuum (through a 110 mm diameter Buchner funnel using Whatman No. 40). Finally, glass bottles were filled with the juices, covered with aluminum foil to prevent oxidation and stored in domestic refrigerator (7±1 °C) until further analysis.

2.5. *In vitro* Antioxidant Capacity of Mixtures

Pure samples and mixtures in study were subjected to analysis in order to measure the *in vitro* antioxidant capacity by a method developed by Brand-Williams *et al.* [20], adapted by the Department of Pharmacognosy and Pharmacobotany of National University of Trujillo, that is based on the reduction of absorbance at 517 nm of 0.1 mM DPPH radical. The reactions were performed using 5 mL of DPPH ethanol solution at 0.1 mM as volume, and 50 µL of sample. The mixture was homogenized carefully; it was left to stand at room temperature protected from light over 30 minutes before absorbance at 517 nm reading. A spectrophotometer (SpectroQuest 4802 UV-Vis, UNICO, USA) was used and methanol and 0.1 mM DPPH solutions were used as negative and positive control. The percentage of DPPH radical scavenging (% $DPPH_{Radical_scavenging}$) of the tested sample was calculated by the Equation 1:

$$\% \ DPPH_{Radical_scavenging} = (Abs\ control - Abs\ sample)*100 / (Abs\ control) \quad \text{(Eq. 1)}$$

¿Cómo redactarlos?

Se debe redactar en **impersonal**:
Se encontró, y no: encontré o encontramos
En inglés: **was found**

En español, se debe redactar en **voz activa**:
Correcto: Se evaluaron dos metodologías
Incorrecto: dos metodologías fueron evaluadas
En Inglés: two methodologies were evaluated

En cuanto a los tiempos verbales,
Introducción: **presente y pasado**
Materiales y métodos y Resultados: **pasado**
Discusión: **Presente y futuro**.

MATERIALES Y MÉTODOS

En artículos de investigación original

Commun Nonlinear Sci Numer Simulat 15 (2010) 3182–3192

Contents lists available at ScienceDirect

Commun Nonlinear Sci Numer Simulat

journal homepage: www.elsevier.com/locate/cnsns

ELSEVIER

Convergence of ecological footprint and emergy analysis as a sustainability indicator of countries: Peru as case study

Raúl Siche [a,*], Lucas Pereira [b], Feni Agostinho [b], Enrique Ortega [b]

[a] Escuela de Ingeniería Agroindustrial, Facultad de Ciencias Agropecuarias, Universidad Nacional de Trujillo, Av. Juan Pablo II s/n, C. Universitaria, Trujillo, Peru
[b] Ecological Engineering Laboratory, Food Eng. School, State University of Campinas, UNICAMP, Cx. Postal 6121, CEP 13083-862, Campinas, SP, Brazil

resource [28]. Since the real wealth can be measured by the work previously done to produce something, Emergy is considered a scientific measure of real wealth in terms of the energy previously required to make something [29].

Emergy analysis (EA) allows the accounting for additional flows that influence sustainability, such as waste, soil loss, human-labor, water use, among others. Besides that, all previous available energy used to make something is considered in the calculation procedure, presenting the energy memory of the product or process in the final indicators. On the other hand, EA presents some deficiencies, mainly those related to criteria and accuracy. Below, there is a brief description of the deficiencies on the emergy methodology that we consider important for the purpose of the present paper:

(a) EA does not define which is its sustainability indicator. Possible indicators are renewability (%R, [3]) or emergy sustainability index (ESI, [49]). Some published papers consider ESI as the sustainability indicator, but others consider the %R, or even all emergy indices assessed at the same time.
(b) Renewability and emergy sustainability index do not have standards. For example, some authors indicate that in a long time perspective systems with high values of renewability emergy index are acceptable [3], but what is the minimum value of renewability to be considered sustainable? For processes and products, the use of ESI index is more enlightening. Brown and Uligiati [3] indicate that for values of ESI below 1, products and processes are not sustainable at a long time period, while they are rather sustainable if ESI equals 1, and clearly sustainable for ESI higher than 5.
(c) Assuming a country's emergy assessment, only the biggest natural renewable flow is considered to avoid double accounting [29]. That procedure occurs, because all of the natural emergy flows come from the same emergy baseline. That approach may be a temporary solution, but the methodology does not consider the flows from internal natural capital storages that produce several environmental services and contribute to the health of human-dominated systems. As well as non-renewable internal storages such as soil, minerals, natural gas, coal, and so on are considered in the analysis, we believe that natural capital should be accounted for as a natural renewable resource.
(d) The lack of available emergy intensity[3] factors with good quality is a deficiency of the emergy methodology. We consider that the International Society for the Advancement of Emergy Research (ISAER, http://www.emergysociety.org) could elaborate a handbook with several emergy intensity factors with controlled quality, taking into account different criteria for that purpose as numeraire (energy, exergy or mass), emergy baseline, technology and calculation year.

By far, strong points overcome weakness on both ecological footprint and emergy analysis methods. Knowing their limitations and advantages allows an attempt for their mutual improvement. The objective of this work is to discuss a potential convergent approach between EF-GAEZ and EA, and apply it to a case study.

2. Proposed method for EF calculation based on emergy: emergetic ecological footprint (EEF)

A new approach based on EF-GAEZ and EA was originally proposed by Zhao et al. [61], slightly modified and used by Chen and Chen [6,7] to investigate the resource consumption of the Chinese society from 1981 to 2001 and by Siche et al. [41] to make a diagnosis of Peru using 2004 data. Zhao's approach consists in calculating biocapacity as natural renewable resources and the footprint as the system consumption, both in emergy units. The calculation procedure is basically to obtain those resources and consumption data in energy and/or mass flows, and convert them in solar emjoules (seJ) using the respective emergy intensity factors. After that, biocapacity and footprint can be estimated using the empower density[4] (seJ ha^{-1} – global empower density in the biocapacity calculation, and local for footprint calculation).

Zhao et al. [61] introduced EA's concepts into the EF framework, but that approach did not remove main weaknesses found in the original methodologies. For example, the three main natural external flows that drive the biosphere (solar radiation, deep Earth heat and tidal energy) are considered to calculate the biocapacity. We consider that procedure correct in order to calculate the amount of natural external renewable resources that the systems consume, but not to calculate the biocapacity. In other words, Zhao et al. [61] considers a biocapacity based on natural renewable external flows, not accounting for the energy and mass flows supplied by available internal storages of natural capital.

We suggest four changes in this present paper aiming to improve Zhao's approach:

(a) *Biocapacity calculation.* Calculate biocapacity as function of natural renewable resources in emergy units, considering the sum of solar radiation, deep Earth heat, tidal energy and internal natural capital storage. The novelty presented here is the inclusion of the item internal natural capital (storage) responsible for producing several ecosystem services (flows). At this time, we assumed that flows could be represented by the net primary productivity (NPP) of preserved natural forest systems. So, we considered the forest biomass accumulated in a year period as the amount of energy flow available from natural capital storage.

Usando textos

(b) *Biocapacity calculation.* Reserve a percentage of 14.2% from the total biocapacity aiming to cover other species needs. In this present work, that percentage corresponds to Peru's area with natural vegetation envisioning biodiversity preservation [17]. Venetoulis and Talberth [55] took the first step towards making formal accommodation for other species reserving 13.4% of the biocapacity. Existing gap studies suggest that if approximately 13.4% of the terrestrial land on Earth were protected, 55% of all species that are significantly threatened with extinction would meet targets for survival [37]. In regions with high levels of species richness and endemism, large percentages of their territory would require protection.
(c) *Footprint calculation.* Include two important categories: soil loss and water consumption. Those categories are not accounted for in the EF-GAEZ method, neither in Zhao's approach. Water and soil are essential factors to agricultural production. In fact, water is so important to human activities that Hoekstra and Hung [14] stated that it should be considered an economic good. Nowadays, problems with water are related to its scarcity, excess and deterioration of its quality. Another major factor endangering the long term food supply is the loss of soil fertility [11]. High technology agricultural systems cause the loss of top soil at an impressive rate: corn production in Iowa, USA, implies the loss of about 20–30 tons of top soil per year per hectare; a sustainable system would tolerate a loss of only 1 ton ha^{-1} $year^{-1}$ [35]. Similar situation is found in populated developing countries: 30 ton ha^{-1} $year^{-1}$ in India and 40 ton ha^{-1} $year^{-1}$ in China. Considering that 500 years are needed to restore 2.5 cm of top soil [35], soil loss is a serious form of biophysical capital depletion.
(d) *Biocapacity and footprint calculation.* The use of global empower density (GED) is different than the use of local empower density (LED) as proposed by Zhao et al. [61]. LED (in seJ ha^{-1}, where ha is equivalent to local hectares) corresponds to obtain a footprint in local hectares. Using GED (in seJ ha^{-1}, where ha is equivalent to global hectares) corresponds to obtain results in global hectares. Zhao et al. [61] have used LED for footprint and GED for biocapacity, but in this present paper, GED was used for both indicators, making it possible to compare them.
(e) *Biocapacity and footprint calculation.* Consider the total area of evaluated systems. As previously discussed, EF-GAEZ excludes areas where resources do not appear to be directly utilized for the purpose of human consumption and waste assimilation. This exclusion, however, disregards the role that these areas provide in generating global biocapacity or supporting critical ecosystem services that sustain both human and non-human life on the planet. From our perspective, however, the entire surface of the Earth is relevant since most of the surface participates in the carbon cycle. This change also acknowledges the interconnectedness of the biosphere.

2.1. Biocapacity calculation

Biocapacity should be calculated as function of available renewable resources. The quantity of natural renewable resources for countries varies, but the main sources are solar radiation, tidal energy, deep Earth heat and internal storage of natural capital. All those natural renewable flows in energy and/or mass units are accounted for in the biocapacity calculation. The accounting for natural capital is a novelty in this work compared to Zhao's et al. [61] approach that have considered the baseline emergy flows as biocapacity. Natural capital is an internal storage of a country that was filled up during several decades (or even centuries) by external natural energy flows. Nowadays, mainly the under development countries are dependent of that storage. For that reason, we have considered natural capital as a supplier of renewable resources, i.e. it was accounted for in the total biocapacity.

The conversion of energy and/or mass flows to emergy flows is made using the emergy intensity factors: emergy (seJ) = energy or mass flow (J or kg) * emergy intensity factor (seJ J^{-1} or seJ kg^{-1}). After that, emergy per capita is calculated through the division of each emergy flow by the population of the country under study, resulting in seJ $person^{-1}$ units. In order to obtain the biocapacity per capita (BCp in gha $person^{-1}$) in units of area, the emergy of biocapacity per capita (EMBCp in seJ $person^{-1}$) of each flow are divided by global empower density (GED, 3.1×10^{14} seJ gha^{-1} from [61]): BCp (gha $person^{-1}$) = EMBCp (seJ $person^{-1}$)/GED (seJ gha^{-1}).

Finally, all the flows in global hectares per capita are summed up and the percentage of 14.2% is subtracted, aiming the preservation of other species. The final value obtained represents the total biocapacity available in global hectares per capita of the evaluated system.

2.2. Footprint calculation

Consumption was divided in seven categories: agriculture (including food and soil loss), pasture, fishing areas, wood and firewood, nonrenewable energy resources, hydroelectricity, and potable water for human use. Those categories are very similar to Zhao's et al. [61] approach, but here we have considered two new categories: soil loss and potable water for human use. Consumption of each category, except soil loss and water use, was calculated through the following expression: Consumption = Production + Importation − Exportation.

Soil loss category (SL) in energy units was obtained using the following equation: SL (J yr^{-1}) = current soil loss (g m^{-2} $year^{-1}$) * area of crop (m^2) percentage of organic matter * energy content in organic matter (J g^{-1}), where percentage of organic matter is estimated as 3% [2], energy content in dry organic matter is 22,604 J g^{-1} [2]. In this work, soil loss category considers only the organic matter lost in erosion processes.

MATERIALES Y MÉTODOS

Ecological Questions 10/2008: 99–101 DOI: 10.2478/v10090–009–0011–2

Emergy and value of the net primary production (NPP) above ground in natural areas

Raúl Siche*, Enrique Ortega**

*Escuela de Ingeniería Agroindustrial – Facultad de Ciencias Agropecuarias, Universidad Nacional de Trujillo, Av. Juan Pablo II s/n. Ciudad Universitaria, Trujillo, Peru
**Laboratório de Engenharia Ecológica e Informática Aplicada – DEA/FEA, Universidade Estadual de Campinas, Campinas, SP, Brasil CEP: 13083–970
corresponding author, e-mail: ortega@fea.unicamp.br

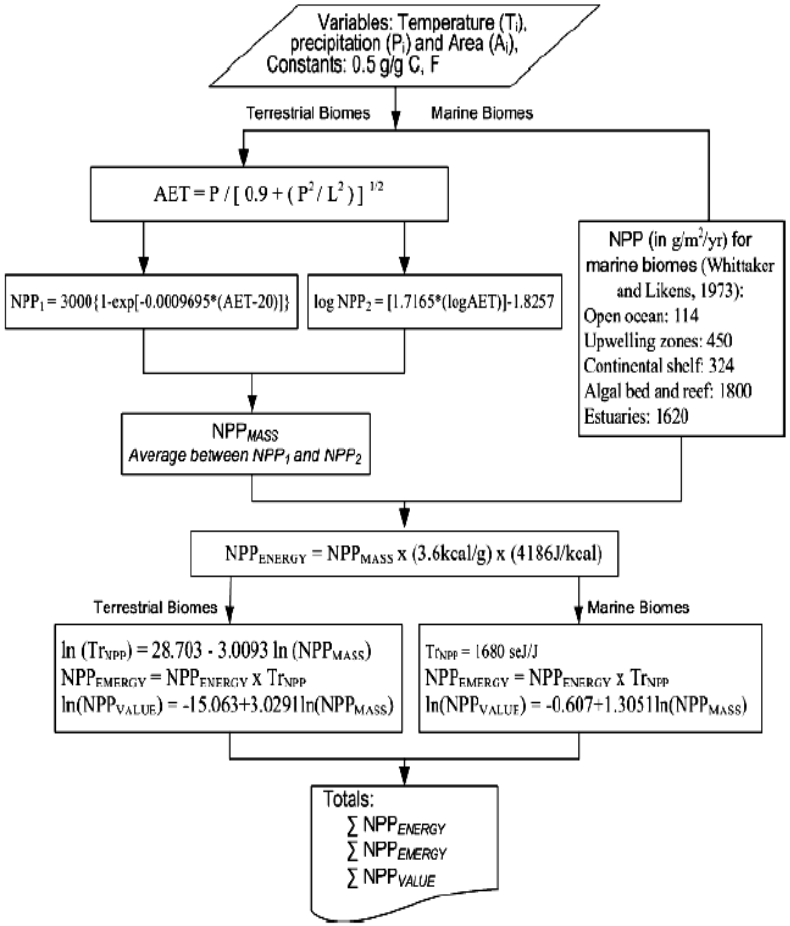


Figure 1. Algorithm used to calculate the net primary productivity of natural areas

Usando algoritmos y fórmulas

MATERIALES Y MÉTODOS

Meat Science 133 (2017) 43–50

Contents lists available at ScienceDirect

Meat Science

journal homepage: www.elsevier.com/locate/meatsci

An application based on the decision tree to classify the marbling of beef by hyperspectral imaging

Lía Velásquez[a], J.P. Cruz-Tirado[a], Raúl Siche[a,*], Roberto Quevedo[b]

[a] Facultad de Ciencias Agropecuarias, Universidad Nacional de Trujillo, Av. Juan Pablo II s/n, Ciudad Universitaria, Trujillo, Peru
[b] Fitogen Program, Department of Aquaculture and Agrifood Resources, Universidad de Los Lagos, Av. Fuchslocher 1305, Osorno, Chile

Usando algoritmos y fórmulas

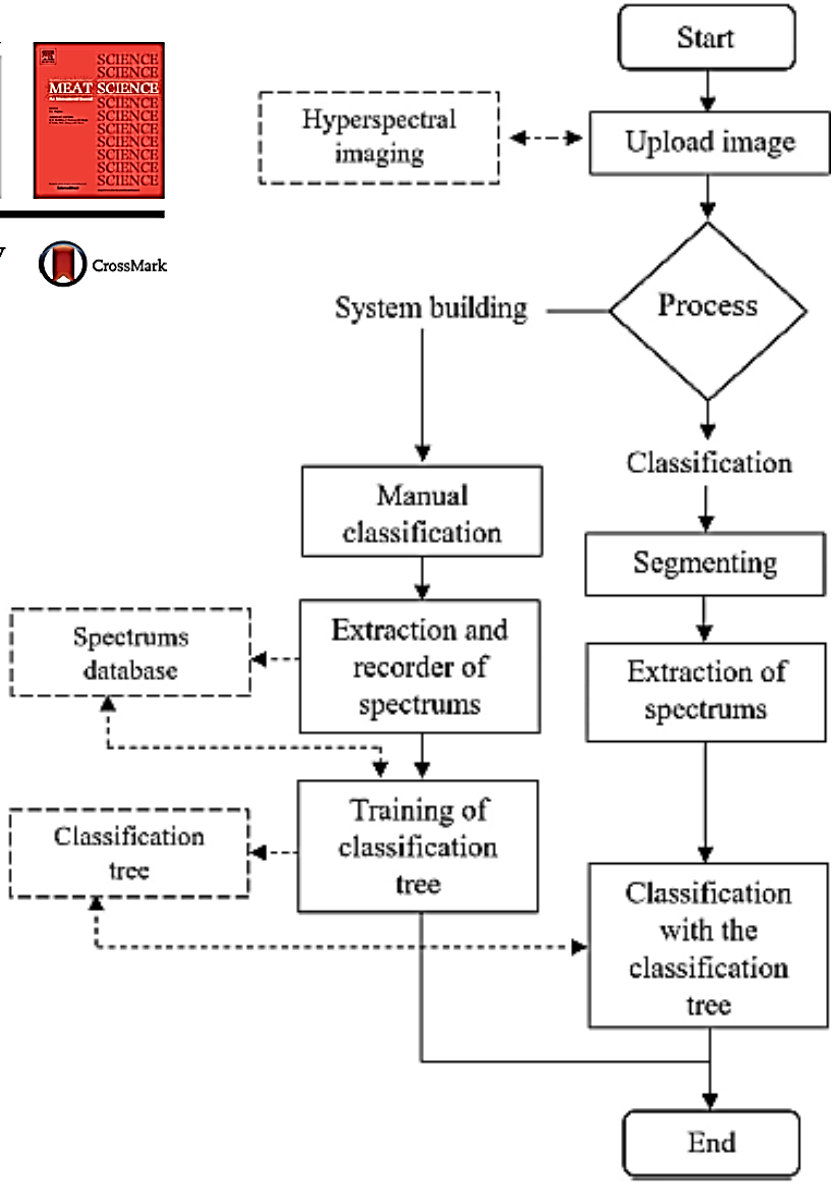


Fig. 3. Algorithm for the hyperspectral image analysis of beef.

