

The cover image is a landscape photograph. The foreground is a dark, rocky, and sparsely vegetated field. In the middle ground, a river flows through a valley, with a person standing on the right bank. The background shows rolling hills under a bright sky.

Icelandic Agricultural Sciences

Icelandic Agricultural Sciences

Icel. Agric. Sci.

www.ias.is

Published by:

Agricultural University of Iceland (Landbúnaðarháskóli Íslands)

Icelandic Forest Research (Rannsóknastöð Skógræktarinnar á Mógilsá)

Marine and Freshwater Research Institute (Hafrannsóknastofnun, rannsókn- og ráðgjafastofnun hafs og vatna)

Institute for Experimental Pathology, University of Iceland (Keldur, Tilraunastöð Háskóla Íslands í meinafræði)

Matís, Ltd. – Icelandic Food and Biotech R&D Institute (Matís ohf. – þekkingar- og rannsóknarfyrtæki í þróun og nýsköpun í matvælaíðnaði, líftækni og matvælaöryggi)

Soil Conservation Service of Iceland (Landgræðsla ríkisins)

The Farmers Association of Iceland (Bændasamtök Íslands)

Editor in chief

Thorsteinn Gudmundsson Agricultural University of Iceland (Landbúnaðarháskóla Íslands)

Associate editors

Bjarni D Sigurdsson Agricultural University of Iceland

Sigurdur Ingvarsson Keldur, Institute for Experimental Pathology

Editorial Board

Edda S. Oddsdóttir Icelandic Forest Research , Mógilsá

Gudmundur Halldórsson Soil Conservation Service of Iceland, Gunnarsholt

Helga Gunnlaugsdóttir Matís Ltd. Icelandic Food and Biotech B&D

Jón S. Ólafsson Marine and Freshwater Research Institute

Ólöf Sigurdardóttir Institute for Experimental Pathology

Þorvaldur Kristjánsson The Icelandic Agricultural Advisory Centre

Contact and submission

Thorsteinn Gudmundsson at editor@ias.is

Cover Foto: Liverwort based biocrust
Photographer: Petra Landmark Guðmundsdóttir

ICELANDIC AGRICULTURAL SCIENCES 32 / 2019

CONTENTS

Editorial	2
JÓN H. EIRÍKSSON, ÁGÚST SIGURDSSON, GUDMUNDUR JÓHANNESSON AND EMMA EYTHÓRSDÓTTIR	
Genetic parameters for Icelandic dairy cows using a random regression test-day model	3
ABDUL-SALAM MAHAMUD BABA, ISABEL C BARRIO AND GUÐMUNDUR HALLDÓRSSON	
Effects of reduced water availability and insecticide on damage caused by cabbage root fly larvae	17
ARNÓR SNORRASON, THORBERGUR HJALTI JÓNSSON AND ÓLAFUR EGGERTSSON	
Aboveground woody biomass of natural birch woodland in Iceland – Comparison of two inventories 1987-1988 and 2005-2011	21
JÓN H. EIRÍKSSON, ÁGÚST SIGURDSSON, GUDMUNDUR JÓHANNESSON AND EMMA EYTHÓRSDÓTTIR	
Comparison of test-day and lactation models for genetic evaluations of Icelandic dairy cows for production traits and somatic cell score	31
PETRA LANDMARK GUDMUNDSDOTTIR AND OLAFUR S. ANDRESSON	
Fungi in liverwort-based biocrust	43
BJÖRN THORSTEINSSON, GUÐMUNDUR HRAFN JÓHANNESSON, ARNGRÍMUR THORLACIUS AND THORSTEINN GUDMUNDSSON	
Precipitation, runoff and nutrient losses from cultivated Histosols in western Iceland	61
TARA A MULLOY, ISABEL C BARRIO, KATRÍN BJÖRNSDÓTTIR, INGIBJÖRG SVALA JÓNSDÓTTIR AND DAVID S HIK	
Fertilisers mediate the short-term effects of sheep grazing in the Icelandic highlands	75

Editorial

For the past nine years I have had the pleasure and challenge to edit IAS, one of the smallest ISI-rated scientific journals, and as important as ever. Although most of the articles are from Iceland it covers applied environmental research in the circumpolar region, a region that is intensely experiencing the impact of the global warming and where qualified research and publications are of paramount importance.