MATERIALES Y MÉTODOS

ECOLOGICAL MODELLING 210 (2008) 37–57

available at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/ecolmodel

The use of emergy assessment and the Geographical Information System in the diagnosis of small family farms in Brazil

Feni Agostinho[a], Guaraci Diniz[b], Raúl Siche[c], Enrique Ortega[a,]*

[a] FEA (College of Food Engineering) – Unicamp, CP 6121, CEP 13083-862 Campinas, SP, Brazil
[b] Sítio Duas Cachoeiras (Farm) – Rodovia SP 360, Km 121, CEP 13908-009 Arcadas, Amparo, SP, Brazil
[c] Escuela de Ingeniería Agroindustrial – Facultad de Ciencias Agropecuarias, Universidad National de Trujillo, Av. Juan Pablo II s/n. C. Universitaria, Trujillo, Peru

In a future perspective where no fossil fuels are available, food production will have to be supported by renewable resources. This situation brings uncertainties about the limits for human existence on the planet (MEA, 2005; Wackernagel et al., 1999; WCED, 1987; Meadows et al., 1972).

It is necessary to adopt agroecological procedures and to prepare new assessment tools to diagnose farms in a fast and efficient way. This analysis should consider the resources from human economy as well as all contributions from nature to produce the output and absorb environmental impacts. The emergy methodology was proposed by Odum (1996) for system analysis, accounting, and diagnosis. The methodology was improved during the last decade. Emergy measures of natural and economic resources are expressed in a common basis: solar equivalent Joules (sej). Emergy analysis is based on Biology Energetics (Lotka, 1922), General Systems Theory (Von Bertalanffy, 1968) and Systems Ecology (Odum, 1983). Several ecosystems and economic systems emergy evaluations were made all over the world (Brown and Ulgiati, 2004; Higgins, 2003; Brown and Buranakarn, 2003; Yang et al., 2003; Lefroy and Rydberg, 2003; Qin et al., 2000; Panzieri et al., 2002, 2000; Ulgiati and Brown, 1998), as well as theoretical studies and discussions (Herendeen, 2004; Hau and Bakshi, 2004; Brown et al., 2004; Bastianoni and Marchettini, 2000). However, there are few emergy studies that evaluate agricultural production (Ortega et al., 2002; Martin et al., 2006; Castellini et al., 2006), especially of small family farms, which have singular characteristics.

The objective of this research is to demonstrate that emergy analysis can show farm performance more clearly with the support of Geographical Information Systems, and to suggest better management practices for the improvement of farming systems.

2. Methodology

2.1. Description of the farming systems

Two agricultural production models were compared: (a) the chemical or conventional model, which has the increase of economic profit as its unique objective, and (b) the agroecological model, that envisions sustainable development. Three agricultural farms located in Amparo County, São Paulo state, Brazil (Fig. 1) were evaluated: Duas Cachoeiras farm (29.7 ha), Santa Helena farm (15.6 ha) and Três Lagos farm (25.3 ha). The three farms have the same climate conditions (solar radiation, wind speed and direction, amount of rain, relative humidity), the same soil characteristics, the same land relief, approximately the same area, and all are family managed. The main difference between the farms is the production model (conventional or agroecological) adopted.

Duas Cachoeiras farm adopted Agroecology in 1985. During the last two decades, it has implemented soil decontamination and natural fertility recovery, reforestation and local biodiversity recovery, chemical input free food production, internal residue cycling (nutrients), enhanced use of local resources, and introduction of extension work, ecological tourism and education. The other two farms use the chemical model. Santa Helena produces vegetables, fruits, and coffee. Três Lagos produces milk and meat.

Fig. 1 – Study area. Brazil Country, Sao Paulo State, Amparo County. TL: Três Lagos farm; DC: Duas Cachoeiras farm; SH: Santa Helena farm.

2.2. Emergy methodology

The emergy analysis is based on the works of Odum (1996), Ulgiati and Brown (1998), and Brown and Ulgiati (2004). The first step in the application of the emergy methodology is to construct system diagrams to identify all components and their relationships. Fig. 2 shows an aggregated flow diagram that uses a symbolic language to represent the flows and interactions. Table 1 shows the description of the emergy flows.

The second step is to build the emergy table, placing the numerical value and the units of each flow mentioned in the diagram. The table allows the conversion of all the resources in terms of solar emergy Joules using transformities (Odum, 1996). The third step is to obtain the emergy indicators (Table 2) in order to evaluate the system environmental performance.

This work incorporates some changes in emergy methodology in order to get closer to reality. These changes are the following:

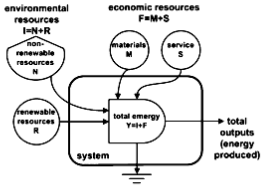


Fig. 2 – Emergy system diagram of a generic production system.

Table 1 – Classification of emergy flows used in environmental accounting

Inputs and services	Description
Nature contributions (I)	$R+N$
Renewable natural resources (R)	Rain, materials, and services from preserved areas, nutrients from soil minerals and air
Non-renewable natural resources (N)	Soil, biodiversity, people exclusion
Feedback from economy (F)	$F=M+S$
Materials (M)	$M=M_R+M_N$
Renewable materials and energy (M_R)	Renewable materials of natural origin
Non-renewable materials and energy (M_N)	Minerals, chemicals, steel, fuel, etc.
Services (S)	$S=S_R+S_N$
Renewable services (S_R)	Manpower supported by renewable sources
Non-renewable services (S_N)	Other (external) services, taxes, insurance, etc.
Total emergy (Y)	$Y=I+F$

Ortega et al., 2002.

(1) The renewability factor of each item have been considered, according to Ulgiati et al. (1994), Ortega et al. (2005, 2002), Ortega and Polidoro (2002), Ulgiati et al. (2005) and Cavalett et al. (2006). The emergy indexes were slightly changed to evaluate sustainability more properly, by considering renewability of each of the economic resource used. The incorporation of the renewability factor is particularly valid when the system uses materials and services, purchased at the local or regional economy, that are not totally considered as nonrenewable resource (such as labor, electricity power, manure and services). Thus, the incorporation of the renewability factor should be added to emergy methodology when applied to assess sustainability (Ortega et al., 2005, 2002).

(2) The soil loss was calculated through the Universal Soil Loss Equation (USLE) in accordance with Wischmeier and Smith (1978) and the aid of the Geographical Information System (GIS). Soil loss equation enumerates the main factors that influence the rain erosion. The equation (USLE) is expressed as follows: $A=R\times K\times L\times S\times C\times P$, where A = soil loss given by area unit [t/(ha year)]; R = rain factor; expression of rain erosion [MJ mm/(ha h year)]; K = soil erodibility factor [t h/(MJ mm)]; L = slope length factor [non-dimensional]; S = slope steepness factor [non-dimensional]; C = cover-management factor [non-dimensional]; P = support practice factor [non-dimensional]. Aerial photographs were obtained from the archives of Amparo City Hall (scale 1:30,000), covering the three research units. Initially, they were geographically located through ERDAS Imagine software (version 8.7) and exported to GIS software (ArcGIS 9.0) for constructing thematic maps (land use and soil type). The factors required by soil loss equation were obtained through several works (Resende and Almeida, 1985; Bertoni and Lombardi Neto, 1999; Guerra et al., 1999; Gabriels et al., 2003; Lu et al., 2004; Shi et al., 2004) and linked to these maps. An Arc Macro Language (AML) routine was used to determine the topographical factor in Arc Info Workstation 9.0, according to Lu et al. (2004). The AML routine was developed by Hickey (2000) and Van Remortel et al. (2001), and is available at the Internet address: http://www.cwu.edu/~rhickey/slope/slope.html. The flowchart used to calculate soil loss can be seen in Fig. 3. Through this procedure, the amount of soil loss calculated is closer to the reality of the specific location;

(3) For the agroecological system analyzed in this work, the ground macronutrients (nitrogen, potash, phosphorus and limestone) removed in the harvest (see Table 3) have been considered as renewable resources from nature, since the process used in the farm makes the acquisition of macronutrients from external sources unnecessary (Agostinho, 2005). The green manure (fertilization using leguminous plants), the incorporation of animal manure, compost and organic matter surplus after harvest to the ground ensure that the amount of ground minerals removed in the crop could be replaced in a renewable way. Since 1985, Duas Cachoeiras farm uses no chemical inputs in food production, displaying a ground mineral extraction equal to or lower than natural restoration;

(4) The fact that the farms have native vegetation areas, which besides serving as a natural defense against plagues, causes some rain water to infiltrate the ground. This increases the amount of water in underground watersheds (Agostinho, 2005). The land use, soil type, soil handling and landscape slope are the most important factors that affect the water pathways after the rain initiates. There are mathematical models able to estimate the water infiltration in the ground, runoff and interception by vegetal covering, but all of them demand many raw data. The calculation of water infiltration into the ground considering vegetable covering was not the main aim of this paper, thus there were used previous works by other researchers (Adekalu et al., 2007; Souza and Alves, 2003; Centurion et al., 2001; Lima, 1996). The following percentages were considered: 30% for forest areas and silviculture; 20% for Napier grass, maize, orchard, chayote, meadows and annual culture; 5% for grassland and cultures with low biomass accumulation. Through the GIS land use map of the three properties (Figs. 4–6) with the values of plant covering areas expressed in hectares and the respective rain infiltration ratio (%), it was possible to estimate the water

Table 2 – Emergy Indicators

Indicator	Expression	Meaning
Solar transformity (Tr)	Y/E	The ratio of the emergy of the output divided by the emergy of the products.
Renewability (%R)	$100x(R+M_R+S_R)/Y$	The ratio of the renewable inputs divided by the total emergy of the system.
Emergy yield ratio (EYR)	$Y/(M_N+S_N)$	The ratio of total emergy used divided by the emergy of nonrenewable inputs from the economy.
Emergy investment ratio (EIR)	$(M_N+S_N)/(R+M_R+S_R+N)$	The ratio of emergy of nonrenewable economic inputs divided by the emergy of nature investment (nature input plus renewable inputs from economy).
Emergy exchange ratio (EER)	$Y/[\$]\times(sej/\$)]$	The ratio of emergy delivered by the producer to the economy divided by the emergy received from the buyer.
Environmental loading ratio (ELR)	$(N+M_N+S_N)/(R+M_R+S_R)$	The ratio of nonrenewable emergy and renewable inputs.
Emergy sustainability index (ESI)	EYR/ELR	Indicates the sustainability of the system.

Source: Ortega et al., 2002; based on Odum, 1996.

Table 3 – Calculation of nutrients removed from the ground

Product	Protein[a] (g)	P^a (g) ($\times10^{-3}$)	K^a (g) ($\times10^{-3}$)	N^b (g)	Ca^a (g) ($\times10^{-3}$)	Others[a] (g) ($\times10^{-3}$)
Maize	9	210	287	1.44	7	167
Sunflower	23	705	689	3.68	116	373
Beans	4	37	187	0.64	17	28
Pumpkin	1	44	340	0.16	21	14
Cassava	1	27	271	0.16	16	35
Sweet potato	2	28	204	0.32	22	24
Rice	15	433	427	2.40	21	194
Soybean	13	194	620	2.08	197	86
Vegetable	1	23	257	0.16	32	18
Fruit	1	11	156	0.16	10	11
Product	**Productivity (kg/ha year)**	**P (kg/ha year)**	**K (kg/ha year)**	**N (kg/ha year)**	**Ca (kg/ha year)**	**Others (kg/ha year)**
Maize	3,000	6.3	8.6	43.2	0.2	5.0
Sunflower	1,000	7.0	6.9	36.8	1.1	3.7
Beans	900	0.3	1.6	5.7	0.1	0.2
Pumpkin	3,500	1.5	11.9	5.6	0.7	0.5
Cassava	10,000	2.7	27.1	16.0	1.6	3.5
Sweet potato	10,000	2.8	20.4	32.0	2.2	2.4
Rice	2,500	10.8	10.6	60.0	0.5	4.8
Soybean	2,400	4.6	14.8	49.9	4.7	2.0
Vegetable	30,000	6.9	77.1	48.0	9.6	5.4
Fruit	10,000	1.1	15.6	16.0	1.0	1.1
Total		44.0	194.6	313.2	21.7	28.6

Duas Cachoeiras farm, year 2003.
[a] Source: Table of Chemical Composition of Foods. U.S. Department of Agriculture, Agricultural Research Service. Nutrient Database for Standard Reference, release 14. Amount of nutrients in 100 g of sample. Available at http://www.unifesp.br/dis/services/nutri, accessed on 18th June 2004. P, phosphate; K, Potash; N, Nitrogen; Ca, Limestone;
[b] The amount of nitrogen corresponds approximately 16% of protein amount.

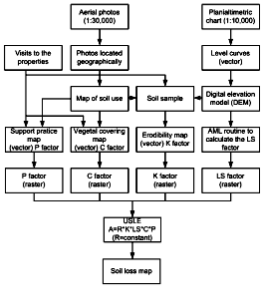


Fig. 3 – Flowchart used in soil loss calculation.

Combinación: textos, figuras, tablas, flujos, fórmulas

En artículos de investigación original

Journal of Texture Studies
A journal to advance the fundamental understanding of food texture and sensory perception
Journal of Texture Studies ISSN 1745-4603

USE OF RESPONSE SURFACE METHODOLOGY TO DESCRIBE THE COMBINED EFFECT OF TEMPERATURE AND FIBER ON THE RHEOLOGICAL PROPERTIES OF ORANGE JUICE

RAÚL SICHE[1], VÍCTOR FALGUERA[2] and ALBERT IBARZ[3,4]
[1]Escuela de Ingeniería Agroindustrial, Facultad de Ciencias Agropecuarias, Universidad Nacional de Trujillo, Trujillo, Peru
[2]Agricultural Knowledge & Innovation Services (AKIS International), Albatàrrec, Spain
[3]Departament de Tecnologiad'Aliments, Universitat de Lleida, Av. Rovira Roure, 191, Lleida 25198, Spain

MATERIALS AND METHODS

To ensure standardization and repeatability of the tests, a concentrated clarified and depectinized orange juice (57.1°Brix) was used, provided by Nufri (Mollerussa, Spain). This juice was diluted with distilled water to 12°Brix for the production of a single-strength juice. Soluble solids were determined by means of a refractometer (Atago RX-1000, Atago Bussan Co., Tokyo, Japan) at 20C. The orange fiber was provided by Indulleida, SA (Alguaire, Spain). The fiber was mixed with the clarified juice for 3 min at 15,000 rpm using a homogenizer (Ultra-Turrax T25, IKA, Staufen, Germany) to obtain juices with fiber at the desired concentration (C_f = 0–12.5% w/w).

Rheological measurements were carried out in a rheometer (Haake RS-80, Haake, Karlsruhe, Germany) using a Couette-geometry sensor (concentric cylinder; Haake Z40-DIN) with relative cup and bob radius of 1.0847 (bob radius = 20 ± 0.004 mm). The temperature was maintained with a water bath (Phoenix Thermo Haake C25P) with a deviation of less than ±0.3C. Each rheological evaluation was carried out with a new sample without mechanical history. After placing the samples in the rheometer, a relaxing time of 10 min was given before starting the shearing.

Steady-state shear experiments were carried out at a shear rate ($\dot{\gamma}$) between 0.01 and 300/s with the exception of pure juice samples, for which a maximum shear rate of 80/s was used due to the formation of Taylor vortices at high values (i.e., secondary turbulent flows cannot be used in the rheological analysis), as described by Steffe (1996). Samples were subjected to shear in a cycle of three flow ramps (up, down and up), and the data from the third ramp were used for analysis (Genovese and Rao 2005; Sato and Cunha 2009; Tonon *et al.* 2009; Silva *et al.* 2010).

A central composite rotatable design for 2 factors × 9 treatments (four factorial, four axial and one central point, as shown in Table 1), with four replicates each, was used. The results were evaluated with Statistica 5.5 (StatSoft, Tulsa, Oklahoma, EEUU) with a significance level of 5%. For comparison, data reported by Siche *et al.* (2012) were also taken. The Herschel–Bulkley model (Eq. 1) was used to study the flow behavior of the samples, where σ_0 is the yield stress, k is the consistency index and n is the flow behavior index:

$$\sigma = \sigma_0 + k\dot{\gamma}^n \quad (1)$$

MATERIALES Y MÉTODOS

En artículos de revisión

Contents lists available at ScienceDirect

Blood Reviews

journal homepage: www.elsevier.com/locate/blre

Review

Approach to pancytopenia: Diagnostic algorithm for clinical hematologists

Jerome Gnanaraj[a,*], Aric Parnes[b], Charles W. Francis[c], Ronald S. Go[e], Clifford M. Takemoto[d], Shahrukh K. Hashmi[e,f]

Estructura

1. Resumen
2. Introducción
3. Metodología
4. Resultados y discusión
5. Conclusiones
6. Referencias bibliográficas

1. Introduction

Pancytopenia is defi
and it could manifest wi
or thrombocytopenia;
Pancytopenia may also l
can be present in some
latively common pheno
most common reasons f
primary care physicians
tologist is consulted whe
not a disease in itself but rather a finding due to an underlying disease process affecting the bone marrow or the peripheral cell lines.

Although there are studies reviewing the underlying pathologies and the bone marrow findings in pancytopenia, only few are published on the approach to pancytopenia in clinical practice [2–4]. Internists, psychiatrists, obstetricians, pediatricians, and intensivists encounter the majority of cases and these are frequently referred to hematologists for further workup. The differential diagnoses in a patient presenting with pancytopenia are broad and extensive. These are only reviewed in textbooks and a literature gap is identified regarding the management of pancytopenia. In this review, we propose a common management approach to pancytopenia, which is essential for hematologists who perform consultative service in academic and community settings.

2. Methods

We conducted a comprehensive electronic literature search from January 1990 to July 2016. We followed the guidelines of PRISMA statement for systematic reviews for collecting the data. Only human studies published in English language were included. We searched the following electronic databases: PubMed, Cochrane Central Register of Controlled Trials and Cochrane Database of Systematic Review. MeSH Terms "Pancytopenia" was combined with "Diagnosis", "Drug Therapy", "Epidemiology", "Physiopathology" and "Therapy" using Boolean Language ("OR", "AND"). We included all studies including Controlled Trials, prospective and retrospective observational studies, case reports and systematic reviews. Case reports describing pancytopenia from unusual causes were excluded.

3. Results

Our systematic search identified many causes of pancytopenia as well as a wide variety of treatments given for conditions causing

Food Eng Rev (2016) 8:306–322
DOI 10.1007/s12393-015-9137-8

REVIEW ARTICLE

Evaluation of Food Quality and Safety with Hyperspectral Imaging (HSI)

Raúl Siche[1] · Ricardo Vejarano[1] · Victor Aredo[1] · Lia Velasquez[1] · Erick Saldaña[2] · Roberto Quevedo[3]

En artículos de revisión

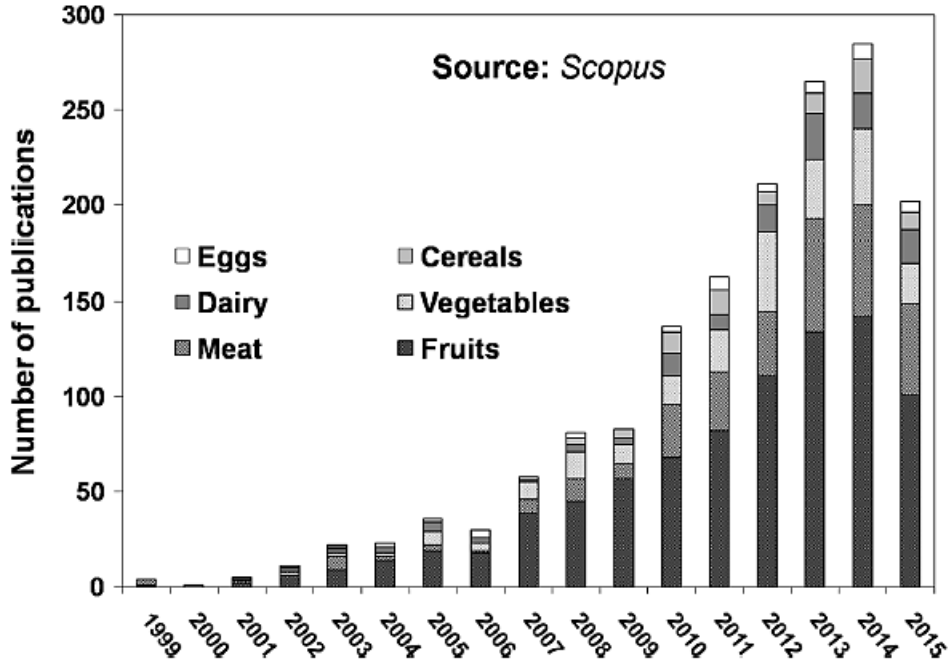


Fig. 1 Publications of scientific articles on the application of hyperspectral imaging (HSI) in the food industry. Information obtained from the database Scopus (search criteria: ALL FIELDS: "hyperspectral imaging" and ARTICLE TITLE, ABSTRACT, KEYWORDS: "each group of food")

Estructura

1. Resumen
2. Introducción
3. Desarrollo y discusión
4. Conclusiones
5. Referencias bibliográficas

¿Cómo presentar los RESULTADOS?

¿Cómo redactar la DISCUSIÓN?

¿Cómo presentar los RESULTADOS?

- ✓ Si sólo un número reducido de datos será divulgado, inserte la información en un texto (No use tablas o figuras)

Tabla 1. Rendimiento del ensayo de extracción

N°. de ensayo	Temperatura, °C	Presión, bar	Rendimiento, %
1	45	100	2.3
2	45	100	2.4
3	45	100	2.2

Tabla 2. Efecto de la temperatura en la germinación de semilla de avena

Temperatura, °C	Germinación después de 48 h
-50	0
-40	0
-20	0
0	0
20	7
40	1

Tabla 3. Requisitos de oxigenación de varias especies de *Streptomyces*

Organismo	Crecimiento aeróbico	Crecimiento anaeróbico
Streptomyces griseus	+	-
S. coelicolor	+	-

Tablas

Las tablas son una forma concisa y efectiva de **presentar grandes cantidades de datos**. Debe diseñarlas cuidadosamente para comunicar claramente sus resultados.

Una tabla bien diseñada debe cumplir:

- Títulos claros y concisos
- Datos divididos en categorías para mayor claridad
- Espaciado suficiente entre columnas y filas
- Se expresan las unidades
- El tipo y tamaño de fuente legibles.

RESULTADOS

Journal of Texture Studies
A journal to advance the fundamental understanding of food texture and sensory perception
Journal of Texture Studies ISSN 1745-4603

USE OF RESPONSE SURFACE METHODOLOGY TO DESCRIBE THE COMBINED EFFECT OF TEMPERATURE AND FIBER ON THE RHEOLOGICAL PROPERTIES OF ORANGE JUICE

RAÚL SICHE[1], VÍCTOR FALGUERA[2] and ALBERT IBARZ[3,4]
[1]Escuela de Ingeniería Agroindustrial, Facultad de Ciencias Agropecuarias, Universidad Nacional de Trujillo, Trujillo, Peru
[2]Agricultural Knowledge & Innovation Services (AKIS International), Albatàrrec, Spain
[3]Departament de Tecnologiad'Aliments, Universitat de Lleida, Av. Rovira Roure, 191, Lleida 25198, Spain

- ✓ Si los datos provienen de ensayos repetitivos, entonces use una tabla o figura; aunque no todos los resultados precisan ser divulgados en estas formas.

TABLE 1. CONSISTENCY INDEX (k), FLOW BEHAVIOR INDEX (n) AND YIELD STRESS (Σ_0) FOR THE NINE EXPERIMENTAL SERIES OF THE RESPONSE SURFACE METHODOLOGY

Fiber (%)		Temperature (C)				
Code*	Value	Code*	Value	k (Pa·s^n)	n	σ_0 (Pa)
−1	1.8	−1	5.9	0.0038 ± 0.0003	1.00 ± 0.00	0 ± 0.00
1	10.7	−1	5.9	0.2934 ± 0.0140	0.805 ± 0.008	0 ± 0.00
−1	1.8	1	34.1	0.0028 ± 0.0003	0.989 ± 0.022	0 ± 0.00
1	10.7	1	34.1	0.1755 ± 0.0184	0.773 ± 0.014	0 ± 0.00
−1.41	0	0	20	0.0015 ± 0.0004	1.00 ± 0.00	0 ± 0.00
1.41	12.5	0	20	0.4613 ± 0.0056	0.769 ± 0.002	0.42 ± 0.05
0	6.3	−1.41	0	0.0469 ± 0.0012	0.911 ± 0.004	0 ± 0.00
0	6.3	1.41	40	0.0140 ± 0.0012	0.947 ± 0.013	0 ± 0.00
0	6.3	0	20	0.0225 ± 0.0013	0.935 ± 0.012	0 ± 0.00

* The code belongs to a central composite rotatable design with the scheme: $2^2 + 2*2 + 1$ central point.

Journal of Texture Studies **46** (2015) 67–73 © 2015 Wiley Periodicals, Inc.

RESULTADOS

Journal of Texture Studies
A journal to advance the fundamental understanding of food texture and sensory perception
Journal of Texture Studies ISSN 1745-4603

USE OF RESPONSE SURFACE METHODOLOGY TO DESCRIBE THE COMBINED EFFECT OF TEMPERATURE AND FIBER ON THE RHEOLOGICAL PROPERTIES OF ORANGE JUICE

RAÚL SICHE[1], VÍCTOR FALGUERA[2] and ALBERT IBARZ[3,4]
[1]Escuela de Ingeniería Agroindustrial, Facultad de Ciencias Agropecuarias, Universidad Nacional de Trujillo, Trujillo, Peru
[2]Agricultural Knowledge & Innovation Services (AKIS International), Albatàrrec, Spain
[3]Departament de Tecnologiad'Aliments, Universitat de Lleida, Av. Rovira Roure, 191, Lleida 25198, Spain

- ✓ Si los datos provienen de ensayos repetitivos, entonces use una tabla o figura; aunque no todos los resultados precisan ser divulgados en estas formas.

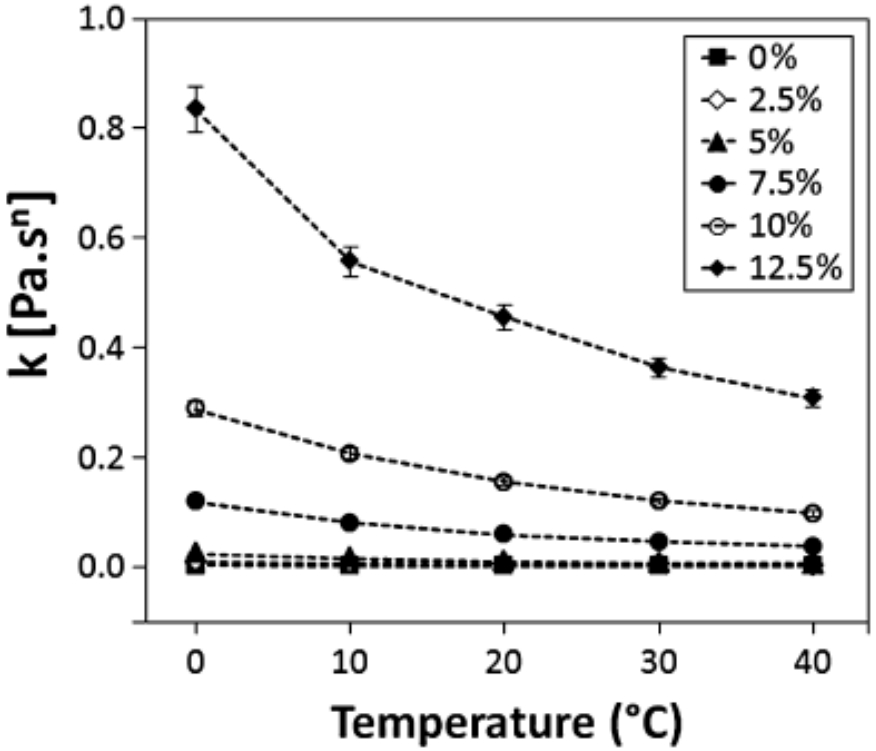
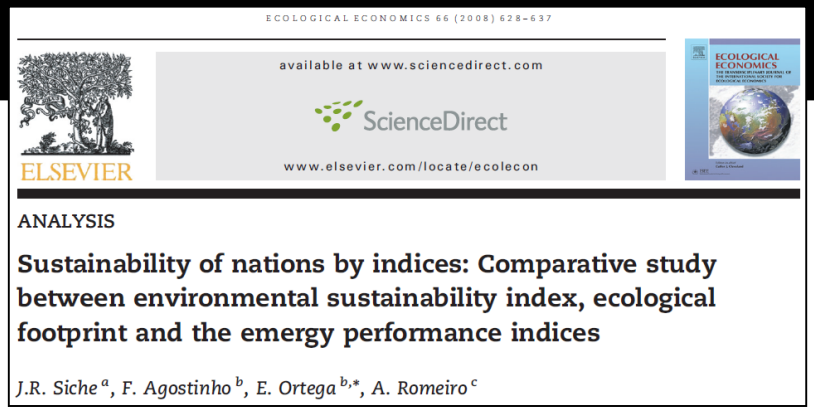


FIG. 3. CONSISTENCY INDEX (*k*) OF THE HERSCHEL–BULKLEY MODEL IN ORANGE JUICE AS A FUNCTION OF FIBER CONTENT AND TEMPERATURE, BUILT WITH DATA FROM SICHE *ET AL.* (2012)

RESULTADOS

- ✓ Seleccione resultados representativos que permitan la generalización de resultados.


ECOLOGICAL ECONOMICS 66 (2008) 628–637

available at www.sciencedirect.com

ScienceDirect

www.elsevier.com/locate/ecolecon

ELSEVIER

ANALYSIS

Sustainability of nations by indices: Comparative study between environmental sustainability index, ecological footprint and the emergy performance indices

J.R. Siche [a], F. Agostinho [b], E. Ortega [b,], A. Romeiro [c]*

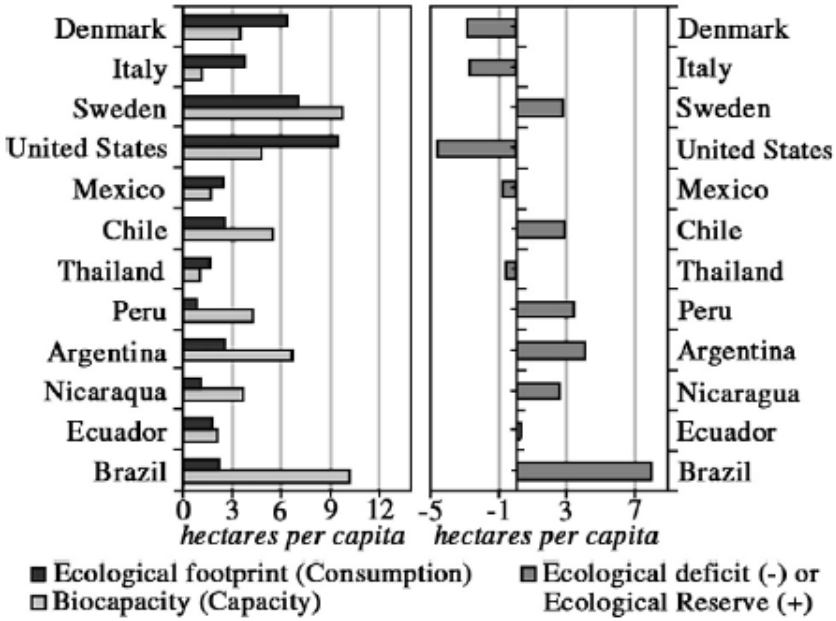


Fig. 1 – Ecological footprint: (a) Capacity and Consumption. (b) Ecological deficit. Source: Own elaboration based on Hails et al. (2006).