A couple of changes were made during this time in IAS's editorial policy. We started to invite some prominent researchers in Iceland to write review articles. Secondly, we opened a venue for short communications, which several authors have made use of, and thirdly we stopped printing the journal and now provide all articles in open access with doi numbers that are registered by CrossRef. This last step has proven to be successful and the number of reads and quotes has markedly increased in recent years.

The publication of IAS is only possible thanks to the seven Icelandic institutions that jointly publish the journal and by that acknowledge the importance of our own Icelandic journal, which provides a platform for our researchers. For this we, the editors, are most grateful. My gratitude is no less to the many reviewers that I have contacted during my time as editor and without their peer reviews, corrections, questions, comments and judgements, we would not have been able to keep the high academic standard we have managed so far.

In this volume there are two articles on genetic variation and genetic evaluation of Icelandic cows; an article on cabbage root fly larvae; an article on a national inventory of aboveground biomass of natural birch woodlands in Iceland; an article on fungi-liverwort-based biocrust; an article on runoff and nutrient losses from drained and cultivated Histosols; and an article on how fertilization mediates short term effects of sheep grazing in the Icelandic highlands. Once again, the articles reflect our broad scope.

From January 2020 my colleague, Prof. Björn Thorsteinsson, will take over and lead IAS into the future. I wish him good luck and success as Editor in Chief.

Thorsteinn Gudmundsson
Editor in Chief

Instructions to authors

(See a complete version on the website www.ias.is)

Icelandic Agricultural Sciences (Icel. Agric. Sci.) is published annually, or more frequently. The journal is in English and is refereed and distributed internationally. It publishes original articles and reviews written by researchers throughout the world on any aspect of applied life sciences that are relevant under boreal, alpine, arctic or subarctic conditions. Relevant subjects include e.g. any kind of environmental research, farming, breeding and diseases of plants and animals, hunting and fisheries, forestry, soil conservation, ecology of managed and natural ecosystems, geothermal ecology, etc.

Authors submitting a paper do so on the understanding that the work has not been published before, is not considered for publication elsewhere and has been read and approved by all authors.

Original research articles must cover new and original research that has not been published before in a medium with peer reviewing and should generally not exceed 12 printed pages, or ca. 5.000 words + tables and figures. **Short communications** focus on studies with more limited coverage than original articles. The maximum length is 4 printed pages, or ca. 2000 words. Short communications do not need an abstract. **Review articles** should generally not exceed 15 printed pages or ca. 7.000 words + tables and figures. **Letters to the Editor** are reserved for comments on articles published in IAS. They should not exceed one printed page or ca. 450 words.

Publication charges. Original articles or review articles not exceeding 12 or 15 printed pages, respectively, are free of charge. For additional pages the authors will be charged 100 € per each additional page. Supplements that may be provided with an article shall be made available on our homepage and will be charged 50€ per page. Manuscripts should be in correct English; typed, with 1.5 line spacing on A4 paper and consisting of:

Title which should be concise and informative but as short as possible. Include also a short running title at the top of the first page.

Authors' names and name(s) and addresses of department(s)/institution(s) to which the work is attributed. Include the e-mail addresses of all authors.

Abstract, English and Icelandic "Yfirlit", should not exceed 150 words each. Non-Icelandic speaking authors will get help from the editor with translation to "Yfirlit".

Keywords in alphabetical order, up to 6 words, preferably not used in the title.