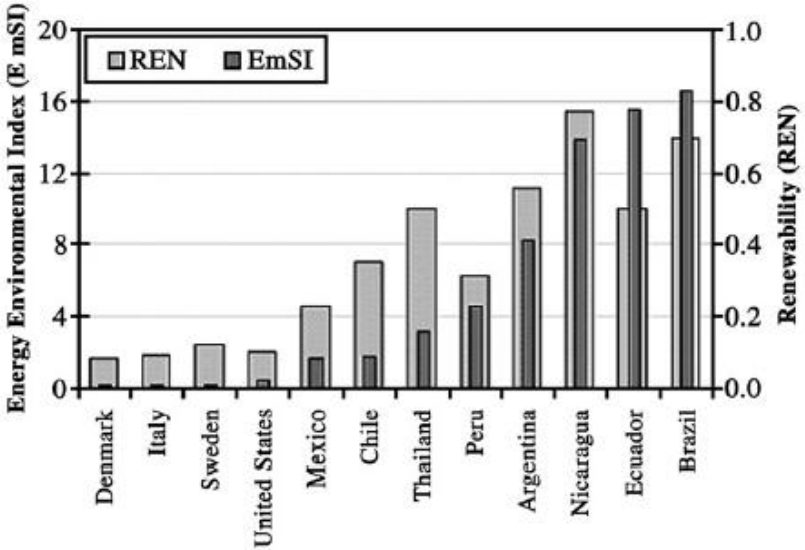


Fig. 3 – Emergy performances indices: Renewability (REN) and Emergy Sustainability Index (EmSI). Source: Own elaboration based in the studies of Brown and McClanahan (1996), Cuadra (2005), Haden (2003), Lagerberg (1999), Siche and Ortega (2007), Scatena et al. (2002).

RESULTADOS

✓Aproveche bien el uso de tablas

ECOLOGICAL MODELLING 210 (2008) 37–57

available at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/ecolmodel

The use of emergy assessment and the Geographical Information System in the diagnosis of small family farms in Brazil

Feni Agostinho[a], Guaraci Diniz[b], Raúl Siche[c], Enrique Ortega[a,]*

Table 11 – Emergy evaluation of Santa Helena farm (SH) in the year 2003 (emergy flows in E+13 seJ/ha/year)

Note	Item	Renewability fraction	Unit	Unit/ha/year	seJ/unit	Reference for seJ/unit	Renewable emergy flow	Non-renewable emergy flow	Total emergy flow
Renewable inputs (R)									
1	Sun	1.00	J	1.52E+11	1.00E+00	Definition	0.02	0.00	0.02
2	Rain	1.00	J	6.25E+10	3.10E+04	Odum et al. (2000)	193.75	0.00	193.75
3	Wind	1.00	J	1.51E+10	2.45E+03	Odum et al. (2000)	3.70	0.00	3.70
4	River water	1.00	J	1.25E+09	2.55E+05	Bastianoni and Marchettini (2000)	31.88	0.00	31.88
5	Biomass	1.00	J	1.35E+11	1.00E+04	Estimated, Brown and Bardi (2001)	135.00	0.00	135.00
Non-renewable inputs (N)									
6	Soil loss	0.00	J	5.33E+10	1.24E+05	Brandt-Williams (2002)	0.00	660.92	660.92
Materials (M)									
7	Depreciation	0.05	US$	4.77E+02	3.30E+12	Coelho et al. (2003)	7.87	149.54	157.41
8	Fuel	0.00	J	2.29E+08	5.50E+05	Bastianoni et al. (2005)	0.00	12.60	12.60
9	Electricity	0.70	J	1.73E+09	2,77E+05	Brown and Ulgiati (2004)	33.54	14.38	47.92
10	Materials	0.10	US$	4.27E+01	3.30E+12	Coelho et al. (2003)	1.41	12.68	14.09
11	Fungicide	0.05	kg	3.33E+01	2.49E+13	Brandt-Williams (2002)	4.15	78.77	82.92
12	Herbicide	0.05	kg	5.00E-01	2.49E+13	Brandt-Williams (2002)	0.06	1.18	1.25
13	Calcium	0.05	kg	2.40E-01	1.00E+12	Brandt-Williams (2002)	0.00	0.02	0.02
14	Nitr. Calcium	0.05	US$	1.58E+00	3.30E+12	Coelho et al. (2003)	0.03	0.50	0.52
15	Nitr. Potass.	0.05	US$	2.14E+00	3.30E+12	Coelho et al. (2003)	0.04	0.67	0.71
Services (S)									
16	Family labor	0.90	US$	2.67E+02	3.30E+12	Coelho et al. (2003)	79.30	8.81	88.11
17	Tax	0.05	US$	2.46E+00	3.30E+12	Coelho et al. (2003)	0.04	0.77	0.81
18	Service	0.05	US$	2.36E+01	3.30E+12	Coelho et al. (2003)	0.39	7.40	7.79
19	Phone	0.05	US$	1.54E+01	3.30E+12	Coelho et al. (2003)	0.25	4.83	5.08
Total emergy (Y)							491.42	953.06	1444.48
Total outputs (O)		J	1.65E+10						
Money from the sale of products		US$	1,536.10						

Figuras

Las figuras son ideales para presentar:

- Imágenes
- Gráficos de datos
- Mapas
- Esquemas

Al igual que las tablas, todas las figuras deben tener un título de leyenda claro y conciso.

Imágenes

Las imágenes ayudan a visualizar la información que se intenta transmitir. Es difícil ser suficientemente descriptivo usando palabras. Las imágenes pueden ayudar a lograr la precisión necesaria. Por ejemplo, puede que no sea suficiente decir: "*La superficie tenía características de escala nanométrica*." En este caso, sería ideal proporcionar una imagen de microscopio.

Para las imágenes, asegúrese de:

- Incluir las escalas
- Etiquetar los elementos importantes
- Indicar el significado de los diferentes colores y símbolos utilizados.

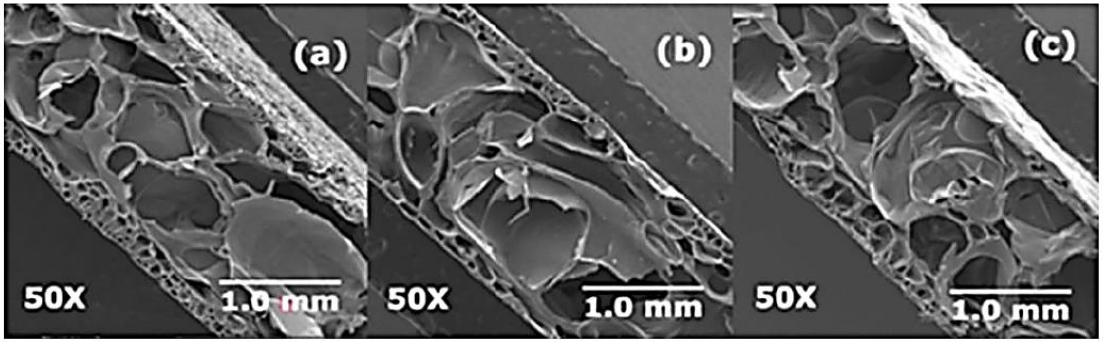


Fig. 1. Images of baked foam: (a) Starch/fiber 100/0, (b) Starch/SB 95/5, and (c) Starch/PA 95/5.

Gráficos de datos

Transmiten grandes cantidades de datos rápidamente. El objetivo es mostrar una relación funcional o estadística entre dos o más elementos. Sin embargo, se omiten a menudo los detalles sobre los puntos de datos individuales para poner el énfasis en la relación mostrada por el conjunto de puntos.

Para los gráficos de datos asegúrese de:

- Etiquetar todos los ejes
- Especificar las unidades para las cantidades
- Etiquetar todas las curvas y conjuntos de datos
- Utilizar un tamaño de fuente legible.

Gráficos de datos (Color)

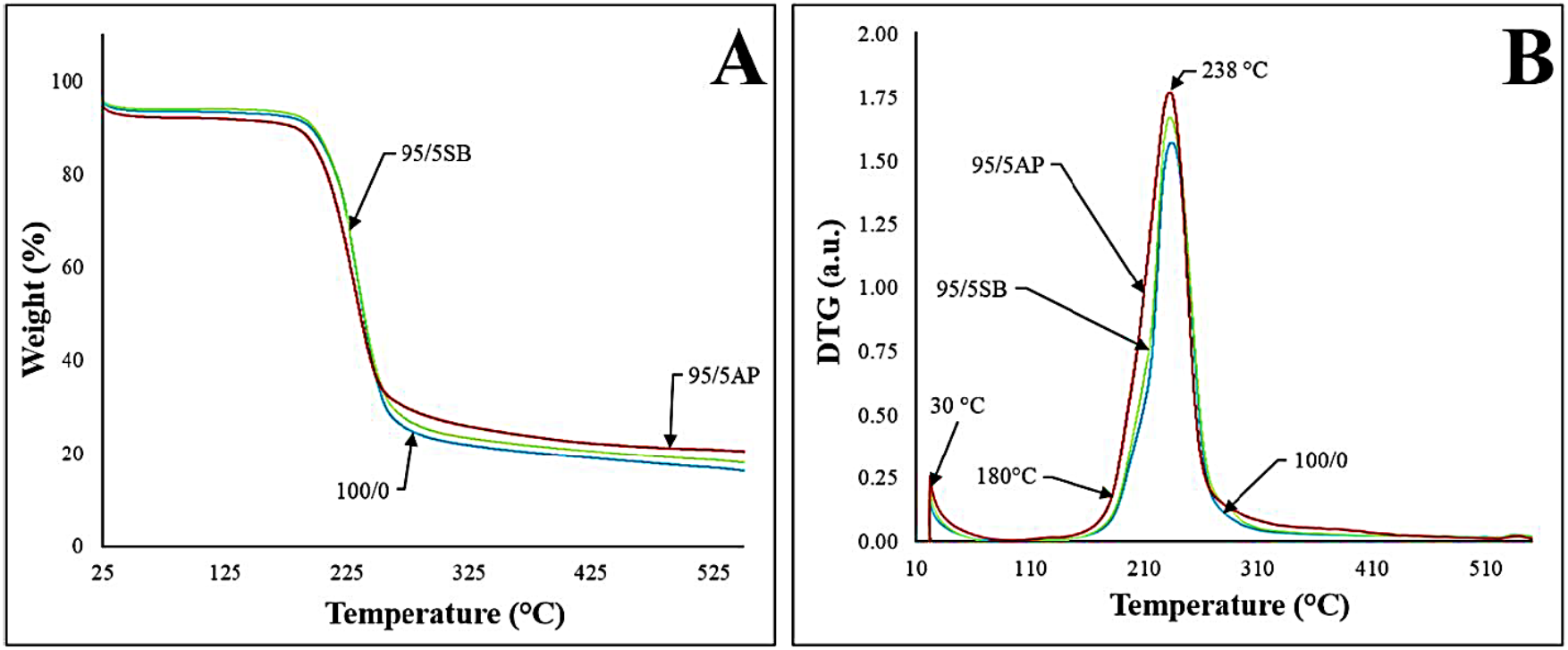


Fig. 2. Thermogravimetric curves of foam trays 100/0, 95/5PA and 95/5SB: (A) TG curves and (B) DTG curves.

Gráficos de datos (blanco y negro)

Es importante haga pruebas de cómo se verán sus figuras en blanco y negro, así serán impresas.

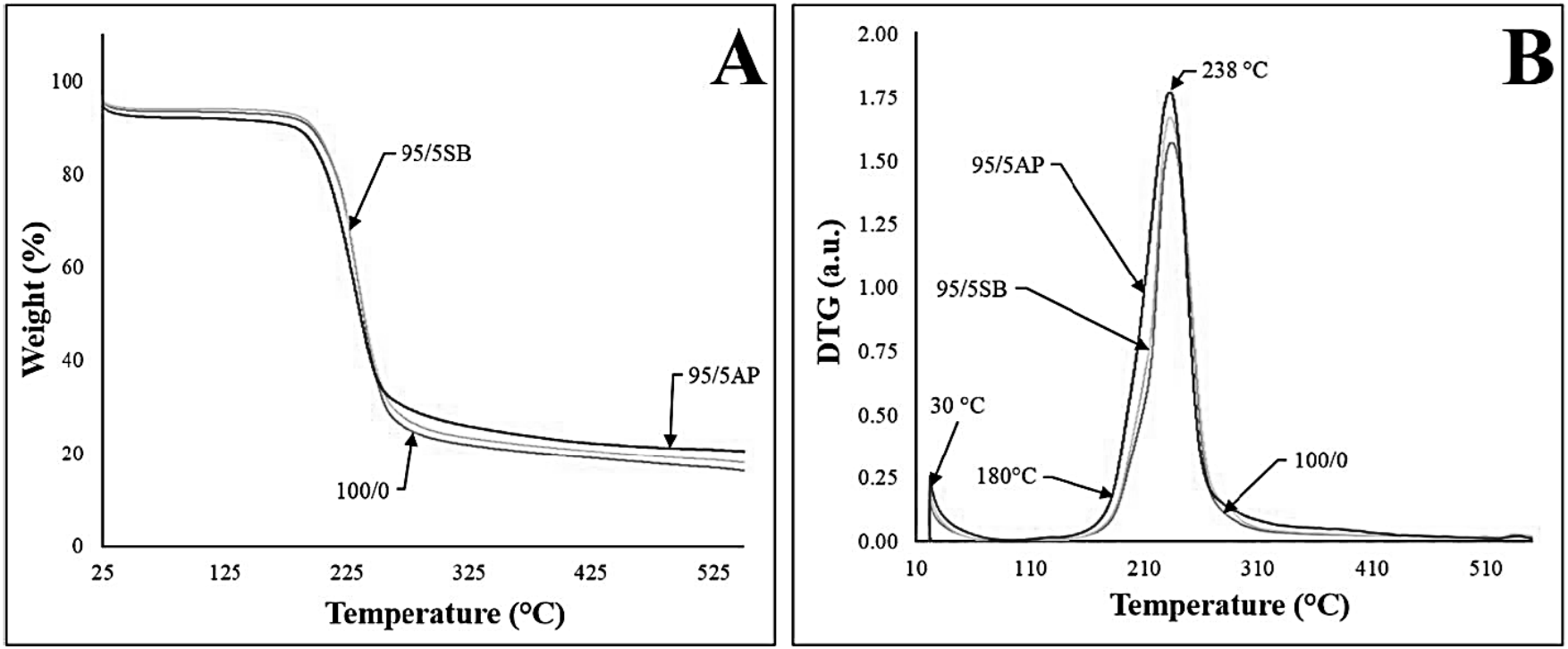


Fig. 2. Thermogravimetric curves of foam trays 100/0, 95/5PA and 95/5SB: (A) TG curves and (B) DTG curves.

Mapas

Los mapas son importantes para poner el trabajo de campo en el contexto del lugar donde se realizó. Un buen mapa ayudará a su lector a entender cómo afecta el sitio a su estudio. Además, ayudará a otros investigadores a reproducir su trabajo o encontrar otros lugares con propiedades similares. Aquí, tenemos un mapa utilizado en un estudio sobre el salmón.

Para los mapas, asegúrese de:

- Incluir latitud y longitud
- Incluir las escalas
- Etiquetar los elementos importantes
- Agregar una leyenda de mapa, en el caso sea necesario.

ECOLOGICAL MODELLING 210 (2008) 37–57

available at www.sciencedirect.com

ScienceDirect

ELSEVIER

journal homepage: www.elsevier.com/locate/ecolmodel

The use of emergy assessment and the Geographical Information System in the diagnosis of small family farms in Brazil

Feni Agostinho[a], Guaraci Diniz[b], Raúl Siche[c], Enrique Ortega[a,*]

Fig. 1 – Study area. Brazil Country, Sao Paulo State, Amparo County. TL: Três Lagos farm; DC: Duas Cachoeiras farm; SH: Santa Helena farm.

Esquemas

Los esquemas ayudan a identificar las partes clave de un sistema o proceso. Deben resaltar sólo los elementos clave porque la adición de elementos sin importancia puede hacer confusa la imagen. Un esquema sólo incluye los dibujos que el autor elige, ofreciendo un grado de flexibilidad no ofrecido por las imágenes. También pueden utilizarse en situaciones en las que es difícil o imposible capturar una imagen.

Para los esquemas, asegúrese de:

- Etiquetar los elementos clave
- Proporcionar explicaciones complementarias en la leyenda y el texto principal.

RESULTADOS

Meat Science 133 (2017) 43–50

Contents lists available at ScienceDirect

Meat Science

journal homepage: www.elsevier.com/locate/meatsci

An application based on the decision tree to classify the marbling of beef by hyperspectral imaging

Lía Velásquez[a], J.P. Cruz-Tirado[a], Raúl Siche[a,*], Roberto Quevedo[b]

[a] Facultad de Ciencias Agropecuarias, Universidad Nacional de Trujillo, Av. Juan Pablo II s/n, Ciudad Universitaria, Trujillo, Peru
[b] Fitogen Program, Department of Aquaculture and Agrifood Resources, Universidad de Los Lagos, Av. Fuchslocher 1305, Osorno, Chile

Meat Science 133 (2017) 43–50

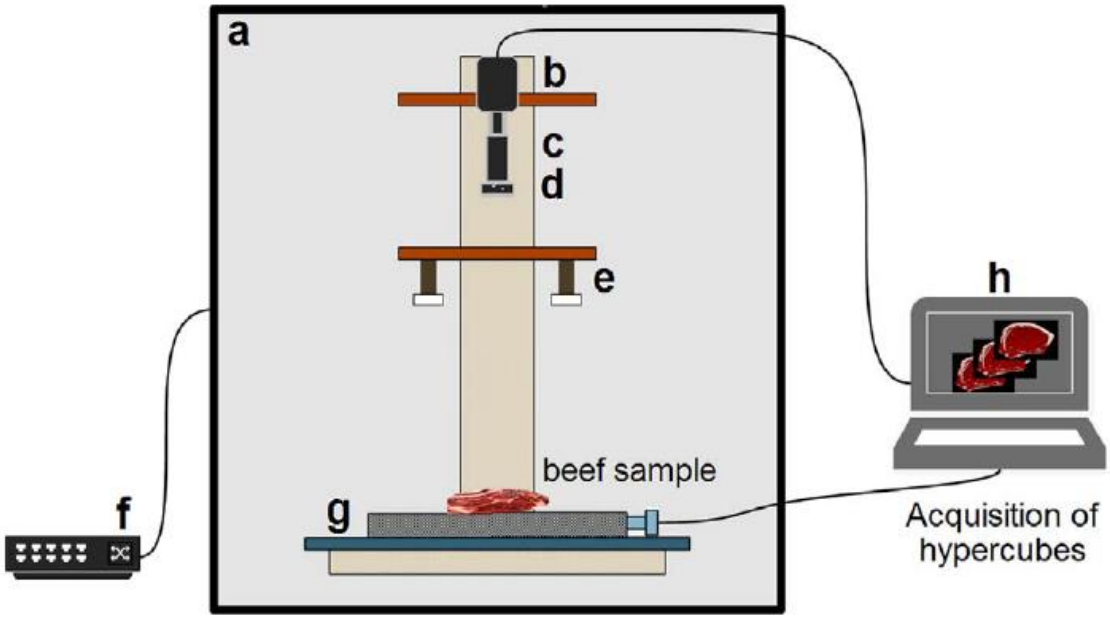


Fig. 1. Configuration of the hyperspectral imaging system: (a) dark chamber, (b) camera, (c) spectrograph, (d) lens, (e) lamps, (f) power supply, (g) transmission stage, (h) computer and image acquisition software.

Meat Science 133 (2017) 43–50

✓Haga figuras explicativas

Meat Science 133 (2017) 43–50

ELSEVIER

Contents lists available at ScienceDirect

Meat Science

journal homepage: www.elsevier.com/locate/meatsci

An application based on the decision tree to classify the marbling of beef by hyperspectral imaging

Lía Velásquez[a], J.P. Cruz-Tirado[a], Raúl Siche[a,*], Roberto Quevedo[b]

[a] Facultad de Ciencias Agropecuarias, Universidad Nacional de Trujillo, Av. Juan Pablo II s/n, Ciudad Universitaria, Trujillo, Peru
[b] Fitogen Program, Department of Aquaculture and Agrifood Resources, Universidad de Los Lagos, Av. Fuchslocher 1305, Osorno, Chile

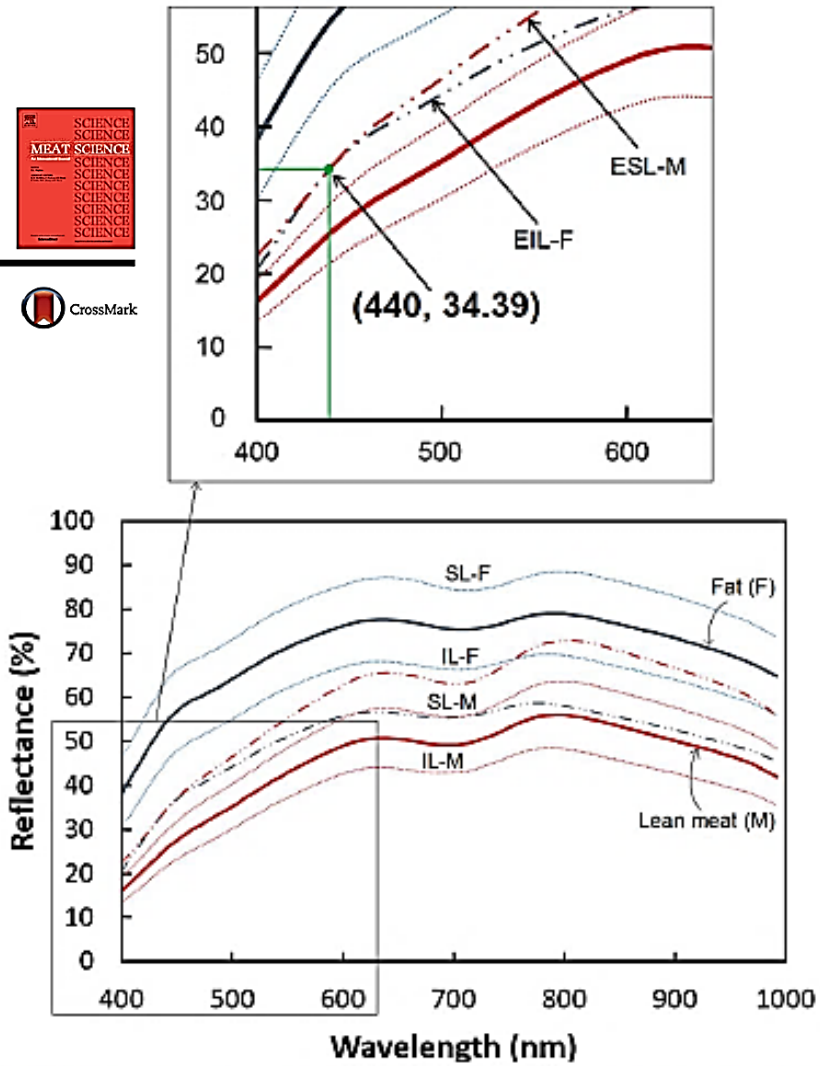


Fig. 4. Intensity spectrums of lean meat (M) and fat (F) (SL: superior limit; IL: inferior limit; ESL-M: extended superior limit – lean meat; EIL-F: extended inferior limit – fat).

RESULTADOS

✓Haga figuras explicativas

ELSEVIER
Journal of Food Engineering

Nonlinear thermodynamic and structural approach to analyze osmotic dehydration of kiwifruit (Actinidia deliciosa cv Hayward) at short treatment times

M. Castro-Giráldez[1], P.J. Fito[1]*, U. Tylewicz[2], M. Dalla Rosa[2], P. Fito[1]

1Instituto Universitario de Ingeniería de Alimentos para el Desarrollo, Universidad Politécnica de Valencia, Camino de Vera s/n, 46022 Valencia, Spain
2 Università degli Studi di Bologna, Facoltà di Agraria, Corso di Laurea in Scienze e Tecnologie Alimentari, Via Ravennate 1020, 47023 Cesena, Italy

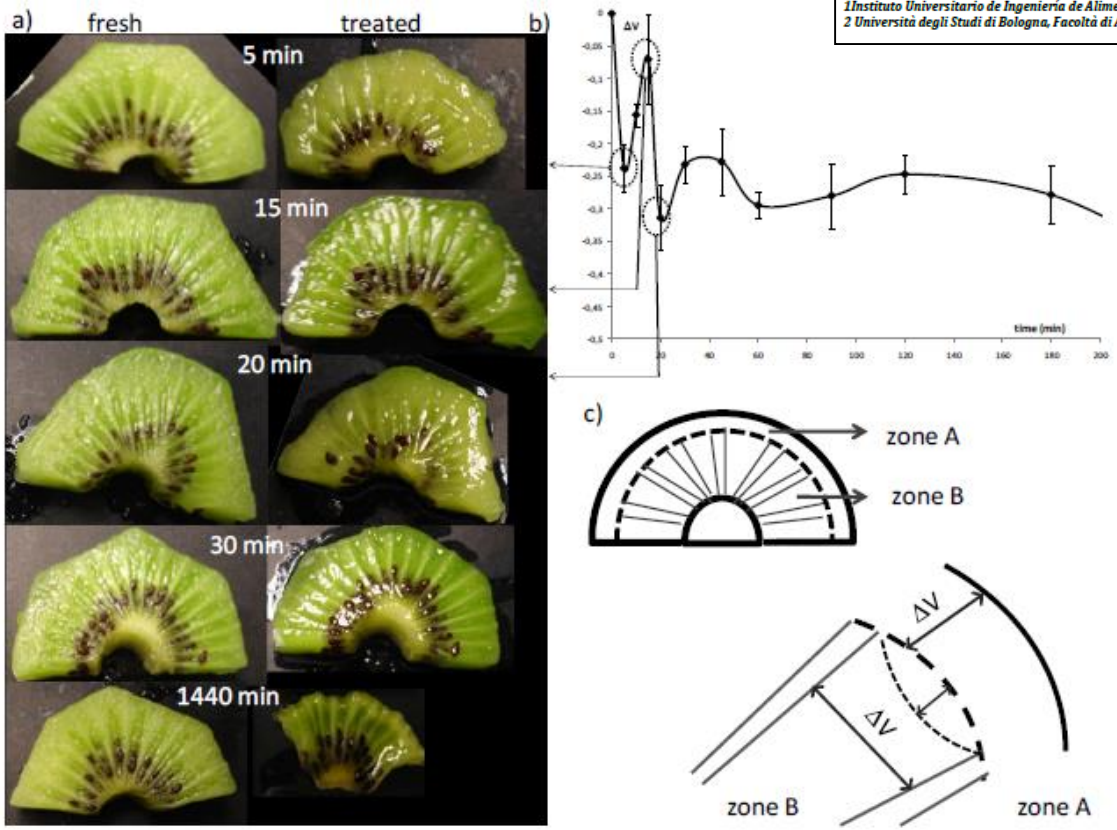
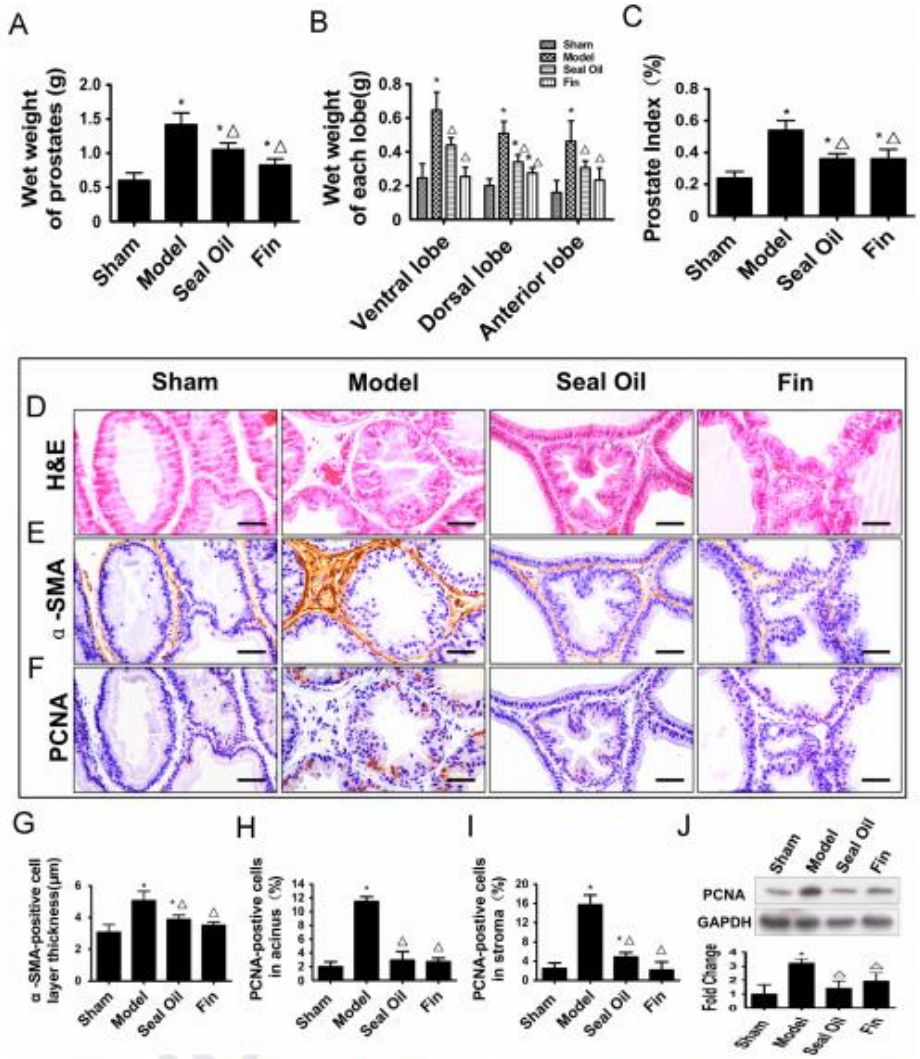
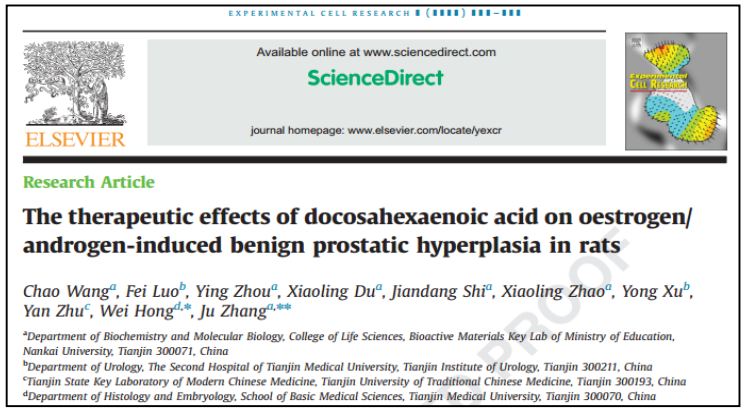


Figure 4. Kiwifruit deformation through the osmotic dehydration; a) pictures of fresh and treated kiwifruit at different treatment times; b) Volume variation curve at short treatment times; c) detail of the zones of the kiwi tissue with the sense of the deformations.

RESULTADOS

✓ Haga figuras explicativas





EXPERIMENTAL CELL RESEARCH ▮ (▮▮▮▮) ▮▮▮–▮▮▮

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/yexcr

ELSEVIER

Research Article

The therapeutic effects of docosahexaenoic acid on oestrogen/androgen-induced benign prostatic hyperplasia in rats

Chao Wang[a], Fei Luo[b], Ying Zhou[a], Xiaoling Du[a], Jiandang Shi[a], Xiaoling Zhao[a], Yong Xu[b], Yan Zhu[c], Wei Hong[d,], Ju Zhang[a,**]*

[a]Department of Biochemistry and Molecular Biology, College of Life Sciences, Bioactive Materials Key Lab of Ministry of Education, Nankai University, Tianjin 300071, China
[b]Department of Urology, The Second Hospital of Tianjin Medical University, Tianjin Institute of Urology, Tianjin 300211, China
[c]Tianjin State Key Laboratory of Modern Chinese Medicine, Tianjin University of Traditional Chinese Medicine, Tianjin 300193, China
[d]Department of Histology and Embryology, School of Basic Medical Sciences, Tianjin Medical University, Tianjin 300070, China

Fig. 1 – Effects of seal oil on rat prostate wet weight. (A) The wet weight of the rat prostates from each group after 28 days of drug and/or hormone treatments. (B) The wet weight of the rat prostatic lobes (ventral, dorsal and anterior lobe) in each group. (C) Alterations in the rat prostatic index of each group. *$p<0.05$ vs. the sham group, $\Delta p<0.05$ vs. the model group, $n=10$. (D–F) Three serial sections from each group were analysed by H&E staining (D) and IHC staining for α-SMA (E) and PCNA (F). Scale bars 50 μm (magnification 400 ×), $n=10$. (G) Quantitative analysis of the thickness of the α-SMA-positive cell layer in the peri-glandular region. (H and I) Percentage of PCNA-positive cells in the prostate epithelial cell (H) and prostate stromal cell populations (I). The quantitative analysis of the SMC layer and PCNA-positive cells was conducted as described in *Materials and methods*. *$p<0.05$ vs. the sham group; $\Delta p<0.05$ vs. the model group. (J) Western blot analysis of PCNA protein expression in rat prostate tissues. ImageJ software was used for densitometry quantification. The values presented are the mean ± SD of three independent experiments. *$p<0.05$ vs. the sham group; $\Delta p<0.05$ vs. the model group.