Text should normally be divided into: Introduction, Materials and methods, Results, Discussion, Acknowledgements, and References. Use capitals in first headings, use italic in second headings (and title of Icelandic "Yfirlit") and use bold and italic in third headings, if needed.

Introduction should provide a general orientation of the subject and present reasons for and aims of the study. Concisely written. Text references should be written: Smith & Jones (1988) or Hansson et al. (1990). If more than two publications are used references should be cited chronologically (Smith & Jones 1988, Hansson et al. 1990). Do not italicizes et al.

Materials and methods must provide sufficient information to permit exact replication of experimental work or statistical analysis.

Results should be clear, concise, and as objective as possible. No discussion of the results is permitted in this section.

Discussion should not repeat results, but in a logical way interpret the main results with reference to relevant figures, tables and references. The Discussion should be concisely written and as brief as possible. A separate chapter of Conclusions may be used.

Abbreviations, numerical symbols and style.

1. Use only international standard abbreviations, according to the guidelines from Caltec Library Service (<http://library.caltech.edu/reference/abbreviations/>).

2. In decimals, use the decimal point, not the comma (use comma in Icelandic "Yfirlit").
3. When presenting units, do not use slash (t/ha year), use negative exponents ($\text{t DM ha}^{-1} \text{ year}^{-1}$). DM = dry mass.
4. When presenting concentrations, quantitative units (e.g. mg N g^{-1} DM) are preferred to relative units (e.g. % N).
5. Use no Roman numerals.
6. Foreign words, Latin names of genera, species, mathematical symbols, etc. should be italicized. Personal names after Latin names should not be italicized.
7. Indicate the Latin binomial and authority names of species when they are first mentioned in the text, but not in the title or the abstract.

References should be kept to a pertinent minimum. Primary publications in English are recommended. In the text, references are identified by the name(s) of the author(s) with the year of publication in parenthesis. If both are in parenthesis, no punctuation separates the name(s) of the author(s) and the year of publication. Consecutive citations in the text are placed in chronological order and separated by commas. If there are two authors the names are separated with the symbol &. If there are more than two authors, only the first author's name is given, and this is followed by the phrase et al., which should not be in italic (e.g. Kramer 1986, Day et al. 2002). In the reference list names of journals should be written out fully. The reference list should be arranged in alphabetical order according to the name of the first author, see examples below. Titles of articles in other languages than English, French or German should be translated to English, in brackets, and the language of the original source should be indicated in brackets at the end of the reference. Names of authors and publication year should be in bold, separating authors with commas but apart from that without commas or dots. Name of journal or books should be italicized.

DOI numbers should always be provided if they exist using the prefix <https://doi.org/>.

Illustrations/Figures. All illustrative material must be of publication quality. All graphs, drawings and photographs are considered figures and should be kept to a minimum, numbered consecutively with Arabic numerals. Use only solid or open symbols, and avoid the use of light lines or fine screen shading. Distinguish areas within a diagram with solid white or black fill, hatching, or cross-hatching. Figures should be designed to fit one (6.6 cm), one and a half (10.3 cm), or two (13.8 cm) column widths, with a maximum height of 19.6 cm. Figures should be submitted at the size they are to appear in the journal. When reproduced at final size, lettering on figures (capitals and numerals) must be of Arial font and 11 point size. Excel format of graphs are preferred. If figures are made in other programs care must be taken to follow the above instructions in every detail. Figures should be delivered in black and white and will be printed in black and white, but colour printing is possible at the cost of author.

Tables. If results are already given in graphs or diagrams, tables should not be used. Double documentation is not acceptable. Table text should be in ordinary letter size and column headings in bold. Location of figures and tables might be indicated as a comment. Columns or rows within the tables should not be separated with lines. Lining should only be at top and bottom of a table, separating the heading from table content.

Submit your manuscript electronically to the editor at:
editor@ias.is

Editor-in-Chief
Thorsteinn Gudmundsson
Agricultural University of Iceland
Hvanneyri, 311 Borgarnes, Iceland