¿Cómo redactar la DISCUSIÓN?

DISCUSIÓN

✓ Interprete sus resultados

LWT - Food Science and Technology xxx (2014) 1–7

Contents lists available at ScienceDirect

LWT - Food Science and Technology

journal homepage: www.elsevier.com/locate/lwt

ELSEVIER

Measurement parameter of color on yacon (*Smallanthus sonchifolius*) slices using a computer vision system

Erick Saldaña [a], Raúl Siche [b,*], Wilson Castro [c], Rosmer Huamán [d], Roberto Quevedo [e]

explains the experimental data acceptably (Gutiérrez-Pulido & de la Vara Salazar, 2004). Also observed was a correlation coefficient near one ($r = 0.9982$), indicating a high degree of correlation.

3.5. Estimation and evaluation of the colorimetric parameters

Color is an important property related to the chemical composition and the degree of alteration of food over time. The different values of Luminosity (L^*) indicates that the reflection of the light in a yacon slice was heterogeneous (Fig. 3). This may have occurred as a result of enzymatic browning, whereby polyphenoloxidase (PPO) catalyzes the conversion of phenolic compounds to quinones, which are polymerized to form dark colored pigments (Sapers & Douglas, 1987). When some fruit is cut, such as yacon, the cut surface turns dark, reducing not only the visual quality, but also results in undesirable changes in the flavor and nutrient loss (Luo & BarbosaCanovas, 1997).

L^* decreases as the samples are darker. Fig. 4 shows that the samples are decreasing in value L^* versus time. For example, average L^* went from 65.99 (0 h) to 60.84 (26 h), meaning that the samples darkened.

The parameters a^* and b^* determine a plane which can represent the individual and combined changes in both parameters, giving an idea of the colorimetric evolution experienced by the sample. The result of enzymatic pigmentation causes to a wide range of L^*, a^* and b^* values (Nicolas, Richard-Forget, Goupy, Amiot, & Aubert, 1994; Robards, Prenzler, Tucker, Swatsitang, & Glover, 1999), being a^* suitable for assessing change of color from green to red in fruits (Castaner, Gil, Artes, & TomasBarberan, 1996). Fig. 4 shows that most of the a^* values are positive, indicating a tendency toward red. In addition, a^* change from 7.33 (0 h) to 17.70 (26 h), also interpreted as an approximation to red. The variation of the b^* was not as significant as for the a^*, registering an insignificant increase with exposure time (from 35.11 to 41.49, for 0 and 26 h respectively) and a trend toward yellow. These results are consistent with data obtained by Krokida, Oreopoulou, Maroulis, and Marinos-Kouris (2001) and Segnini, Dejmek, and Oste (1999).

From L^*, a^* and b^* psychometric coordinates H^* and C^* were obtained. H^* is the hue angle measurement and indicates the relative orientation of the color with respect to the origin (0°) (Chiralt, Martínez-Navarrete, González, Talens, & Moraga, 2007).

H^* decreases from 78.22 to 66.90 in the 26 h of treatment (Fig. 5). These results indicate that the variation in the yellow-green quadrant. C^*, or chroma, is the measure of the saturation of the color being measured from the center point of the color space, i.e.,

DISCUSIÓN

✓ **Compare** sus resultados con resultados de la literatura y discuta si ellos están en concordancia o discordancia.

Commun Nonlinear Sci Numer Simulat 15 (2010) 3182–3192

Contents lists available at ScienceDirect

Commun Nonlinear Sci Numer Simulat

journal homepage: www.elsevier.com/locate/cnsns

Convergence of ecological footprint and emergy analysis as a sustainability indicator of countries: Peru as case study

Raúl Siche [a,*], Lucas Pereira [b], Feni Agostinho [b], Enrique Ortega [b]

[a] Escuela de Ingeniería Agroindustrial, Facultad de Ciencias Agropecuarias, Universidad Nacional de Trujillo, Av. Juan Pablo II s/n, C. Universitaria, Trujillo, Peru
[b] Ecological Engineering Laboratory, Food Eng. School, State University of Campinas, UNICAMP, Cx. Postal 6121, CEP 13083-862, Campinas, SP, Brazil

The CO_2 absorption category showed to be the largest bioproductive area of Peru in the EF-ENPP approach with a value of 6.9 gha person^{-1} (Table 5). This value is 5 times greater than 1.3 gha person^{-1} obtained for CO_2 absorption category calculated using EF-GAEZ by Siche (2007). This difference occurs because in the EF-GAEZ, Forest area is used to calculate the Biocapacity for CO_2 absorption (Monfreda et al., 2004), while in EF-ENPP all areas able to make photosynthesis (i.e. forest, ocean, desert, continental water, etc.) were considered for CO_2 absorption.

DISCUSIÓN

✓ **Compare** sus resultados con resultados de la literatura y discuta si ellos están en concordancia o discordancia.

LWT - Food Science and Technology xxx (2014) 1–7

Contents lists available at ScienceDirect

LWT - Food Science and Technology

journal homepage: www.elsevier.com/locate/lwt

Measurement parameter of color on yacon (*Smallanthus sonchifolius*) slices using a computer vision system

Erick Saldaña [a], Raúl Siche [b,*], Wilson Castro [c], Rosmer Huamán [d], Roberto Quevedo [e]

explains the experimental data acceptably (Gutiérrez-Pulido & de la Vara Salazar, 2004). Also observed was a correlation coefficient near one ($r = 0.9982$), indicating a high degree of correlation.

3.5. *Estimation and evaluation of the colorimetric parameters*

Color is an important property related to the chemical composition and the degree of alteration of food over time. The different values of Luminosity (L^*) indicates that the reflection of the light in a yacon slice was heterogeneous (Fig. 3). This may have occurred as a result of enzymatic browning, whereby polyphenoloxidase (PPO) catalyzes the conversion of phenolic compounds to quinones, which are polymerized to form dark colored pigments (Sapers & Douglas, 1987). When some fruit is cut, such as yacon, the cut surface turns dark, reducing not only the visual quality, but also results in undesirable changes in the flavor and nutrient loss (Luo & BarbosaCanovas, 1997).

L^* decreases as the samples are darker. Fig. 4 shows that the samples are decreasing in value L^* versus time. For example, average L^* went from 65.99 (0 h) to 60.84 (26 h), meaning that the samples darkened.

The parameters a^* and b^* determine a plane which can represent the individual and combined changes in both parameters, giving an idea of the colorimetric evolution experienced by the sample. The result of enzymatic pigmentation causes to a wide range of L^*, a^* and b^* values (Nicolas, Richard-Forget, Goupy, Amiot, & Aubert, 1994; Robards, Prenzler, Tucker, Swatsitang, & Glover, 1999), being a^* suitable for assessing change of color from green to red in fruits (Castaner, Gil, Artes, & TomasBarberan, 1996). Fig. 4 shows that most of the a^* values are positive, indicating a tendency toward red. In addition, a^* change from 7.33 (0 h) to 17.70 (26 h), also interpreted as an approximation to red. The variation of the b^* was not as significant as for the a^*, registering an insignificant increase with exposure time (from 35.11 to 41.49, for 0 and 26 h respectively) and a trend toward yellow. These results are consistent with data obtained by Krokida, Oreopoulou, Maroulis, and Marinos-Kouris (2001) and Segnini, Dejmek, and Oste (1999).

From L^*, a^* and b^* psychometric coordinates H^* and C^* were obtained. H^* is the hue angle measurement and indicates the relative orientation of the color with respect to the origin (0°) (Chiralt, Martínez-Navarrete, González, Talens, & Moraga, 2007).

H^* decreases from 78.22 to 66.90 in the 26 h of treatment (Fig. 5). These results indicate that the variation in the yellow-green quadrant. C^*, or chroma, is the measure of the saturation of the color being measured from the center point of the color space, i.e.,

DISCUSIÓN

✓ Dar **valor a sus resultados.** Sea propositivo.

Journal of Texture Studies
A journal to advance the fundamental understanding of food texture and sensory perception

Journal of Texture Studies ISSN 1745-4603

USE OF RESPONSE SURFACE METHODOLOGY TO DESCRIBE THE COMBINED EFFECT OF TEMPERATURE AND FIBER ON THE RHEOLOGICAL PROPERTIES OF ORANGE JUICE

RAÚL SICHE[1], VÍCTOR FALGUERA[2] and ALBERT IBARZ[3,4]

[1]Escuela de Ingeniería Agroindustrial, Facultad de Ciencias Agropecuarias, Universidad Nacional de Trujillo, Trujillo, Peru
[2]Agricultural Knowledge & Innovation Services (AKIS International), Albatàrrec, Spain
[3]Departament de Tecnologiad'Aliments, Universitat de Lleida, Av. Rovira Roure, 191, Lleida 25198, Spain

switch to pseudoplastic behavior with flow behavior index values lower than 1. When the fiber content is high enough, fiber particles can interact, forming aggregates that make the flow of fluid more difficult if the applied stress is not enough, i.e., a value of the yield stress appears and the fluid exhibits plastic behavior.

All these facts constitute an important piece of information for the design of the fiber addition process, in a simplified manner; the RSM allows observing the changes in flow behavior in a single plot. On the contrary, with the traditional approach (Fig. 5), the combined effect of fiber concentration and temperature cannot be observed with such precision.

The influence of the addition of orange fiber in the rheological behavior of the obtained juices can be

DISCUSIÓN

✓ Dar **valor a sus resultados.** Sea propositivo.

LWT - Food Science and Technology xxx (2014) 1–7

Contents lists available at ScienceDirect

LWT - Food Science and Technology

journal homepage: www.elsevier.com/locate/lwt

Measurement parameter of color on yacon (*Smallanthus sonchifolius*) slices using a computer vision system

Erick Saldaña [a], Raúl Siche [b,*], Wilson Castro [c], Rosmer Huamán [d], Roberto Quevedo [e]

In future work, the computer vision system should be integrated with an artificial neural network using colorimetric and morphometric parameters of food. This integrated system would classify processed or fresh foods according to their sensory quality, and could even be used to estimate sensory shelf life of minimally processed foods.

✓ Retos futuros

Artículo de revisión

- Indicar los desafíos científicos y/o tecnológicos que deben ser superados para una aplicación a otra escala o a otro nivel.
- Recomendar investigaciones futuras, otras aplicaciones, nuevos modelos, etc.
- Es posible hacer uso de la literatura para fundamentar algunas proposiciones o recomendaciones.

Artículo de revisión

INTERNATIONAL JOURNAL OF FOOD PROPERTIES
2017, VOL. 20, NO. S2, S1264–S1297
https://doi.org/10.1080/10942912.2017.1338729
Taylor & Francis
Taylor & Francis Group
Check for updates

Evaluation of biological contaminants in foods by hyperspectral imaging: A review

Ricardo Vejarano[a,b], Raúl Siche [a], and Wendu Tesfaye[c]

[a]Facultad de Ciencias Agropecuarias, Universidad Nacional de Trujillo (UNT), Ciudad Universitaria, Trujillo, Peru; [b]Facultad de Ingeniería, Universidad Privada del Norte (UPN), Trujillo, Peru; [c]Departamento de Química y Tecnología de Alimentos, Universidad Politécnica de Madrid (UPM), Madrid, Spain

Future challenges

On the basis of aforementioned disadvantages, scientific and technological challenges that must be overcome for further application of HSI at the industrial level are

(a) Further research for detecting biological contaminants in liquid foods is needed,[15] since most applications have been focused on solid samples (Tables 2–4).
(b) Quantification of low concentrations of microorganisms, since most studies have been focused on assessing microbial densities higher than 10^2 CFU/g.[2]
(c) Current studies will need to be extended to other microbial species,[2,92] since most of these studies are limited in detecting and quantifying metabolites produced by microbial contaminants.
(d) Advanced methodologies that allow discrimination between biological contaminants based on its specific "spectral signature."
(e) Optimize the existing models or create more robust models that allow to predict biological contamination from the spectral data obtained, without running the risk of losing valuable information.
(f) Validation of developed models on several storage conditions, simulating real life, for example, at different storage temperatures.[79]
(g) Design of techniques able to fuse the spatial and spectral data, since most of available hyperspectral data processing techniques focus on analysing the spectral data without incorporating information on the spatial data.[3]

CONCLUSIONES
¿Cómo redactarlas?

CONCLUSIONES

En esta sección se **sintetizan** los resultados de la investigación en **función de los objetivos** trazados inicialmente.

Por lo tanto, **no puede incorporarse nuevos elementos** que no hayan sido tratados en el proceso de investigación, lo cual **no impide tomar en cuenta nuevas ideas que surjan producto de la investigación realizada e incorporarlas como aporte**.

CONCLUSIONES

Artículo de revisión

CONCLUSIONES

Artículo de revisión

- ✓ Se puede iniciar colocando una pequeña **justificación** de la revisión.
- ✓ Luego mencionar los **principales aspectos** analizados en la revisión.
- ✓ Finalmente, ventajas, desventajas, limitaciones o **recomendaciones** de trabajos futuros en forma concreta

CONCLUSIONES

Artículo de revisión

Food Eng Rev (2016) 8:306–322
DOI 10.1007/s12393-015-9137-8

REVIEW ARTICLE

Evaluation of Food Quality and Safety with Hyperspectral Imaging (HSI)

Raúl Siche[1] · Ricardo Vejarano[1] · Victor Aredo[1] · Lia Velasquez[1] · Erick Saldaña[2] · Roberto Quevedo[3]

Conclusions

In the modern food industry, the requirement for adequate control of attributes such as size, shape, color and texture of foods is greater. This requirement is fulfilled by automated or by visual inspection techniques, which often can lead to human error. Furthermore, evaluation of parameters related to the food composition such as moisture content, fat, protein often requires destructive analysis that demands the use of both human and technological resources that make them unworkable in practice.

These parameters can be measured simultaneously by the HSI, which allows to obtain data on a larger number of spectral bands, making them a better source of information for assessing the external attributes and predicting the composition and spatial distribution of the various constituents within the food, besides providing speed, reliability, accuracy, reduced human error in the analysis and not be destructive.

HSI offers the advantage of evaluating samples of heterogeneous nature, by other techniques, such as simple spectroscopy, which would be limited only to the characterization of homogeneous materials, which is inefficient in a practical application that must control the entire surface of a sample.

Finally, despite presenting some disadvantages such as long time that is required for data acquisition and processing of this information, it is anticipated that the use of this technology will become indispensable in the industry, to evaluate the quality and safety of food, providing that improvements are made in terms of real-time control and safety control requirements.

CONCLUSIONES

Artículo de investigación original

CONCLUSIONES

Artículo de investigación original

- ✓ Iniciar señalando la **conclusión general** como producto del cumplimiento del objetivo general.
- ✓ Luego mencionar **los principales resultados** que se hayan encontrado.
- ✓ Finalmente resaltar los **aportes o beneficios** de los resultados obtenidos.
- ✓ Es posible incluir **recomendaciones** de trabajos futuros.

CONCLUSIONES

LWT - Food Science and Technology xxx (2014) 1–7

Contents lists available at ScienceDirect

LWT - Food Science and Technology

journal homepage: www.elsevier.com/locate/lwt

Measurement parameter of color on yacon (*Smallanthus sonchifolius*) slices using a computer vision system

Erick Saldaña [a], Raúl Siche [b,*], Wilson Castro [c], Rosmer Huamán [d], Roberto Quevedo [e]

4. Conclusions

The contribution of this study was to develop a new algorithm using computer vision and apply this methodology to yacon slices, which is an unexploited functional fruit. This algorithm provides objective sensory information about color. Therefore, this proposal could take charge over traditional systems based on subjective color measurements like sensory panel evaluation, where influence aspects such as fatigue, stress, level of vision, among others are evident.

The algorithm implemented in the CVS enabled an estimate of the parameters of CIE Lab color with low errors ($e_{L^*} = 5.001\%$, $e_{a^*} = 2.287\%$ and $e_{b^*} = 4.314\%$). L^* decreased from 65.99 to 60.84 due to obscuration of the samples, a^* increased from 7.33 to 17.70 indicating a red color trend, and b^* increased from 35.11 to 41.49 suggesting a yellow color trend with time. C^* increased from 35.87 to 45.11, showing a tendency towards a combination of red-yellow. H^* declined from 78.22 to 66.90, indicating a variation in the yellow-green quadrant. ΔE^* increased from 2.57 to 13.23, showing a tendency to colors: red, yellow and dark. These results demonstrate that the designed system based on image helps explain the color changes of minimally processed fruit. Thus, this system could be used to measure, in real-time, the color quality in foods and choose

CONCLUSIONES

Food Research International 89 (2016) 701–708

Contents lists available at ScienceDirect

Food Research International

journal homepage: www.elsevier.com/locate/foodres

Ultrasound pre-treatment enhances the carrot drying and rehydration

Cinthia Ricce [a,b], Meliza Lindsay Rojas [a], Alberto Claudio Miano [a], Raul Siche [b], Pedro Esteves Duarte Augusto [a,*]

[a] Department of Agri-food Industry, Food and Nutrition (LAN), Luiz de Queiroz College of Agriculture (ESALQ), University of São Paulo (USP), Piracicaba, SP, Brazil
[b] Escuela de Ingeniería Agroindustrial, Facultad de Ciencias Agropecuarias, Universidad Nacional de Trujillo, Trujillo, LL, Perú

Fig. 8. Drying rate behaviour at 40 °C of carrot slices with different pre-treatment: control (US0 min + D40 °C), ultrasound pre-treated directly immersed in water (US60 min + D40 °C) and vacuum-packed samples ultrasound pre-treated (Vacuum + US60 min + D40 °C). The dots are the averages and the bars represent the standard deviation.

4. Conclusions

The ultrasound pre-treatment (41 W/L of volumetric power and 25 kHz of frequency) affected the drying and rehydration process of

carrot slices. The main effects are the microstructural changes such as cell disruption, micro-channel formation and cell bloating, which are influenced by the pre-treatment time. Short times of pre-treatment are not enough to create micro-channels. However, it causes the cell become bloated hindering the drying process. On the other hand, when long ultrasound-pre-treatments are applied, micro-channels are formed increasing the porosity of the samples and enhancing the following drying process. In addition, it was demonstrated that the ultrasound pre-treatment of the samples inside distilled water has the advantage of unclogging the pores and micro-channels. Thus, this improved the drying process. In the case of rehydration, longer ultrasound pre-treatments increases the rehydration rate; however, tends to reduce the equilibrium moisture content probable due to the lower water holding capacity of the disrupted cells. Finally, it was corroborated that the use of high drying temperatures hides the ultrasound pre-treatments effects since the temperature effects in the samples are higher than the caused by ultrasound. Therefore, the ultrasound pre-treatment is a good option to reduce the drying time and/or temperature and increase the dehydration rate of foods. Nevertheless, optimization studies are desirable for obtaining better results of rehydration.

Recomendaciones

Fernández-Ronco, M. P., Gracia, I., Lucas, A., & Rodriguez, J. F. (2013). Extraction of *Capsicum annuum* oleoresin by maceration and ultrasound-assisted extraction: Influence of parameters and process modeling. *Journal of Food Process Engineering*, *36*, 343–352.
Fick, A. (1855). Ueber diffusion. *Annalen der Physik*, *170*, 59–86.
Fijalkowska, A., Nowacka, M., Wiktor, A., Sledz, M., & Witrowa-Rajchert, D. (2016). Ultrasound as a pretreatment method to improve drying kinetics and sensory properties of dried apple. *Journal of Food Process Engineering*, *39*, 256–265.
Floros, J. D., & Liang, H. (1994). Acoustically assisted diffusion through membranes and biomaterials. *Food Technology*, *48*, 79–84.
Gallego-Juarez, J. A., Rodriguez-Corral, G., Gálvez Moraleda, J. C., & Yang, T. S. (1999). A new high-intensity ultrasonic technology for food dehydration. *Drying Technology*, *17*, 597–608.
Gallego-Juárez, J. A., Riera, E., De La Fuente Blanco, S., Rodríguez-Corral, G., Acosta-Aparicio, V. M., & Blanco, A. (2007). Application of high-power ultrasound for dehydration of vegetables: processes and devices. *Drying Technology*, *25*, 1893–1901.
Gamboa-Santos, J., Soria, A. C., Villamiel, M., & Montilla, A. (2013). Quality parameters in convective dehydrated carrots blanched by ultrasound and conventional treatment. *Food Chemistry*, *141*, 616–624.
García-Pérez, J. V., Cárcel, J. A., De La Fuente-Blanco, S., & Riera-Franco De Sarabia, E. (2006). Ultrasonic drying of foodstuff in a fluidized bed: Parametric study. *Ultrasonics*, *44*, e539–e543 (Supplement).
García-Pérez, J. V., Cárcel, J. A., Benedito, J., & Mulet, A. (2007). Power ultrasound mass [illegible] *d Bioproducts Processing*, *85*, 247–254.
[illegible]6). Comparison of the retention of 6-gingerol in drying of ginger under modified atmosphere heat pump drying and other drying methods. *Drying Technology*, *24*, 51–56.
Henderson, S. M., & Pabis, S. (1961). Grain drying theory I: temperature effect on drying coefficient. *Journal of Agricultural Engineering Research*, *6*, 169–174.

CONCLUSIONES

Meat Science 133 (2017) 43–50

Contents lists available at ScienceDirect

Meat Science

journal homepage: www.elsevier.com/locate/meatsci

An application based on the decision tree to classify the marbling of beef by hyperspectral imaging

Lía Velásquez[a], J.P. Cruz-Tirado[a], Raúl Siche[a,*], Roberto Quevedo[b]

[a] Facultad de Ciencias Agropecuarias, Universidad Nacional de Trujillo, Av. Juan Pablo II s/n, Ciudad Universitaria, Trujillo, Peru
[b] Fitogen Program, Department of Aquaculture and Agrifood Resources, Universidad de Los Lagos, Av. Fuchslocher 1305, Osorno, Chile

4. Conclusion

The present study demonstrated that VIS/NIR HSI can be used for classifying of the degree of marbling of beef according to the Japanese standard BMS. Furthermore, the results suggest that hyperspectral imaging together with classification tools such as the decision tree has the advantage of being a quick, effective and non-destructive tool for classification of marbling in beef. The study showed the potential of decision tree for classifying pixels of fat and meat based on the spectral difference at 440 nm. Meat samples evaluated traditionally obtained a high percentage of correlation with the samples obtained with the application of hyperspectral images.

Thus, the decision tree method proposed in this study, meets the requirements of the meat industry in the rapid analysis and online for classification of marbling of beef, according to the Japanese standard BMS; so, to apply HIS in the classification of the degree of marbling of beef, it could be advantageous and less costly.

Due to the provenance of the samples, it was not possible to evaluate all the marbling degrees contemplated in the standard; so, future research could involve samples from different geographical areas, different breeds and different feeding regimes.

Conclusión general

Aportes, beneficios

Resultados

Recomendación

No recomendable

- ✓ Utilizar el **marco teórico** para reforzar los resultados obtenidos, aunque si es necesario podría hacerse.
- ✓ Exponer la **importancia personal** que tienen sus resultados.

AGRADECIMIENTOS

AGRADECIMIENTOS

Aquí se reconoce la ayuda de personas e instituciones que aportaron significativamente al desarrollo de la investigación.

ECOLOGICAL MODELLING 210 (2008) 37–57

available at www.sciencedirect.com

ScienceDirect

ELSEVIER

journal homepage: www.elsevier.com/locate/ecolmodel

The use of emergy assessment and the Geographical Information System in the diagnosis of small family farms in Brazil

Feni Agostinho[a], Guaraci Diniz[b], Raúl Siche[c], Enrique Ortega[a,]*

we have a better description of small family farms, improving the proposals of environmental resources usage through Best Management Practices. Duas Cachoeiras farm had a better performance in almost all emergy indicators compared to the other two farms, which use chemical agricultural production. The agroecological system revealed: (a) good efficiency in energy transformation (low value of transformity); (b) less dependency on economic resources, because only 11% of total emergy used comes from this source; (c) high sustainability, with a renewability of 59%; (d) low environmental impact (ELR = 0.69) and a greater sustainability index compared to the other systems. Thus, the expansion of agroecological produc-

Acknowledgements

We are grateful to Antônio Padilha for his kind help in collecting data. Thanks also to Consuelo Pereira, Otávio Cavalett, and Gabriela Vernaza for reviewing the paper. Feni Dalano Roosevelt Agostinho is grateful to CAPES (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior) for the master's degree grant. This study was made possible through CAPES' financial support.

AGRADECIMIENTOS

El nombre de la agencia que financió la investigación y el **número de la subvención** deben incluirse en esta sección.

Food Eng Rev
DOI 10.1007/s12393-015-9137-8

REVIEW ARTICLE

Evaluation of Food Quality and Safety with Hyperspectral Imaging (HSI)

Raúl Siche[1] · Ricardo Vejarano[1] · Victor Aredo[1] · Lia Velasquez[1] · Erick Saldaña[2] · Roberto Quevedo[3]

Acknowledgments Raúl Siche thanks the following institutions for funding: Fondo para la Innovación, la Ciencia y la Tecnología—FINCyT (Contract 407-PNICP-PIAP-2014) and Universidad Nacional de Trujillo—UNT (PIC2-2013/UNT). Erick Saldaña thanks the "Ministerio de Educación del Perú" for the scholarship granted by the program "Programa Nacional de Becas y Crédito Educativo" (PRONABEC).

AGRADECIMIENTOS

No exceder en agradecimientos; se agradece sólo las contribuciones realmente importantes, las menos importantes pueden agradecerse personalmente o por escrito.

Agradecimentos

Minha gratidão eterna a Deus Pai. Que é e será meu suporte e guia pelo resto da minha vida. A meu Senhor JesusCristo, queridíssimo amigo desde o meu nascimento. Em todo momento eles estiveram a meu lado.

À Miriam Dupas Hubinger, pela orientação, e por sua paciência que muitas vezes quebrei durante todo este projeto. Vou sentir saudades de você Miriam, não perderei as suas coordenadas. Ao professor Dr. Paulo de Amaral Sobral, obrigado mesmo.

Aos professores da Banca examinadora: Florencia Menegalli, João Borges Laurindo, Kil Jin Park, Luiz Antonio Viotto e Marcelo Cristianini, pela atenção dispensada, como também pelas correções sugeridas.

À FAPESP – Fundo Assistencial da Pesquisa do Estado de São Paulo, pela bolsa de estudos de doutorado que me foi concedida.

Ao Departamento de Engenharia de Alimentos e Laboratório de Engenharia de Processos da Universidade Estadual de Campinas-UNICAMP, pela oportunidade proporcionada para a realização dos estudos de doutorado.

Ao Sr.Cosme Perota da secrataria da Pós-graduação da FEA.

À minha UNIVERSIDAD NACIONAL DEL CALLAO – LIMA - PERÚ, por ter-me concedido as facilidades e a licença para realizar os estudos de Doutorado. Em especial ao ex - Reitor Dr. Alberto Arroyo Viale. Ao Secretario Geral Lic. Mg. Pablo Arellano Ubilluz e colegas Walter Acha e Walter Alvites, obrigado pela amizade e apoio moral.

Ao Dr. Alfredo De Almeida Vitali do ITAL pela colaboração prestada e a todo esse pessoal que me brindaram uma especial atenção. Obrigado mesmo.

À Empresa Estrutura Indústria e Comercio Ltda e Quiminox S.A., por ter participado em forma conjunta na construção do desidratador osmótico a vácuo, especialmente aos senhores Francisco e Gruppe.

À Dra. Graciela Bugueño, grande colega Chilena, que desde longe gentilmente me enviou preciosas informações que me permitiram ver essa luz ao fundo desta trilha que a gente está deixando. Ao Dr. Carlos Rodrigues Saavedra, Sr. Pablo Guzman, Francisco Pezantes, que foram guias e apoio na minha formação Professional e Pessoal.

Aos funcionários do LEP pelo apoio em todos os momentos, a Joyce, a Ana ao bugrino Senhor Aparecido, mas eu virei torcedor da Ponte Preta, vou sentir saudades do Moises Lucarelli.

Aos colegas do LEP e da Turma, Divair Christ, Roberta, Angela, Gustavo, Katiusha, Severina, Angelo, Delia, Harold, Elmer, Leila, Ana, Cristie, Renata.....aos bons estudantes de iniciação científica Francisco e Priscila.

Agradeço a todos aqueles que participaram e contribuíram ou buscaram o jeito em quebrar o meu galho, ...Não foi fácil não. Obrigado Brasil! Obrigado Unicamp!

vi

AGRADECIMIENTOS

Generalmente no se agradecen las contribuciones que son parte de una labor rutinaria o que se reciben a cambio de pago. Los artículos científicos casi nunca incluyen dedicatorias ni agradecimientos afectuosos (amistad, apoyo moral, consejos personales, etc.).

AGRADECIMIENTOS

Las contribuciones siguientes ameritan un agradecimiento pero no justifican la coautoría del artículo:

- ✓ Ayuda técnica de laboratorio
- ✓ Préstamo de literatura y equipo
- ✓ Compañía y ayuda durante viajes al campo
- ✓ Asistencia con la preparación de tablas e ilustraciones
- ✓ Sugerencias para el desarrollo de la investigación
- ✓ Ideas para explicar los resultados
- ✓ Revisión del manuscrito
- ✓ Apoyo económico
- ✓ Traducción del texto a otro idioma.

CITAS Y BIBLIOGRAFÍA

CONTROL DE FUENTES

- Se deben **chequear** los autores citados al interior del texto con los que aparece en la bibliografía (Autores que no aparecen en la bibliografía o autores en la bibliografía que no han sido citados al interior del texto).
- Autores citados con **nombres alterados o incompletos** en otras partes del texto y/o en la bibliografía.
- Se menciona el apellido de **un solo autor** en la cita cuando **son más autores**.
- Se utilizan fuentes de autores con **discutible autoridad académica** sobre el tema.

CITAS Y BIBLIOGRAFÍA

- ✓ La bibliografía se citará según la normativa exigida por la revista elegida o la editorial científica.
- ✓ Existen diferentes normas reconocidas internacionalmente (VANCOUVER, APA, HARVARD, ISO, etc.) y que deben ser tenidas en cuenta por el investigador, cuando sea necesario.
- ✓ El nivel de actualización del artículo científico, se determinará atendiendo a las bibliografías consultadas y que se encuentren en los últimos 5 años de publicación.

CITAS Y BIBLIOGRAFÍA

INTERNATIONAL JOURNAL OF FOOD PROPERTIES
2017, VOL. 20, NO. S2, S1264–S1297
https://doi.org/10.1080/10942912.2017.1338729

Taylor & Francis
Taylor & Francis Group

Check for updates

Evaluation of biological contaminants in foods by hyperspectral imaging: A review

Ricardo Vejarano[a,b], Raúl Siche [a], and Wendu Tesfaye[c]

[a]Facultad de Ciencias Agropecuarias, Universidad Nacional de Trujillo (UNT), Ciudad Universitaria, Trujillo, Peru; [b]Facultad de Ingeniería, Universidad Privada del Norte (UPN), Trujillo, Peru; [c]Departamento de Química y Tecnología de Alimentos, Universidad Politécnica de Madrid (UPM), Madrid, Spain

Several recent review articles have been published on applications of HSI which is primarily concerned with overall food quality and safety evaluation,[3–13] and others have been mainly focused on determination of chemical and microbiological contamination on food products.[1,2,14,15] However,

References

1. Feng, Y.Z.; Sun, D.W. Application of Hyperspectral Imaging in Food Safety Inspection and Control: A Review. Critical Reviews in Food Science and Nutrition **2012**, *52*(11), 1039–1058.
2. Gowen, A.A.; Feng, Y.; Gaston, E.; Valdramidis, V. Recent Applications of Hyperspectral Imaging in Microbiology. Talanta **2015**, *137*, 43–54.
3. Liu, D.; Zeng, X.A.; Sun, D.W. Recent Developments and Applications of Hyperspectral Imaging for Quality Evaluation of Agricultural Products: A Review. Critical Reviews in Food Science and Nutrition **2015**, *55*(12), 1744–1757.
4. Chen, Q.; Zhang, C.; Zhao, J.; Ouyang, Q. Recent Advances in Emerging Imaging Techniques for Non-Destructive Detection of Food Quality and Safety. Trends in Analytical Chemistry **2013**, *52*, 261–274.
5. Cheng, J.H.; Sun, D.W. Hyperspectal Imaging as an Effective Tool for Quality Analysis and Control of Fish and Other Seafoods: Current Research and Potential Applications. Trends in Food Science and Technology **2014**, *37* (2), 78–91.
6. ElMasry, G.; Barbin, D.F.; Sun, D.W.; Allen, P. Meat Quality Evaluation by Hyperspectral Imaging Technique: An Overview. Critical Reviews in Food Science and Nutrition **2012a**, *52*(8), 689–711.
7. ElMasry, G.; Kamruzzaman, M.; Sun, D.W.; Allen, P. Principles and Applications of Hyperspectral Imaging in Quality Evaluation of Agro-Food Products: A Review. Critical Reviews in Food Science and Nutrition **2012b**, *52* (11), 999–1023.

Food Eng Rev (2016) 8:306–322
DOI 10.1007/s12393-015-9137-8

REVIEW ARTICLE

Evaluation of Food Quality and Safety with Hyperspectral Imaging (HSI)

Raúl Siche[1] · Ricardo Vejarano[1] · Victor Aredo[1] · Lia Velasquez[1] · Erick Saldaña[2] · Roberto Quevedo[3]

Similar results were obtained in beef steaks, with coefficients of determination R^2 of 0.95 [88] and 0.96 [89], both working at 400–1000 nm, while in porcine meat, lower values of R^2 were obtained by Barbin et al. [7] for total viable count (TVC) and psychrotrophic plate count (PPC), with values of 0.82 and 0.85, respectively, at spectral region between 900 and 1700 nm. For its part, Tao et al. deep red color to a pale yellow color with time. In a recent study, Dai et al. [19] investigated the potential of visible and NIR hyperspectral imaging (400–1000 nm) as a rapid and noninvasive method to differentiate freshness of prawns. The results demonstrated a satisfactory classification rate of 98 and 95 % for prediction samples in unfrozen and frozen groups, respectively.

References

1. Abdel-Nour N, Ngadi M (2011) Detection of omega-3 fatty acid in designer eggs using hyperspectral imaging. Int J Food Sci Nutr 62(4):418–422
2. Achata E, Esquerre C, O'Donnell C, Gowen A (2015) A study on the application of near infrared hyperspectral chemical imaging for monitoring moisture content and water activity in low moisture systems. Molecules 20:2611–2621
3. Andrés S, Silva A, Soares-Pereira AL, Martins C, Bruno-Soares AM, Murray I (2008) The use of visible and near infrared reflectance spectroscopy to predict beef M. Longissimus thoracis et lumborum quality attributes. Meat Sci 78:217–224
4. Ariana DP, Lu R, Guyer DE (2006) Near-infrared hyperspectral reflectance imaging for detection of bruises on pickling cucumbers. Comput Electron Agric 53:60–70
5. Ariana DP, Lu R (2008) Quality evaluation of pickling cucumbers using hyperspectral reflectance and transmittance imaging: Part II. Performance of a prototype. Sens Instrum Food Qual Saf 2:152–160
6. Ariana DP, Lu R (2008) Detection of internal defect in pickling cucumbers using hyperspectral transmittance imaging. Trans ASABE 51:705–713
19. Dai Q, Cheng J-H, Sun D-W (2015) Potential of visible/near-infrared hyperspectral imaging for rapid detection of freshness in unfrozen and frozen prawns. J Food Eng 149:97–104
20. Del Fiore A, Reverberi M, Ricelli A, Pinzari F, Serranti S, Fabbri AA, Bonifazi G, Fanelli C (2010) Early detection of toxigenic fungi on maize by hyperspectral imaging analysis. Int J Food Microbiol 144:64–71
21. Delwiche SR, Kim MS, Dong Y (2011) Fusarium damage assessment in wheat kernels by Vis/NIR hyperspectral imaging. Sens Instrum Food Qual Saf 5(2):63–71
22. Dransfield E (1999) In: Pearson AM, Dutson TR (eds) Quality attributes and their measurement in meat, poultry and fish products, vol 11. Aspen Publication, Maryland, pp 289–315
23. Du CJ, Sun DW (2004) Recent developments in the applications of image processing techniques for food quality evaluation. Trends Food Sci Technol 15:230–249
24. ElMasry G, Wang N, ElSayed A, Ngadi M (2007) Hyperspectral imaging for non-destructive determination of some quality attributes for strawberry. J Food Eng 81:98–107
25. ElMasry G, Wang N, Vigneault C, Qiao J, ElSayed A (2008) Early detection of apple bruises on different background colors using hyperspectral imaging. LWT Food Sci Technol 41:337–345
26. ElMasry G, Wang N, Vigneault C (2009) Detecting chilling

CITAS Y BIBLIOGRAFÍA

[14] Hoekstra AY, Hung PQ. Globalization of water resources: international virtual water? Ows in relation to crop trade. Global Environ Change 2005;15:45–56.

[15] Hoekstra AY, Chapagain AK. Water footprints of nations: water use by people as a function of their consumption pattern. Water Resour Manage 2007;21(1):: 35–48.

[16] INEI – Instituto Nacional de Estadística e Informática. Peru: Compendio Estadístico; 2005. Available at http://www.inei.gob.pe/biblioinei.asp.

[17] INRENA – Instituto Nacional de Recursos Naturales. Sistema Nacional de Áreas Naturales Protegidas por el Estado. Lima, Peru; 2006. Available at http://www.inrena.gob.pe/index_inicio.htm.

(c) *Footprint calculation.* Include two important categories: soil loss and water consumption. Those categories are not accounted for in the EF-GAEZ method, neither in Zhao's approach. Water and soil are essential factors to agricultural production. In fact, water is so important to human activities that Hoekstra and Hung [14] stated that it should be considered an economic good. Nowadays, problems with water are related to its scarcity, excess and deterioration of its quality. Another major factor endangering the long term food supply is the loss of soil fertility [11]. High technology agricultural systems cause the loss of top soil at an impressive rate: corn production in Iowa, USA, implies the loss of about 20–30 tons of top soil per year per hectare; a sustainable system would tolerate a loss of only 1 ton ha^{-1} $year^{-1}$ [35]. Similar situation is found in populated developing countries: 30 ton ha^{-1} $year^{-1}$ in India and 40 ton ha^{-1} $year^{-1}$ in China. Considering that 500 years are needed to restore 2.5 cm of top soil [35], soil loss is a serious form of biophysical capital depletion.

CITAS Y BIBLIOGRAFÍA

e-ISSN: 2306-6741
Scientia Agropecuaria
Scientific journal of Universidad Nacional de Trujillo

Las referencias bibliográficas deben estar ordenadas en forma alfabética por apellidos del primer autor. Todas las publicaciones citadas en el texto deberán estar listadas en la sección Referencias Bibliográficas, y viceversa, todas las Referencias Bibliográficas listadas deben haber sido citadas en el texto. Una indicación importante a tener en cuenta es que **mínimo el 75% de las referencias bibliográficas deben ser artículos científicos y mínimo el 50% de los últimos 5 años**. Minimizar en lo posible el uso de libros y/o páginas web.

Ejemplos:

Journal o revista científica

Velásquez, L.; Cruz-Tirado, J.P.; Siche, R.; Quevedo, R. 2017. An application based on the decision tree to classify the marbling of beef by hyperspectral imaging. Meat Science 133: 43-50.

Libro

Fellows, P. 2007. Tecnología del procesado de los alimentos: Principios y práctica. 2da Edición. Editorial Acribia S.A. Zaragoza, España. 746 pp.

Capítulo de libro

Siche, R.; Carranza, J. 2016. Caso Espárrago Peruano. En: Arias-Vargas, F. (Comp.). Casos Empresariales en Agronegocios Perú-Colombia. Serie Lasallista Investigación y Ciencia. Colombia. Pp. 53-92.

Actas de conferencia o Conference Proceedings

Cruz, G.; Guzman, Y.; Mayorga, A.; Vejarano, R.; Tapia-Blácido, D.R.; Cruz-Tirado, J.P.; Siche, R. 2016. Influence of fiber size on the mechanical and physical properties of foam made from sweet potato starch. En Proceedings of the International Agroindustrial Engineering Conference, México, 17-20 oct, 2016.

Tesis

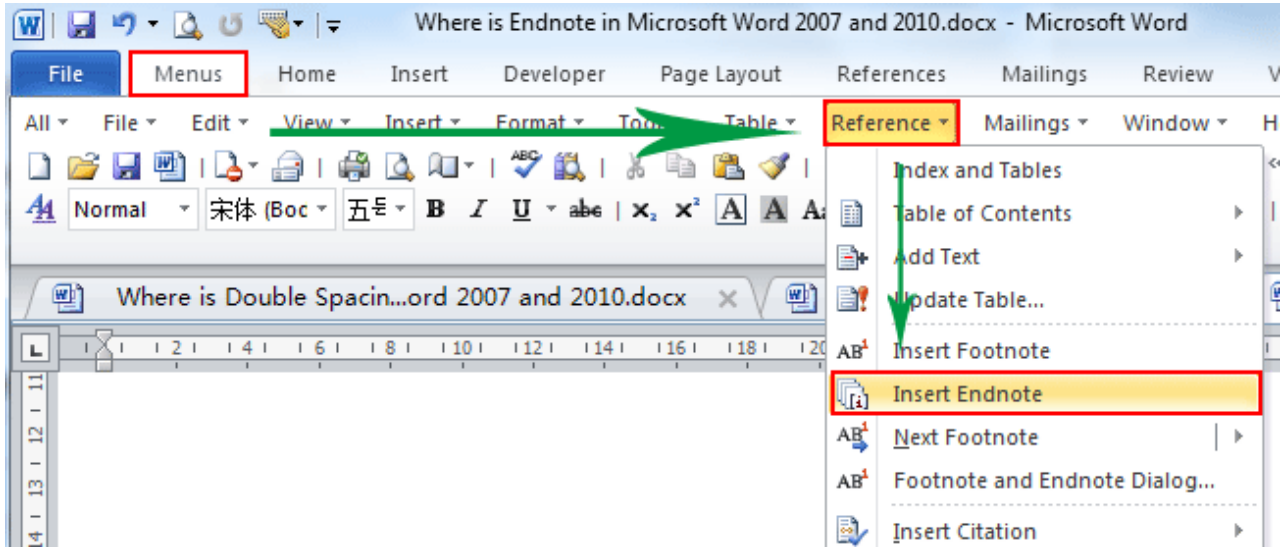
Siche, R. 2007. Avaliação ecológica-termodinâmica e econômica de nações: o peru como estudo de caso. Tesis de doctorado, Universidad Estadual de Campinas, Sao Paulo. Brasil. 377 pp.

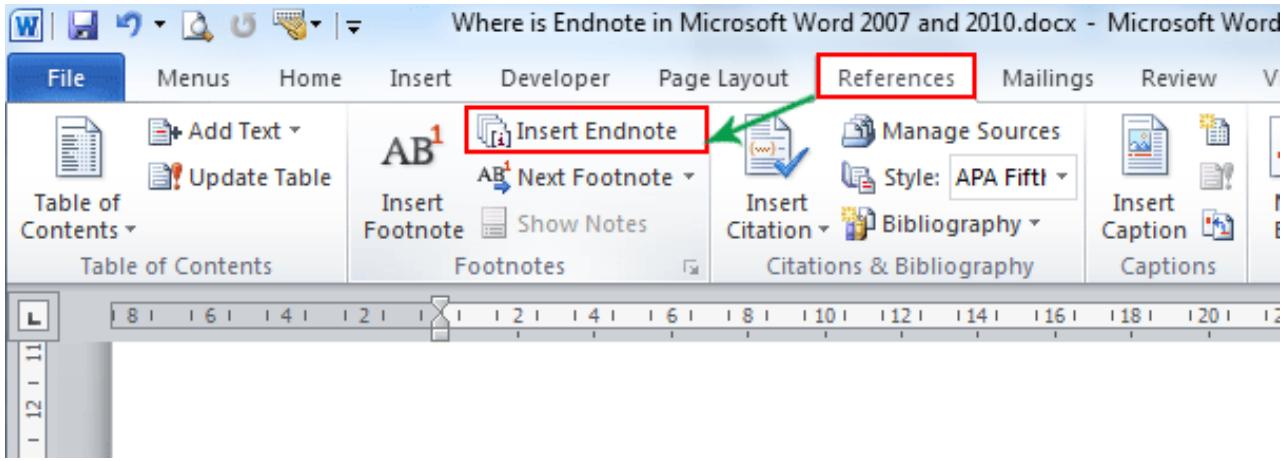
Página Web

O'Brien, T.; Díaz, A. 2004. El ejemplo del espárrago Peruano. Inter-American Institute for Cooperation on Agriculture – IICA y Comisión para la Promoción de Exportaciones – PROMPEX. Disponible en: http://infoagro.net/shared/docs/a3/esparrago_peru.pdf.

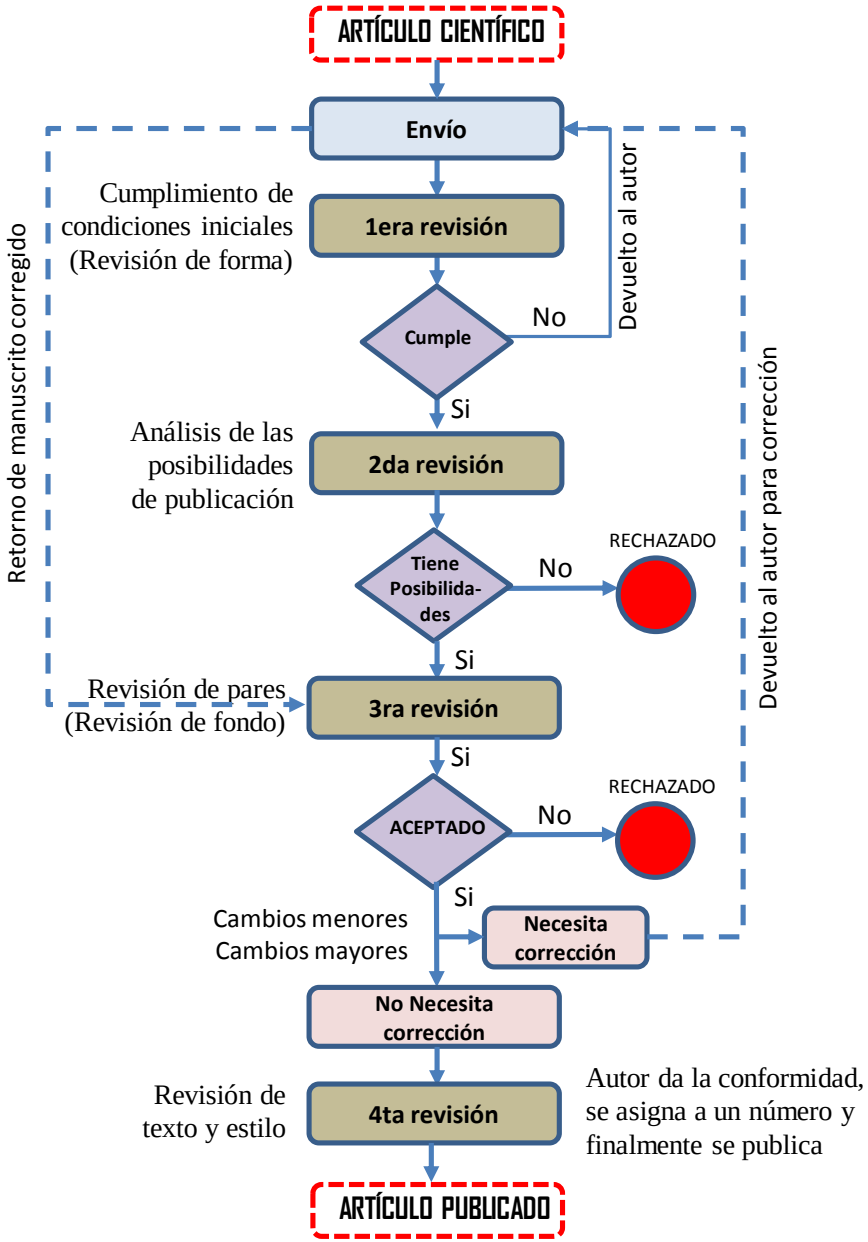
http://revistas.unitru.edu.pe/index.php/scientiaagrop/about/submissions#authorGuidelines

ENDNOTE

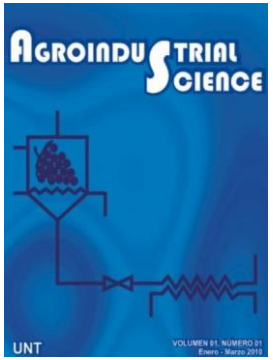

Where is Endnote in Microsoft Word 2007 and 2010.docx - Microsoft Word
File
Menus
Home
Insert
Developer
Page Layout
References
Mailings
Review
Reference
Mailings
Window
Index and Tables
Table of Contents
Add Text
Update Table...
Insert Footnote
Insert Endnote
Next Footnote
Footnote and Endnote Dialog...
Insert Citation
Where is Double Spacin...ord 2007 and 2010.docx

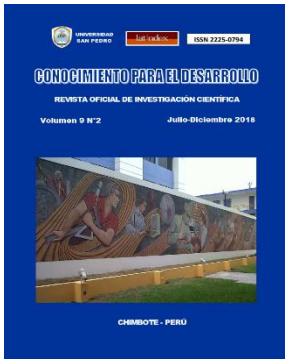

Where is Endnote in Microsoft Word 2007 and 2010.docx - Microsoft Word
File
Menus
Home
Insert
Developer
Page Layout
References
Mailings
Review
Table of Contents
Add Text
Update Table
Table of Contents
Insert Footnote
Insert Endnote
Next Footnote
Show Notes
Footnotes
Insert Citation
Manage Sources
Style: APA Fifth
Bibliography
Citations & Bibliography
Insert Caption
Captions

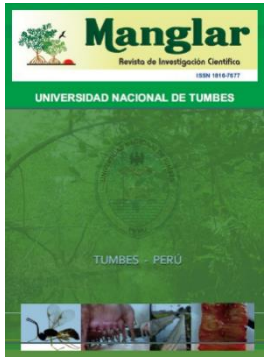
Proceso Editorial



Revistas Latindex







Revista WoS y SciELO

Editor

Dr. Raúl Siche

rsiche@unitru.edu.pe